

Behavioral Responses to Interpersonal Conflict in Decision Making Teams: A
Clarification of the Conflict Phenomenon

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ABSTRACT

Interpersonal conflict in organizations plays an important role in performance, but the exact nature of that role remains unclear. Among conflict researchers a shift has occurred from believing that all conflict is debilitating for organizational performance to the realization that there are both positive and negative aspects of conflict. Contemporary research adopts a distinction between task conflict and relationship conflict.

Conceptually, a positive relationship has been proposed between task conflict and performance, while a negative relationship has been proposed between relationship conflict and performance. Empirically, however, there has been wide variation in the findings linking either type of conflict with performance. A recent meta-analysis by De Wit and Greer (2008) found that across studies linking task conflict and performance, findings reflected positive, negative and no relationships. Similarly, for relationship conflict, though a predominantly negative relationship was found across studies, there was wide variation in relationship magnitudes across studies. These meta-analytic results show that the effects sizes across both types of conflict studies are mainly negative.

However, given the large standard deviation estimates in both cases, there were also positive effect sizes in some of the studies. The wide variation across studies leads to the conclusion that in most studies conflict is detrimental, but in some it truly can be useful.

Also, it suggests that the relationship between both task and relationship conflict and performance needs to be clarified. Consequently, this research aims to examine the

source of the inconsistencies within the conflict literature by introducing a behavioral taxonomy to help explain the relationship between performance and the two types of conflict. Using a quasi-experimental design to study conflict, I will be able to induce conflict and observe the team behavioral dynamics as they unfold.

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Chapter 1 – Introduction

Organizations offer an ideal environment for the study of interpersonal conflict as they provide the impetus for conflict as well as incubate conflict situations (Dirks & McClean-Parks, 2003). Conflict “disturbs the equilibrium of the organization” (Pondy, 1967, p. 308) and many organizations invest the necessary resources to efficiently manage the conflict process. Consequently, organizational success to some extent depends on the ability to establish and manage the appropriate mechanisms for addressing a variety of conflict phenomena (Pondy, 1967).

Though definitions vary, conflict is consistently viewed as a sequential, dynamic process. Jehn and Bendersky (2003) described conflict as perceived incompatibilities or discrepant views among the parties involved. Putnam and Poole (1987) define conflict as “the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see the other party as potentially interfering with the realization of these goals” (p. 552). The general characteristics of interaction, interdependence, and incompatible goals that are common to most definitions of conflict are integral to providing a comprehensive definition of conflict.

Early process models (e.g., Pondy, 1967) included multiple stages of conflict, which reflected the sequential and dynamic nature of conflict. Pondy’s process model included five stages: latent conflict at stage 1, perceived conflict at stage 2, felt conflict at stage 3, manifest conflict at stage 4, and the conflict aftermath at stage 5. Latent conflict was viewed as the cause of conflict. An example could be role interdependence, which has the potential to create interpersonal conflict. Perceived conflict involves the cognitive aspect of conflict where either or both parties may recognize that there is conflict. Felt

conflict represents the affective aspect of conflict, and manifest conflict represents the behavioral display of conflict. Perceived, felt, and manifest conflict are often thought of as the core processes of conflict. The conflict aftermath represents the effects of conflict. As conflict process models have evolved, more focus has been placed on perception as the main core process, with felt or manifest conflict becoming less important. This focus on perception informed one of the major typologies of conflict that is used widely in the literature to study conflict--task and relationship conflict.

Task (substantive) conflict is related to the disagreements among group members about the task issues, such as goals, decisions, procedures and the appropriate choice for action (Guetzkow & Gyr, 1954; Pelled, Eisenhardt, & Xin, 1999). Relationship (affective) conflict, on the other hand, is not directly related to the task and arises when group members have interpersonal clashes which may lead to animosity among group members (Pelled et al. 1999; Simons & Peterson, 2000).

For many years, conflict management researchers tried to determine how conflict could be reduced, eliminated and resolved in organizations. The implicit assumption was that conflict was detrimental to the organization and that it would be beneficial to reduce or eliminate conflict. More recently, researchers have asked questions that may be more useful: when, and under what circumstances, is conflict detrimental and when and under what circumstances does it benefit the organization? Thus, conflict is not assumed to be good or bad but rather it is recognized as a factor that can be both. The impetus then becomes attempting to manage conflict in a way that will ameliorate or eliminate its destructive effects while capitalizing on and enhancing its constructive effects.

Conceptually, task and relationship conflict are believed to have different relationships with performance outcomes. . Some conflict researchers believe the relationship between task conflict and performance to be positive, while others believe it to be negative. Empirically, however, task conflict studies have shown mixed results where both positive, negative and no relationships have been found. A recent meta-analysis by DeWit and Greer (2008) found that across 71 studies, the relationship between task conflict and performance was negative with a relatively large standard deviation.

With regard to relationship conflict, theory suggests that relationship conflict should have a consistently negative relationship with performance. This has been shown in the literature, where a relatively consistent negative relationship has been identified with performance outcomes. However, there has still been wide variation in the effect sizes. The previously mentioned meta-analysis by DeWit and Greer (2008) showed that findings for relationship conflict and performance across 59 studies were negative, but also had a relatively large standard deviation.

Also, a recent meta-analysis on conflict research by De Dreu and Weingart (2003) reflects inconsistent findings on the role of task type in studies of conflict. Consistent with the negative relationship for both types of conflict and performance outcomes, results related to task type also show a negative relationship with variation across effect sizes for decision making teams, project teams, production teams, and multiple types of teams. This apparent variation in the conflict literature underscores the inconsistency across studies and suggests that there is still unexplained variance which needs to be accounted for. A summary of these findings is outlined in Table 1 below.

Table 1: Meta-analytic Findings for Interpersonal Conflict and Performance

Conflict and Performance^a	k	N	ρ	SDρ
Task	71	5149	-.11	0.31
Relationship	59	3856	-.24	0.23
Task Conflict and Task Type^b	k	N	ρ	SDρ
Decision Making Teams	4	254	-.20	0.18
Project Teams	12	847	-.26	0.20
Production Teams	4	318	.04	0.20
Multiple Types of Teams	4	307	-.43	0.28
Relationship Conflict and Task Type^b	k	N	ρ	SDρ
Decision Making Teams	4	254	-.39	0.31
Project Teams	12	950	-.17	0.16
Production Teams	4	297	-.04	0.19
Multiple Types of Teams	4	307	-.38	0.20

Note: k = number of correlations; N = number of teams; ρ = corrected population correlation; SD ρ = standard deviation of the corrected population correlation

a. Adapted from DeWit and Greer (2008)

b. Adapted from De Dreu and Weingart (2003)

These findings beg the question of why conflict researchers have not been able to find consistent conflict results in their studies. Several factors have been offered as an explanation of this phenomenon. First, the movement away from more traditional process models of conflict has resulted in decreased focus on some of the core processes and an increased focus on conflict perceptions. As such, conflict is largely studied in the literature by accounting for perceptions and the behavioral link between perception and performance is often assumed. Unless perceptions can be reliably tied to more observable and measurable behaviors that represent the mechanism by which conflict affects

performance, assessing the link between conflict perceptions and performance will continue to be problematic.

Further, in the few conflict studies that have examined behaviors, the focus has often been on conflict-handling behaviors such as problem solving or accommodating, rather than behavioral responses to conflict. Behavioral responses to conflict are more consistent with the initial conceptualization of manifest conflict used in early process models. The use of behavioral responses may also be more appropriate in understanding how conflict influences outcomes.

Additionally, the current use of conflict-handling behavior in the literature is also more consistent with behavioral taxonomies that represent interpretations of behavior rather than behavioral instances. While conflict-handling behaviors are still relevant to the conflict discourse, they are broad behavioral representations of how one might handle a conflict interaction. For instance, asking a random sample of individuals to visually identify a problem solving behavior or an accommodating behavior during an interpersonal interaction might result in several different responses. As such, there might be more consistency in the responses if specific and clearly defined behaviors such as *agreeing* and *giving suggestions* are used in the same random sample of individuals.

Using specific behavioral instances, on the other hand, represents an improvement on using behavioral taxonomies as it allows for the identification of specific behaviors that have been found to be relevant to team performance, rather than over-identifying behaviors that may be irrelevant to performance. Though the aim of identifying relevant taxonomies was to capture behavior related to conflict (e.g. Blake & Mouton, 1984;

Rubin, Pruitt, and Kim, 1994; Van de Vliert & Euwema; 1994), these taxonomies have largely been deficient because of the breadth of the behavioral sets.

Study Rationale

This study seeks to clarify how interpersonal conflict affects team performance by introducing behavioral indicators which are specific, and definitive as the mediating mechanism in the relationship between conflict perception and performance. Behaviors represent the overt actions and verbal statements displayed during interactions between team members. Thus, behaviors are distinct from other individual attributes such as cognition and feelings. Because behaviors are observable and measurable actions of individuals, linking them to conflict, which is largely represented as perceptual—and therefore, not easily observed--will help to identify how conflict affects performance. Moreover, behaviors can concretely affect the social and physical environment, whereas cognition and feelings are intrinsic to the individual and must be translated into behaviors to have an effect on the team environment.

Using a quasi-experimental design with teams will ensure that conflict is studied in a setting where the behavioral dynamics can be observed. Observation will also allow for the identification of behaviors that are relevant to team performance and these behaviors will then be linked to specific types of conflict. Also, the control gained from using a lab setting will help to make a better case for causality than has previous correlational designs used in conflict studies.

Taken together, the primary purpose of this study is to examine the impact of conflict on the behavior and performance of decision making teams. Specifically, the research questions ask,

1. How do task and relationship conflict influence the performance of decision-making teams?
2. How does task and relationship conflict influence the behaviors of decision-making teams?
3. How do the behaviors of decision making teams in conflict influence performance?

By studying these questions, I can offer insight into how conflict changes behavior and whether task and relationship conflict cause different types of behavior changes. Further, I can examine how these conflict behaviors relate to team performance. This study is important because it will offer clarity on whether task and relationship conflict have unique effects on decision-making through behaviors. By identifying specific behaviors that result from conflict and influence decision-making performance, organizations will be better able to design interventions that overcome the negative effects of conflict.

Chapter 2 – Literature Review

Background and Overview of Conflict Research

Theoretical Background of Interpersonal Conflict

Pondy (1967) very early on defined conflict as a dynamic process between two or more individuals, incorporating five stages of conflict: latent conflict, perceived conflict, felt conflict, manifest conflict, and the conflict aftermath. In latent conflict, the conditions for conflict are present. In perceived conflict, one or more parties become aware of a disagreement, though at this stage may be associated with inaccurate conflict perceptions. At the stage of felt conflict, the conflict becomes personalized and the parties may feel anxious or hostile. Manifest conflict occurs when conflict is enacted through behaviors such as hostility. Finally, conflict aftermath involves outcomes of the conflict episode.

Consistent with each of Pondy's (1967) stages of conflict, Thomas's (1976) definition of conflict as a process also included perceptions, emotions, behaviors, and outcomes. Though Thomas's definition included different terminology, the central idea of conflict being a multiple stage dynamic process remained unchanged from Pondy's earlier definition. Later, Putnam and Poole (1987) put forward one of the most widely-used definitions of conflict as the interaction of interdependent people who perceive opposition of goals, aims, and values, and who see the other party as potentially interfering with the realization of these goals.

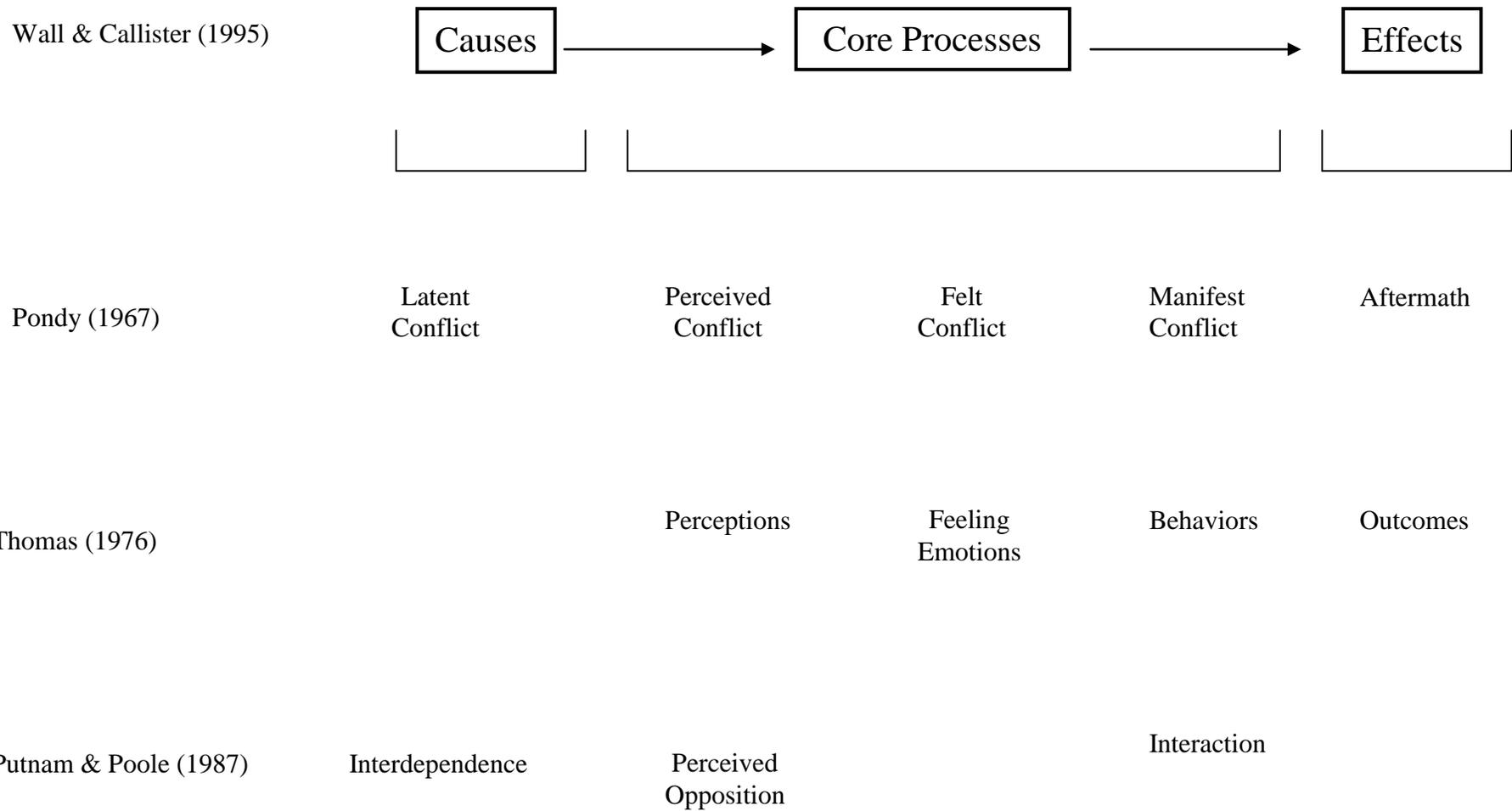
This more contemporary definition of conflict focused on three key characteristics: interaction, interdependence, and incompatible goals. Because these three characteristics are considered to be an integral source of conflict, they also underscore the essence of conflict dynamics and are relevant for both intragroup and interpersonal

conflict. Whether conflict researchers focus on dyads or intragroup conflict involving small groups of 3 or 4, conflict is still treated as interpersonal since the characteristics are applicable in both scenarios.

This convergence in the characterization and definition of conflict informs many of the contemporary views of conflict such as that of Wall and Callister, (1995) and represents a synthesis of prior definitions. Each of the definitions of interpersonal conflict represents a process model view of conflict. The process model view of conflict emphasizes intra-individual and interpersonal processes that are linked to manifestations of conflict (Korsgaard, Jeong, Mahony, & Pitariu, 2008). Process models also imply recursive relationships that suggest conflict episodes have consequences for future interactions and subsequent conflict episodes. Figure 1 outlines four different process models and their evolution over time.

As shown in Figure 1, early process models of conflict initially focused on all the stages of conflict. As process models evolved over time, there was less focus on every stage of the conflict process. Wall and Callister's (1995) model, which is the most recent, shows that many of the intermediary stages have been compressed into overarching core processes. As conflict research evolved, conflict perception became the focus of conflict research. Less emphasis was therefore placed on examining behavior related to the conflict process. This focus on conflict perception is evident in the literature, which has shifted toward perception-based research within the last two decades. The main typology and assessment developed by Jehn (1995) is also perception based and forms the basis for much of the current conflict research.

Figure 1: Process Models of Conflict



Typology & Conceptual View of Interpersonal Conflict

There is consensus among conflict researchers that conflict perceptions have multiple dimensions. Jehn's (1995) typology of interpersonal conflict includes task and relationship conflict. This view of interpersonal conflict proposes that both types of interpersonal conflict are distinct, based on the differing conceptual relationships that each is expected to have with outcomes. However, the two types of conflict perceptions may be interrelated, such that a group with many relationship conflicts may also have a high number of task conflicts and vice versa.

Task conflict is focused on the substantive issues associated with the group's task and can involve differences in viewpoints, ideas, or opinions. Task conflict may also involve the discussion or awareness of different preferences or approaches to a task. More formally, task conflict is defined as "disagreements among group members about the content of tasks being performed, including differences in viewpoints, ideas, and opinions" (Jehn, 1995, p.284).

Conceptually, it is suggested that task conflict is positively related to performance. This view is consistent with a more contemporary position in the literature that has emerged within the last ten years or so. In the presence of task related conflict, these recent conflict researchers believe that task conflicts have the potential to create value by stimulating creative thinking and divergent thought processes. Task conflict may help employees confront task-related issues, learn to take different perspectives, and address task-related inefficiencies. Other conflict researchers, who conform to the more traditional view of task conflict, contend that task conflict may be detrimental to

performance. This is based on the rationale that the tension and antagonism that can result from task conflict, may further distract from the task.

The second type of conflict, relationship conflict, on the other hand, is focused on interpersonal incompatibilities among group members and may include personality differences as well as differences of opinion and preferences regarding non-task issues. Relationship conflict can also be thought of as an awareness of personality clashes, interpersonal tension, or conflict characterized by anger, frustration, and uneasiness. As such, relationship conflict is defined as “interpersonal incompatibilities among group members which typically includes tension, animosity, and annoyance among members within a group” (Jehn, 1995, p. 284).

Conceptually, relationship conflict is uniformly considered to negatively relate to performance, and has a more adverse effect than task conflict. This is based on the rationale that in the presence of relationship conflict, arousal and cognitive load increases, which in turn affects cognitive flexibility and creative thinking and decreases performance. Further, researchers believe that employees who experience relationship conflict often spend most of their time and effort resolving interpersonal problems. As such, they mobilize less energy and fewer resources to deal with task-related issues, which lead to process losses. Additionally, employees who are involved in relationship conflict are thought to also suffer from increased levels of anxiety and frustration resulting in cognitive interference and poorer cognitive functioning for problem solving (Jehn, 1995).

Task and relationship conflict can also share some conceptual overlap, as each type of conflict may affect the other. Task conflict may turn into relationship conflict if

perceived as a personal disagreement. Misattributions about viewpoints or opinions could lead an individual to assume that his or her competence is being challenged and relationship conflict might result. Similarly, unresolved relationship conflict could also result in unproductive task conflict. Underlying personal issues can become enmeshed in communication and disturb task-related processes.

Empirical Findings Related to Interpersonal Conflict

Task Conflict

Empirical findings related to task conflict have shown a positive relationship between task conflict and outcomes. Some of these outcomes include decision outcomes (Amason, 1996), decision comprehensiveness (Simons et al., 1999), constructive communications (Lovelace et al., 2001), task progress and efficiency (Tjosvold & DeDreu, 1997), and performance (Jehn, 1994), particularly on non-routine tasks (Jehn, 1995). Simons and Peterson (2000) also found empirical evidence to suggest that groups who experience task conflict tend to make better decisions because such conflict encourages greater cognitive understanding of the issue being considered. Other research on team decision-making by Hollenbeck et al. (1995), indicated that when all else is equal, team members whose recommendations are uncorrelated or negatively correlated (i.e. conflicting), provide more value as a unit than do team members whose recommendations are correlated high and positive (i.e. redundant).

Empirical evidence has also shown a negative relationship between task conflict and outcomes such as team productivity and satisfaction (Saveedra, Earley, & Van Dyne, 1993). In her 1995 study, Jehn examined task routineness and found a negative relationship between task conflict and performance when the task was routine. Lovelace

et al. (2001) also found that task conflict inhibited the expression of doubts by team members and had a negative impact on innovation. Further, the impact of task conflict on more relational outcomes is generally negative. Specifically, researchers have found that task conflict negatively impacts relational outcomes such as trust, respect, and cohesiveness (Jehn & Mannix, 2001), liking (Jehn, 1995; Jehn & Mannix, 2001), perceptions of leadership (Lovelace et al., 2001), satisfaction (Jehn, 1994), and intent to stay (Jehn et al., 1999).

A meta-analysis by deWitt and Greer (2008) using a sample of over 20,000 teams across 175 studies found an effect size of $-.11$ and a related standard deviation of $.31$ ($\rho = -.11$, $SD_{\rho} = .31$). This finding suggests that, across these studies, a negative relationship was more frequently found between task conflict and performance outcomes. However, some of these results also indicate no relationship between task conflict and outcomes and others indicate a substantial number of positive relationships between task conflict and outcomes. Further, the variance across studies reflects a very wide confidence interval where for 95% of the studies, the resulting effect size is likely to fall between $-.73$ and $.51$. This broad confidence interval suggests that there is substantial unexplained variance that needs to be accounted for in the relationship between task conflict and performance. More specifically, these findings may provide some support for the argument that in some instances, task conflict may be beneficial. Overall, these meta-analytic findings, which include mixed positive and negative findings, represent a strong rationale for deciphering more specifically the mechanism through which task conflict affects performance.

Relationship Conflict

The impact of relationship conflict has been found to be generally detrimental to perceived (Jehn et al., 1999) and actual performance (Jehn, 1994, 1997; Jehn et al., 1999, Earley & Moskowski, 2000) such that a predominantly negative relationship exists between relationship conflict and outcomes. Relationship conflict, which appears to increase in the face of diversity, is debilitating to relational outcomes such as satisfaction (Earley & Moskowski, 2000; Jehn, 1994, 1995, 1997, Jehn et al., 1999), intent to remain (Jehn, 1995; Jehn et al., 1999), commitment (Jehn et al., 1999), cohesiveness, respect, and trust (Jehn & Mannix, 2001), as well as the efficacy of communicative and planning activities (Earley & Moskowski, 2000).

Relationship conflict has been found to interfere with team performance and reduce satisfaction because it produces tension, antagonism, and distractions from the task at hand. Carnevale and Probst (1998) showed that when participants anticipated a competitive, hostile, high conflict negotiation, cognitive flexibility and creative thinking decreased substantially. Simons and Peterson (2000) also found that relationship conflict limited the information processing ability of groups because group members spent their time and energy focusing on each other rather than on the group's task-related problems.

The same meta-analysis by deWitt and Greer (2008) also showed that an effect size of $-.24$ has been found with a standard deviation of $.23$ ($\rho = -.24$, $SD_{\rho} = .23$) across studies with relationship conflict and performance. These empirical findings bear out the theorized negative relationship between relationship conflict and performance. However, as with the task conflict meta-analysis, there have also been great variations in the effect sizes across these studies. Across 95% of the studies, the corresponding confidence

intervals ranged from $-.70$ to $.22$, again suggesting that there is some unexplained variation between relationship conflict and performance.

Understanding How Conflict Influences Outcomes

A close look at the empirical evidence gathered since Jehn's (1994, 1995) work suggests that the relationships between both task and relationship conflict and outcomes are inconsistent with the conceptual view. Empirically, both types of conflict have different effects on performance, with relationship conflict being more consistently tied to poorer outcomes. In spite of the range of empirical findings, however, the conflict literature as a whole still does not allow for explicitly understanding how these findings occur for both types of conflict. Consequently, determining how this works might permit us to better understand what causes the variability in outcomes within conflict types.

In summary, empirical findings related to both task and relationship conflict have been mixed and difficult to disentangle. Some studies have reported strong positive correlations between task conflict and team performance (Jehn, 1994), but others have found a negative correlation (Jehn, Northcraft & Neale, 1999; Lovelace, Shapiro, & Weingart, 2001) or no significant relationships (Pelled, Eisenhardt, & Xin, 1999). More recent studies have also found that both forms of conflict were found to be negatively related to group performance (e.g. De Dreu & Weingart, 2003; Jehn et al., 1999; Earley & Moskowski, 2000), among other outcomes.

These contradictory findings related to both types of conflict and their relationship with performance underscore some inherent problems with the study of conflict. Such findings represent what conflict researchers such as Dirks and McLean-Parks (2003) describe as the conflicting state of conflict research. Though there are

proposed differences in the expected empirical findings related to both task and relationship conflict, this difference has not been observed across the variety of conflict studies. In other words, the conflict literature fails to bear out what the theoretical positions propose and this may reflect a methodological issue. As such, seeking an explanation for the unexplained variance in these relationships represents a necessary initial step toward understanding the conflict phenomenon. Revisiting the initial process models used by early conflict researchers may provide some valuable methodological insight into the discrepancy in these findings by helping us to understand the underlying mechanisms that lead to differences in outcomes.

Methodological Limitations: A New Approach

A majority of conflict studies in the last decade have focused on the relationship between conflict perceptions and performance. In fact, more studies have focused on this relationship than on those for any other core process, including behaviors. These studies typically use surveys and questionnaires that ask participants to recall some aspect of conflict they experienced. These self reports of perceptions are then compared to outcomes.

Undoubtedly, there is value in examining the relationship between perceptions and performance since, initially, interpersonal conflict is almost always perceptual. However, given that conflict research has largely focused on perceptions, the link between conflict and performance outcomes has remained a black box of sorts, with little insight gained on the mechanism through which conflict affects performance.

Manifest Behavior

Though earlier conflict models identified and studied manifest behavior as an integral element of conflict, later research designs, which tested components of process models, rarely studied manifest behavior. In order to gain insight into the black box of conflict, manifest behavioral processes need to become the focus of conflict studies. The relationship between perceptions and outcomes need to be understood through observed behavior rather than by assuming some vague behavioral linkage, as is the current trend in conflict studies. There is undeniable value in linking observed behavioral responses to conflict and outcomes: this approach will shed light on the mediating mechanism of how conflict perceptions affect outcomes. As such, broadening the scope of conflict studies beyond the link between perception and performance to include observed behavior may provide some valuable insight that may help to account for some of the unexplained variance in these relationships.

The deviation away from the study of manifest behaviors has also been represented as a shift in the definition of behavior as it was initially conceptualized. The few studies that have examined behavior in the conflict literature have focused less on observed behavioral responses and more on five modes of conflict handling; forcing, avoiding, compromising, accommodating, and problem-solving.

Forcing involves contending the adversary in a direct way, while avoiding involves moving away from the conflict issue. Compromising refers to settling through mutual concessions, and accommodating involves giving in to the opponent. Problem-solving relates to reconciling the parties' basic interests. This conceptualization of

conflict behavior based in the tradition of dual concerns such as concern for one's own or other's goals.

Studying conflict behavior within the framework of modes of conflict handling focuses explicitly on a limited subset of behaviors related to conflict that are also broad and generalizable. Additionally, using conflict handling modes to broadly delineate conflict behavior focuses on interpretations of behavior rather than instances of behavior: *why* a person *seems* to be doing something rather than *what* concrete thing he or she is doing. While there is value in the use of conflict handling behavior, understanding conflict dynamics also requires examining behaviors which are responsible for conflict escalation. Broad behavioral categorizations such as conflict handling behaviors hinder the identification of a specific set of conflict-related behaviors that are relevant to performance.

In order for a set of behaviors to explain how conflict relates to performance, these behaviors must be related to both conflict and performance. Given the range of possible behaviors during a conflict interaction, it is important to identify which specific behaviors that relate to performance might also be present during a conflict interaction. Using broad, generalizable behaviors to account for this relationship increases the possibility of finding behaviors that relate to conflict or performance, but not both. Identifying a small subset of behaviors that is broad enough to capture the range of behavioral interaction but narrow enough to be related to both conflict and performance represents a reasonable compromise.

This view that the current conceptualization of conflict behaviors limits conflict research is also endorsed by Nicotera (1993). She maintained that, though the conflict

styles tradition is one of the dominant approaches used in the literature and has contributed to knowledge pertaining to conflict behaviors, the approach has exhausted its potential. She believed that conflict behaviors included within taxonomies are ambiguous at best and that employing these dimensions creates ambiguous and problematic definitions. She also suggested that improvement of the ways in which we conceptualize and then observe conflict behavior is crucial to furthering the study of conflict. Table 2 (below) outlines some of the empirical studies related to different types of conflict behaviors. It also highlights two significant trends found in the literature: (1) studying conflict behavior without observing behavior and (2) using modes of conflict handling rather than observed conflict behavior.

Conflict Behavior Taxonomies

One main solution to address the methodological shortcomings of conflict studies is to refocus on observed conflict behavior as it was initially conceptualized. Given that a definitive set of observed conflict behavior is lacking in the literature, it may be necessary to examine established behavioral taxonomies to determine an appropriate set of observed conflict behavior. This approach represents a suitable resolution, given that studying mediating behaviors is relevant to gaining clarity between conflict perceptions and outcomes.

Descriptive taxonomy is the main type of taxonomy used to describe and compare behavior related to conflict perceptions (Van de Vliert and Euwema, 1994). This type of taxonomy identifies main types of conflict behaviors, and inter-relates them by listing their characteristics. There are three pairs of factors which are commonly used in the literature: concern for one's own and others' goals (which was outlined earlier);

integration and distribution; and mitigation-intensification and passive-active. These factors are typically used to describe group members' conflict behaviors in terms of their causes or consequences. Though there is some value in using a descriptive taxonomy, it is limited. Descriptive taxonomies are consistent with current conceptualizations of conflict behavior, which reflect modes of conflict handling rather than behavioral responses to conflict. As a result, the use of descriptive taxonomies represents a deficient solution as the behaviors associated with the taxonomy maintain the digression away from the initial conceptualization of conflict behavior. A more appropriate behavioral taxonomy would include behavioral descriptors that are relevant for both conflict and performance outcomes.

Overall, studying conflict using conflict perceptions and modes of conflict handling has been inherently problematic. Conflict research has focused largely on perceptions, with the behavioral link between conflict and performance assumed but not explicitly measured. Further, the behavioral indicators and taxonomies that have been used in conflict studies have been broad instances of conflict behavior, which reflect interpretations of behavior rather than specific behavioral responses. In general, the rating scales used in conflict research are aggregated at too high a level as they are getting at broad perceptions and interpretations of classes of behavior and their purposes, rather than examining the specific manifest behavior itself.

Table 2: Summary of Conflict Behavior Studies

Study	Core Question	Conflict	Behavior	Outcomes	Key Findings
DeDreu, Nauta & Van de Vliert (1995)	To examine self serving evaluation of conflict management in relation to conflict escalation by looking at differential judgments of one's own and the other's conflict behavior	Study 1 & 2 Self evaluation of conflict management Study 3 Conflict escalation	<u>Non-Behavioral</u> Study 1 & 2 Questionnaire Study 3 External judge ratings	Study 1 & 2 Conflict escalation Study 3 Conflict handling tactics/behaviors	Across all three studies, it was demonstrated that experienced conflict managers are subject to self-serving evaluations of conflict behavior. Specifically, self serving evaluations of conflict behavior were found to be associated with increased frustration and irritation, with reduced problem solving, and with enhanced likelihood of future conflict.
Van de Vliert, Euwema, Huismans (1995)	To determine whether effectiveness of conflict management is a function of behavioral conglomerations rather than single modes of conflict handling	Conflict management styles 1.Forcing 2.Problem solving	<u>Focus on modes of conflict handling</u> Observer interaction of videotaped participant interaction	Effectiveness of conglomerated conflict behavior	The results suggested that: Conflict management is a conglomeration of behavioral components The effectiveness of conglomerated behavior is a function of the nature of its components and the gestalt rather than the sum of its components An increase in problem solving tended to enhance effectiveness especially if combined with a high level of forcing

Study	Core Question	Conflict	Behavior	Outcomes	Key Findings
Munduate, Ganaza, Peiro & Euwema (1999)	To determine the specific combinations of conflict handling styles that result in differentiated patterns within a group of managers	Conflict management styles 1.Integrating 2.Obliging 3.Dominating 4.Avoiding 5.Compromising	<u>Focus on modes of conflict handling</u> Observer assessment of videotaped participant interaction	Dyadic effectiveness of substantive and relational outcomes 1. Number of conflict issues 2. Seriousness of issues 3. Proximity to solution 4. Chances of recidivism 5. Quality of task performance 6. Attention to common ground areas 7. Amount of mutual distrust 8. Amount of mutual understanding 9. Atmosphere 10. Personal relationship	Results show that patterns using multiple conflict handling styles were more effective than patterns based on a single style
Euwema, Van de Vliert &	To test the theory of conglomerated conflict behavior which posits	Components of conglomerated behavior	<u>Focus on modes of conflict handling</u>	Substantive conflict Relational	Findings suggest that components of behavior influence each other's impact

Study	Core Question	Conflict	Behavior	Outcomes	Key Findings
Bakker (2003)	that behavioral components used in interpersonal conflict are not mutually independent but covary as they occur This was also examined using both substantive and relational conflict as a means of examining the reciprocal relationship between the two types of conflict	1.Forcing 2.Avoiding 3.Confronting 4.Compromising 5.Accomodating 6.Problem Solving 7.Process Controlling	Observer assessment of participant behavior	Conflict	on the substantive and relational outcomes of conflict
Van de Vliert, Ohbuchi, Rossum, Hayashi, van de Vegt (2004)	To examine whether the relative effectiveness of accommodating and integrating as interactive complements of contending	Conflict Behavior	<u>Non-Behavioral</u> Questionnaire	Perceived Effectiveness	The present findings support the notion that contending can be an essential ingredient of constructive conflict behavior in different ways. As such, the effectiveness of contending may be universal while the most effective conglomeration of contending and other components of conflict behavior may be society specific

Linking specific behaviors to conflict perceptions represents the primary solution for explaining the mediating mechanism between conflict perceptions and performance. Behaviors represent the overt actions and verbal statements displayed during interactions between team members, and the relationship between conflict perceptions and outcomes need to be understood through behaviors. Behaviors are observable and measurable and reflect what is done rather than what is thought. To the extent that behaviors can be tied to conflict perceptions and related to team performance, a more consistent relationship between conflict and performance might be obtained. Behaviors are also distinct from other individual attributes such as cognition and feelings, which are intrinsic and must be translated into behaviors to have an effect on the team environment. The most appropriate behavior set should be fine grained rather than broad categorizations and interpretations of behavior, and should be simultaneously relevant to both conflict and performance outcomes.

Therefore, the plan of action to rectify the methodological shortcomings in conflict research is to study interpersonal conflict behaviorally, building on the foundation of the early conflict research that put a premium on distinct, individual actions. This approach represents an improvement on the past study of conflict while providing an alternative mechanism to address the apparent disconnect between theory and empirical findings in the conflict literature.

The Present Study

The current study explores the behavioral mediating mechanisms through which interpersonal conflict affect team performance. Relevant behaviors that are specific, fine grained, and definitive—rather than broad, ambiguous, and inferential—are identified. This design moves beyond previous studies of conflict by being able to identify team behaviors that are linked to conflict perceptions and that are linked to good and poor team performance.

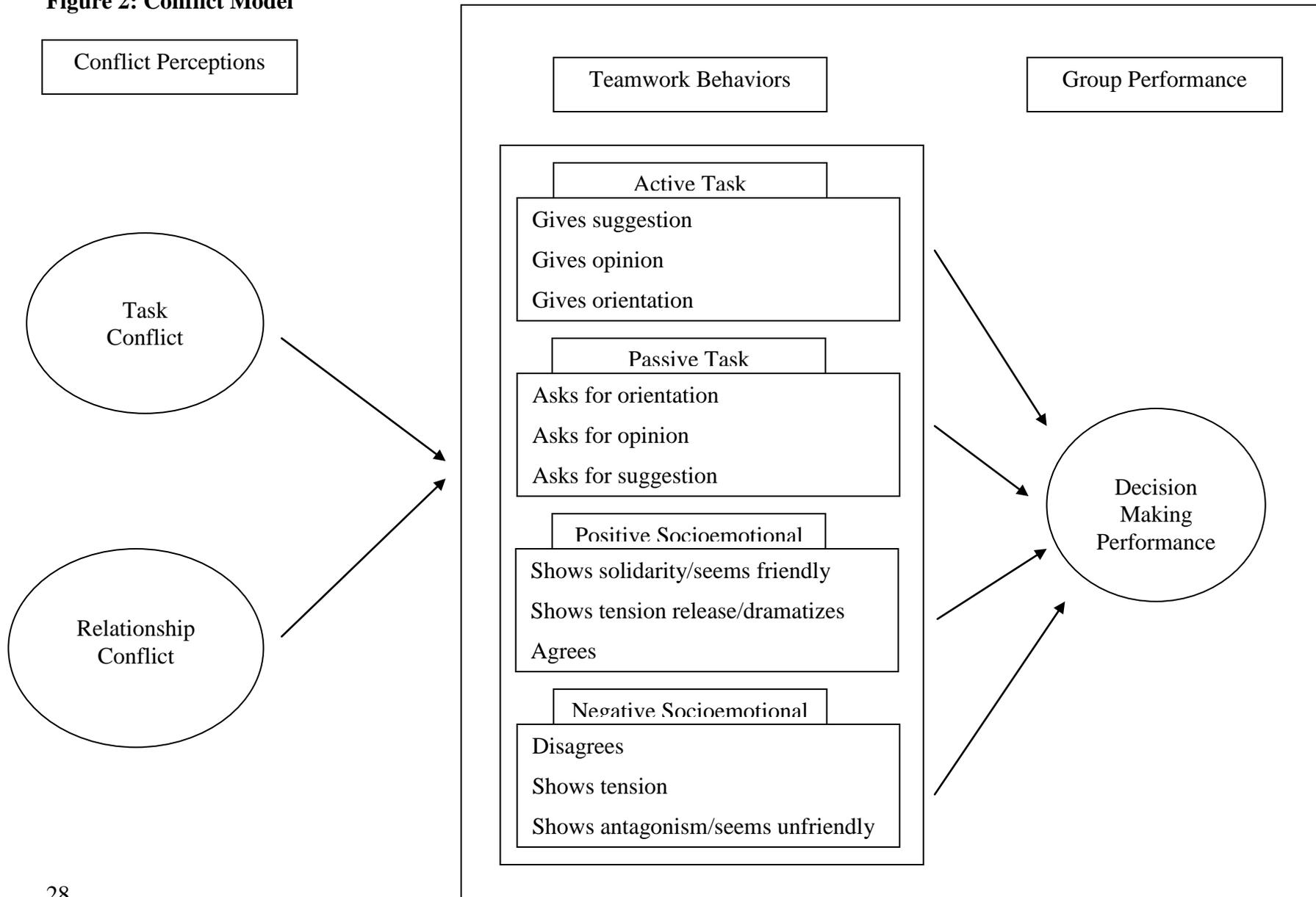
Figure 2 below provides an overview of the conceptual model driving this study. It portrays the relationship between conflict perceptions and group decision-making performance as mediated by various types of behaviors that are predicted to emerge during the interactions between individuals engaged in a group decision-making task.

Given that not all behaviors related to conflict are also related to performance and vice versa, this study will help identify that subset of behaviors that are relate to both conflict and performance. To accomplish this, the present study begins by focusing on the relationship between behaviors and performance. The focus then shifts to examining links between perceptions of conflict and behavior. Finally, behaviors that mediate the relationships between conflict perception and decision-making performance will be identified and the nature of these relationships examined.

More specifically, teamwork behaviors as they relate to decision making performance will be examined using a framework first proposed by Bales (1950). The relationship between task and relationship conflict with teamwork behaviors are expected to have differing relationships with each of the teamwork behaviors. Using the team literature as a foundation will allow for the determination of whether behavioral overlap

exists within the team and conflict literature while also avoiding over-identification of potentially irrelevant behaviors. Team behaviors related to both good and poor performance have been well established in the group literature as these relationships have

Figure 2: Conflict Model



been tested empirically in a number of different contexts. Further, within the conflict literature there is a paucity of specific behaviors from which to draw as a relevant representation of behavioral responses to conflict. The team literature provides an additional source for relevant, specific behavioral responses.

Teamwork Behaviors

Teamwork behaviors are related to team performance and have been outlined in the team literature as one of the mediational processes in which groups engage to transform team inputs into outputs. Beal and his colleagues (2003) define teamwork behaviors as actions that are relevant to achieving a team's goals. Behaviors are distinct from other individual attributes such as cognitions and feelings because they are observable and measurable actions of individuals. Moreover, behaviors can affect the social and physical environment whereas cognitions and feelings are intrinsic and must be translated into behaviors to have an effect on the team environment (Rousseau, Aube & Savoie, 2006).

Teamwork behavior is a multifaceted concept that has been difficult to conceptualize and through the years a number of frameworks have been proposed to classify teamwork behaviors (e.g. Cannon-Bowers et al., 1995; Hoegl & Gemuenden, 2001; Marks, Mathieu, & Zaccaro, 2001). These categorization schemes aim to delineate the diverse behavioral processes or behavioral dimensions of teamwork behaviors. Though these frameworks present some commonalities, there are many differences among them including the nature and number of dimensions as well as a growing list of ill-defined, often indistinguishable, behaviors (Rousseau et al., 2006). Because of this lack of agreement around conceptualizing teamwork behaviors, valid generalizations

about the functioning of teams are limited. Below, Table 3 outlines the existing frameworks of teamwork behaviors.

Teamwork behaviors are inherent to the existence of work teams (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995). These behaviors represent the overt actions and verbal statements displayed during interactions between team members to ensure a successful collective action (Morgan, Glickman, Woodward, Blaiwes, & Salas, 1986). As such, teamwork behaviors are required of team members for effective team performance. The collective nature of *team* implies that members interact and share resources, which underscores the interdependence of teams regarding task accomplishment (Van der Vegt & Van de Vliert, 2002). Alignment and coordination of effort are integral to successful team functioning (Smith-Jentsch, Johnston, & Payne, 1998). In short, teamwork behaviors facilitate the achievement of collective tasks and consequently increase team performance.

Table 3: Frameworks of Team Behaviors

Authors ^a	Dimensions	Bales Framework
Bowers, Morgan, Salas, and Prince (1993)	Adaptability, communication, decision-making, mission analysis, situational awareness,	Less behaviorally ambiguous
Campion, Medsker, and Higgs (1993)	Communication, cooperation, social support	More balanced to include task-work elements
Cannon-Bowers, Tannenbaum, Salas, and Volpe (1995)	Adaptability, communication, coordination, decision-making, interpersonal relations, performance monitoring and feedback, shared situational awareness	Less behaviorally ambiguous More readily codeable
Carson, Mosley, and Boyar (2004)	Rehearsal, self-criticism, self-expectation, self-goal setting, self-observation/evaluation, self-reinforcement	More team focused
Cohen (1994)	Coordination, implementation of innovation, sharing of expertise	More observable behaviorally
Cohen, Ledford, and Spreitzer (1996)	Coordination, innovation process	More balanced to include interpersonal elements
DeDreu and Van Vianen (2001)	Helping behavior, voice	More balanced to include task elements
Dominick, Reilly, and McGourty (1997)	Collaboration, communication, decision-making, self-management	More balanced to include task elements
Druskat and Kayes (1999)	Attention to feedback, confronting members who break norms, creating clear work procedures, flexibility, interpersonal understanding, proactivity in problem solving, team self-evaluation, unified effort and cooperation	More observable behaviorally More readily codeable
Erez, Lepine, and Elms (2002)	Cooperation, voice	More balanced to include task elements
Gladstein (1984)	Discussion of strategy, open communication, supportiveness	More balanced to include task elements

Authors ^a	Dimensions	Bales Framework
Hoegl and Gemeunden (2001)	Communication, coordination, mutual support	More fine grained and specific
Janz, Colquitt, and Noe (1997)	Helping behavior, information sharing, innovating	More readily codeable
Koslowski and Bell (2003)	Communication, cooperation, coordination	More fine grained and specific
Marks, Mathieu, and Zaccaro (2001)	Affect management, conflict management, coordination, goal specification, mission analysis, monitoring progress toward goals, motivation and confidence building, strategy formulation, systems monitoring, team monitoring, backup behaviors	More observable behaviorally More readily codeable
Mathieu, Heffner, Goodwin, Salas, and Cannon-Bowers (2000)	Communication, cooperation, coordination, strategy formation	More balanced to include task elements
McIntyre and Dickinson (1992)	Backup behaviors, communication, feedback, monitoring, coordination	More balanced to include task elements
McIntyre and Salas (1995)	Backing-up behaviors, closed-loop communication, feedback, performance monitoring	Less behaviorally ambiguous
Morgan, Glickman, Woodward, Blaiwes, and Salas (1986)	Acceptance of suggestions or criticism, adaptability, communication, cooperation, coordination, giving suggestions or criticism, team spirit and morale	More fine grained and specific
Prince and Salas (1993)	Adaptability/flexibility, communication, decision-making, mission analysis, situation awareness	Less behaviorally ambiguous
Salas, Sims, and Burke (2005)	Adaptability, backup behavior, mutual performance monitoring	Less behaviorally ambiguous
Smith-Jentsch, Johnston, and Payne (1998)	Communication, information exchange, supporting behavior	More fine grained and specific
Stanton (1996)	Communication, control, cooperation, coordination	More balanced to include task elements
Stevens and	Collaborative problem solving,	More fine grained and

Authors ^a	Dimensions	Bales Framework
Campion (1994)	communication, conflict resolution, goal setting, performance management, planning, task coordination	specific
Tannenbaum, Beard, and Salas (1992)	Communication, conflict resolution, coordination, decision-making, problem solving	More fine grained and specific
Tesluk and Mathieu (1999)	Communication, cooperation, coordination	More balanced to include task elements
Welson, Jehn, and Pradhan (1991)	Extrarole behavior, morale-building communication, performance monitoring, planning	More observable behaviorally More readily codeable
Weldon and Weingart (1993)	Cooperation, morale-building communication, planning	More balanced to include task elements
Yeatts and Hyten (1998)	Communication, cooperation (collaboration), coordination	More balanced to include task elements

Note: Adapted from Rousseau, V., Aube, C., & Savoie, A. (2006). Teamwork behaviors: A review and an integration of frameworks. *Small Group Research*, 37(5), 540-570.

a. The authors are presented in alphabetical order.

Though a variety of frameworks are outlined in Table 3, only a few of the frameworks include fine grained behavioral indicators (e.g. Marks et al., 2001; Druskat & Kayes, 1999; Morgan et al., 1986) capable of more specifically delineating the relevant behavior set related to team performance. Many of the frameworks include behaviors that are ambiguous, or behavioral sets that exclude task-related elements. One framework that is perhaps more applicable and includes more specific behavioral categories is Bales (1970) Interaction Process Analysis (IPA), where qualitative analysis is used to examine human interaction which is seen as an interplay of action (Bales, 1950).

Interaction Process Analysis

Bales's (1950; 1970) structural work on group process, though largely inductive, is seen as foundational for analyzing interaction patterns in group situations. Bales's

work with small groups was driven by the absence of studies examining social interaction observationally in real time, and so he aimed to “see what happened when small groups of persons who did not know each other were put together with a common task, but with no designated leader and no specified organization” (Bales, 1999, p.159).

Bales’s early research (Bales, 1953; Bales & Slater, 1955) was done continually over a period of five years, using a variety of primarily male student subjects in small groups who tried to solve problems and make decisions across different contexts. Based on his findings, Bales identified what he believed to be two distinct behavioral patterns that were necessary for groups to make task progress when problem-solving. He believed that members must engage in task activities such as ‘directing the discussion’ and ‘making suggestions’ in order to accomplish their goal. However, he also promoted the idea that task activity could create negative social behavior such as hostility and tension within the group and group members must therefore also perform positive socio-emotional activities such as relieving tension. Consequently, Bales concluded that two distinct roles--task and social--emerged during group interaction to satisfy these functions.

Based on this premise, Bales instituted a series of tests and major revisions. He then developed a set of workably small categories for observation of behavior that constitutes interaction process analysis (IPA). His formulation of the IPA categories is based on a dual purpose: The categories must be sufficiently specific to include each kind of behavioral act, but also sufficiently general to be used to study different social interaction systems. The IPA system, initially a list of 87 categories, now includes 12 specific behavioral categories nested within four overarching process categories, which

are fully outlined in Table 4. Three categories describe positive socio-emotional categories and three others describe negative socio-emotional categories. The other categories each describe three active task activities and three passive task activities. Bales described the IPA categorization as inclusive and continuous. For example, the set of categories is meant to be completely inclusive, so that every observable act can be classified in one defined category. The method is also continuous in that it requires the researcher to make a classification of every act that can be observed as it occurs so that no observed acts are omitted from classification except by error.

Given that the IPA was initially developed for problem-solving groups in a lab setting and was originally created for the act-by-act coding of behavior in interacting groups, its use in the present context is pertinent. Further, the IPA is also applicable for use in this study because it delineates specific, fine-grained teamwork behavior that relates to both task and socio-emotional elements.

Consistent with Bales's two distinct roles, the task areas of the IPA reflect task roles associated with problem-solving while the socio-emotional areas of the IPA reflect social roles related to group functioning. Bales believed that the interaction process within small groups could be described as one of alternating emphasis between these group functions. When attention is given to the task, strains may be created in the social and emotional relations of the group members, and attention becomes focused on resolving these problems. Once the group devotes itself to managing socio-emotional concerns, the task may be neglected and attention would then have to be refocused on the task area.

In a typical sample used by Bales, the IPA scheme was used to categorize single acts relating to a specific individual within the group's interaction. Based on his observations, Bales created profiles for group interactions or for individual members within a given period. These profiles showed the percentage of the total interaction activity, either for an individual or the group as a whole related to each of the twelve categories. Further, Bales plotted these activity rates as a frequency polygon attached to the system of categories, where it could be determined visually if the rate of functional group interaction (positive socio-emotional and active task behaviors) exceeded that of dysfunctional group interaction (negative socio-emotional and passive task behaviors). Similarly, information on the interaction patterns of individuals during a group session could also be gleaned visually from the profiles.

What a researcher captures in a group's interaction may be quite varied and Bales noted, based on his observation and experience with his own experimental groups, that there are far too many variables and differing conditions in which real life groups are involved to support very strong generalizations. Early research by Bales and Slater (1955) on the twelve IPA categories across different group samples and contexts suggested that active task activity has been found to characterize the largest percentage of behavior, with positive socio-emotional behavior second. A much smaller portion of behavior was categorized as negative socio-emotional behavior and a still smaller percentage of behavior was identified as passive task behavior. Appendix A offers an example of one of Bales's early interaction profiles, which is consistent with this pattern and shows the average interaction pattern across various small discussion groups for the twelve IPA categories. Appendix B also shows two more specific interaction profile

charts for members in a group with a non-directive leader and a thesis discussion group, respectively. Both sets of patterns are also consistent with Bales's observation of average patterns across groups.

Table 4: Interaction Process Analysis Categories and Functional Codes

Socio-emotional area: positive reactions

1. Shows solidarity/Seems friendly: Any act that shows positive feelings toward another person

Behavioral examples - *raises other's status, gives help, reward*

2. Shows tension release/ Dramatizes: Any act that reduces the anxiety that a person may be experiencing

Behavioral examples - *jokes, laughs, shows satisfaction*

3. Agrees: Any act that shows acceptance of what another person has said

Behavioral examples - *shows passive acceptance, understands, concurs*

Task area: attempted answers

4. Gives suggestions: Any act that offers direction/action for how to engage in a task

Behavioral examples - *direction, implying autonomy for other*

5. Gives opinions: Any act that advances a belief or value that is relevant to the task

Behavioral examples - *evaluation, analysis, expresses feeling, wish*

6. Gives orientation/information: Any act that reports factual observations or experiences

Behavioral examples - *information, repeats, clarifies, confirms*

Task area: questions

7. Asks for orientation/information: Any act that requests factual observations or experiences

Behavioral examples - *information, repetition, confirmation*

8. Asks for opinions: Any act that requires a belief or value that is relevant to the task

Behavioral examples - *evaluation, analysis, expression of feeling*

9. Asks for suggestions: Any act that request direction/action for how to engage in the task

Behavioral examples - *direction, possible ways of action*

Socio-emotional area: negative reactions

10. Disagrees: Any act that shows rejection of what another person has said

Behavioral examples - *shows passive rejection, formality, withholds help*

11. Shows tension: Any act that indicates that a person is experiencing anxiety

Behavioral examples - *asks for help, withdraws*

12. Shows antagonism/seems unfriendly: Any act that shows negative feelings toward another person

Behavioral examples - *deflates other's status, defends or asserts self*

Teamwork Behaviors and Performance

As suggested earlier by Rousseau et al. (2006), teamwork behaviors are integral to team performance and have been found to have a positive influence on team outcomes such as performance (Cohen and Bailey, 1997; Guzzo & Shea, 1992). Two of the behavioral categories that they cite as relevant to performance are task-related behaviors and team maintenance. In work team settings, team members may enhance task accomplishments through task-related collaborative behaviors. Further, teams cannot operate efficiently when team maintenance is jeopardized; thus, effective management of team maintenance enables team members to deal with difficulties that may arise (Tesluk & Mathieu, 1999). This categorization of teamwork behaviors associated with task and maintenance team roles is consistent with that of Bales (1950, 1970).

In a recent meta-analysis, LePine, Piccolo, Jackson, Mathieu, and Saul (2008) also outline action and interpersonal processes of teamwork as being important to team outcomes. They describe action processes as the types of activities that occur as the team works toward the accomplishments of its goals and objectives, while interpersonal processes represent the team activities that are focused on the management of interpersonal relationships (Marks, Mathieu, and Zaccaro, 2001). These processes as outlined by LePine et al. (2008) are seen as first order teamwork processes that are subsumed by narrower related processes within each of the action and interpersonal categories. They maintain that because the narrower processes are more specific indications of higher order processes both higher order and narrower processes will have consistent relationships with the same criteria. As such, relationships established at one level should also hold for another level.

LePine et al.'s (2008) meta-analysis tests this assertion and finds that both broad and narrowly defined teamwork processes are positively associated with team performance regardless of the nature of the process. Specifically, both action and interpersonal teamwork processes and their related narrower team processes have strong, positive, and similar relationships with team performance. These meta-analytic findings for action and interpersonal teamwork processes and team performance are included below in Table 5.

LePine and his colleagues believe that these results suggest a related hierarchical structure between higher level and narrower teamwork processes. They also assert, based on their findings, that a compatibility principle should be used such that when examining a more specific aspect of teamwork, measures could include items that tap the appropriate first order concept directly or include items from narrower measures that correspond to the first order measure.

Table 5: Meta-analytic Results for Broad Teamwork Processes and Performance

Team Performance^a	k	N	ρ	90% CI	80% CV
Action	30	1921	.29	(.22, .36)	(.10, .48)
Interpersonal	28	1891	.29	(.21, .38)	(.05, .53)

Note: k = number of correlations; N = combined sample size; ρ = corrected population correlation; CI = confidence interval; CV = credibility interval

a. Adapted from LePine, Piccolo, Jackson, Mathieu, & Saul (2008)

Some teamwork behaviors might also have a negative impact on team performance. These potentially negative behaviors like free riding and social loafing are less frequently examined in the literature. Kozlowski and Ilgen (2006) agreed that research more often focuses considerable energy on identifying factors that eliminate

uncooperative behavior and induce more cooperation in groups. However, Price, Harrison, and Gavin (2006) examined withholding inputs in team contexts. Based on the belief that team's interaction processes relate to social loafing, they examined loafing in teams to understand why team members withhold their input. Findings based on loafing behavior as a naturally evolving team process suggested that team member composition, including aspects of relational dissimilarity and KSAs, are associated with dispensability, a central construct in loafing research. Taken together, these findings indicate that teamwork processes can also be negative and these negative processes might also result in process losses.

Based on the existing findings linking both positive and negative teamwork processes to team performance, the following hypotheses are offered relating specifically to teamwork behaviors and team decision-making behaviors:

*Hypothesis 1: Active task behaviors (gives suggestion, gives opinion, and gives orientation) will be **positively** related to team decision-making performance*

*Hypothesis 2: Passive task behaviors (asks for orientation, asks for opinion, asks for suggestion) will be **negatively** related to team decision-making performance*

*Hypothesis 3: Positive socio-emotional behaviors (shows solidarity, shows tension release, and agrees) will be **positively** related to team decision-making performance*

*Hypothesis 4: Negative socio-emotional behaviors (disagrees, shows antagonism, shows tension) will be **negatively** related to team decision-making performance*

The Effect of Conflict on Bales Teamwork Behaviors and Performance

The consensus among researchers is that there is the need to study mediational processes relating to teams given that they affect outcomes (Ilgen et al. 2005). Conflict has been identified as an important mediational process that affects team effectiveness. Several recent studies have examined interventions that might be used to minimize social conflict among team members. Face-to-face developmental feedback from peers could drastically reduce conflict especially if the feedback is delivered at the appropriate time (Druskatt & Wolff, 1999), and leaders who promote procedural justice and apply rules consistently were able to minimize relationship conflict (Naumann & Bennett, 2000). This finding was replicated by De Cremer and van Knippenberg (2002). Although there is little consensus that conflict can be beneficial to team performance, many team researchers believe that teams need to have rich, unemotional debate in a context marked by trust (Simons & Peterson, 2000), a context where team members feel free to express their doubts and change their minds (Lovelace et al., 2001), and an ability to resist pressures to compromise quickly (Montoya-Weiss et al., 2001) or to reach a premature consensus (Choi & Kim, 1999).

A central challenge of teams involves stimulating what some researchers believe are productive types of conflict while minimizing the presence of dysfunctional conflict (Jehn, 1995). The ability to do this can be the key to gaining the benefits of conflict without the costs. Specifically, by identifying teamwork behaviors which have been found to relate to team performance and examining how these behaviors relate to conflict perceptions, researchers may be able to shed greater light on the effect of conflict as a mediational process in group functioning.

For active task behaviors, different relationships are proposed with regard to how task and relationship conflict relate to the behaviors in this category. *Gives suggestion*, *gives opinion*, and *gives orientation* are consistent options with task conflict, in that when group members engage in these behaviors, task conflict often results and as such a positive relationship is anticipated between task conflict and these behaviors. Conversely, though each of the behaviors that are outlined in this category typically relate to task conflict, the presence of task conflict may encourage interpersonal issues to occur within the team. It may be relatively easy for a team member to perceive that someone who gives their opinion openly is opinionated, or that someone who always offers opinions is a ‘know it all’. As such, the presence of active task behaviors which may stimulate task conflict may also trigger relationship conflict. Similarly, giving suggestion and giving opinion are perhaps more likely to be regarded as behaviors which reflect being proactive and potentially forceful and as such may be more strongly related to both task and relationship conflict. Giving orientation on the other hand may be perceived as more of a reactionary and submissive behavior and may be less strongly related to perceptions of task and relationship conflict. The following hypotheses reflect these proposed relationships.

*Hypothesis 5a: Perceptions of task conflict will be **positively** related to gives suggestion, gives opinion, and gives orientation behaviors*

*Hypothesis 5b: Perceptions of relationship conflict will be **negatively** related to gives suggestion, gives opinion, and gives orientation behaviors*

Hypothesis 5c: Perceptions of both task and relationship conflict will have a stronger relationship with gives suggestion and gives opinion than gives orientation

Similarly, perceptions of task and relationship conflict are proposed to have a different relationship with passive task behaviors. When teams engage in passive task behaviors, there is likely to be less task conflict and more “perceived” agreement among team members related to the task. As such, in the presence of these behaviors, task conflict is expected to be low and a negative relationship with task conflict is proposed. Further, the absence of task conflict discourages potential interpersonal issues from arising among team members that result in a positive relationship between passive task behaviors and relationship conflict. With regard to the specific behaviors, asks for suggestion and asks for opinion are proposed to have an equally strong relationship with perceptions of both task and relationship conflict. Similar to the arguments made for hypothesis 4c, these behaviors reflect a more proactive element than asks for orientation and perhaps will be more likely to be perceived ambiguously and interpreted as task or relationship conflict. The following hypotheses reflect this proposed relationship.

*Hypothesis 6a: Perceptions of task conflict will be **negatively** related to asks for orientation, asks for suggestion, and asks for opinion behaviors*

*Hypothesis 6b: Perceptions of relationship conflict will be **positively** related to asks for orientation, asks for suggestion, and asks for opinion behaviors*

Hypothesis 6c: Perceptions of both task and relationship conflict will have a stronger relationship with asks for suggestion and asks for opinion than asks for orientation

For positive socio-emotional behaviors, it is expected that both task and relationship conflict will be positively related to each of the specific behaviors. Since positive socio-emotional behaviors involve raising other’s status, showing satisfaction,

and concurring, it is expected that when these behaviors are present in group interaction, there will be less relationship conflict based on the interpersonal camaraderie and less task conflict based on the passive acceptance and solidarity of group members which may discourage them from challenging each other's viewpoints and opinions.

Further positive socio-emotional behaviors encourage an atmosphere of support within the team for both task and interpersonal expression, and the manifestation of each of these specific behaviors is proposed to have different strengths of relationship with perceptions of task and relationship. Showing solidarity is reflected in raising team members' status, rewarding, and giving help and this is purported to have the strongest relationship with both task and relationship conflict given that it might perhaps be one of the more obvious of the positive socio-emotional behaviors. Showing tension release and agreement behaviors are proposed to have a less strong relationship with task and relationship conflict respectively because the expression of these behaviors is perhaps slightly more ambiguous than showing solidarity behaviors. The following hypotheses represent the previous arguments.

*Hypothesis 7a: Perceptions of task conflict will be **negatively** related to showing solidarity, showing tension release, and agreement behaviors*

*Hypothesis 7b: Perceptions of relationship conflict will be **negatively** related to showing solidarity, showing tension release, and agreement behaviors*

Hypothesis 7c: Perceptions of both task and relationship conflict will have the strongest relationship with showing solidarity, followed by tension release, and then agreement behaviors

For negative socio-emotional behaviors, a positive relationship is proposed for both task and relationship conflict. Behavioral indicators in this category include withholding help, withdrawing and deflating other's status. These behaviors are expected to be associated with increased task conflict and relationship conflict given that there is the potential for both task and interpersonal issues to arise when these behaviors are exhibited in a team setting. With regard to the specific behaviors, showing antagonism is expected to have the strongest relationship with perceptions of both task and relationship conflict given that this behavioral indicator reflects an aggressive verbal exchange. Though showing tension can also be verbal it is less likely to be perceived as aggressive and as such is hypothesized to be less strongly related to perceptions of both task and relationship conflict. The most passive of the three behaviors, disagrees, is proposed to be the least strongly related to perceptions of task and relationship conflict. The following hypotheses are therefore proposed:

*Hypothesis 8a: Perceptions of task conflict will be **positively** related to disagrees, shows tension, and shows antagonism behaviors*

*Hypothesis 8b: Perceptions of relationship conflict will be **positively** related to disagrees, shows tension, and shows antagonism behaviors*

Hypothesis 8c: Perceptions of both task and relationship conflict will have the strongest relationship with showing antagonism, followed by showing tension, and then disagreement behaviors

Since it is proposed that active task behaviors and negative socio-emotional behaviors will be positively related to relationship conflict such that the presence of these behaviors should result in more relationship conflict, it should be expected that these

behaviors will be more likely to explain the relationship between relationship conflict and team performance. As such, the following hypothesis suggests that:

Hypothesis 9: Passive task behaviors and negative socio-emotional behaviors will mediate the relationship between relationship conflict and decision making performance

Given that task conflict has a more complex relationship with behavioral indicators, it may not be unreasonable to expect that all of the behavioral categorizations may help explain the relationship between task conflict and team performance. However, because meta-analytic evidence shows a predominantly negative relationship between task conflict and team performance, passive task behaviors and negative socio-emotional behaviors may have a greater mediating effect than active task behaviors and positive socio-emotional behaviors. These ideas are reflected in the following hypotheses:

Hypothesis 10a: Active and passive task behaviors, and positive and negative socio-emotional behaviors will mediate the relationship between task conflict and decision making performance.

Hypothesis 10b: Passive task behaviors, and negative socio-emotional behaviors will be more likely than active task behaviors and positive socio-emotional behaviors to mediate the relationship between task conflict and decision making performance.

Chapter 3 – Methods

Study Design

This study examined how conflict affects specific behaviors that are related to team performance. Teams of four participants were asked to complete two decision-making tasks in ad-hoc problem-solving groups. The first task or pre-task was chosen based on its potential for generating conflict among group members, and the second was used to objectively score task performance. Group members were blind to the true nature of the study, which allowed for examination of how the presence of task and relationship conflict influences group behavior and decision-making performance.

Conflict perception was the independent variable and team performance was the dependent variable. Teams completed the second intellectual/decision making performance task with group performance scored on a continuous scale. Team interactions were observed and the presence and frequency of targeted behaviors hypothesized to explain the relationship between conflict perceptions and team performance were examined.

Study Sample

Participants were recruited from business and psychology courses at a large university in the south-eastern United States. Participants received course credit and an extra inducement of \$1000 was provided for groups which successfully completed the decision-making task. The entire process took approximately one hour and the participants were blind to the true nature of the study, though they were informed that the research examined group dynamics.

Sample size is closely related to statistical power and Cohen (1988) asserted that power should exceed .50 and that .80 is an adequate level of power to achieve in a study. Following Cohen's recommendation, a sample of approximately 180 groups would be needed to achieve power of .8 for this study. Using this number of study groups would be ideal; however, the number of groups used in this study was approximately 60, based on time considerations and the results yielded during the pilot study.

Study Procedure

Participants were recruited for a specific team session with members with whom they had no prior team/group involvement. Permission to recruit students from upper-level courses was sought from instructors teaching in the business school and the psychology department. Students were offered extra credit to participate in the study. They were also assured that confidentiality and anonymity was maintained throughout the study, and in no instance did a student refuse to participate based on confidentiality and anonymity concerns. Students were also offered the option to withdraw from the study at any point for any reason without penalty.

Once participants arrived for the group session, they were greeted by the experimenter outside the research room. They were then brought into the study lab and seated at a table. The room is equipped with a one way mirror as well as two wall mounted video cameras, allowing full visibility of each participant. Participants were told via their consent form (see Appendix C) that their group session was being recorded. The instructions that the groups should follow while completing the assigned task was read from a prepared script before the group members read and signed their consent forms.

This script is included in Appendix K. Then, groups completed the decision-making tasks. Afterward, each individual completed a study questionnaire.

Teams consisted of three or four members. Given that group members had no prior knowledge of each other, familiarity effects were minimized. The total time for the experiment rarely exceeded sixty minutes and, in those few instances, by no more than ten minutes. This time period was sufficient for groups to reach consensus on two tasks, as well as to have a reasonable length of time for the discussion to unfold and conflict to emerge.

The group was asked to complete an initial task, which asked them to rank order five candidates who were eligible for a heart transplant. Each of the candidates was equally medically compatible as well as eligible to receive the heart. Each of the candidates had varying ages, genders, previous life circumstances, financial situations, and family circumstances. Groups were asked to jointly arrive at a unanimous decision on how the candidates should be ranked, from who they believed was most deserving of the transplant heart to who was least deserving of the heart.

Once this task was completed, participants were provided with the second task, where they were also required to jointly arrive at an agreed upon, unanimous outcome. This task involved crash landing in the desert and working as a team to rank 15 items salvaged from the crash based on the importance of the item to their survival. The group's answers were compared to expert rankings and the group scores were based on deviations from the expert rankings. Groups that ranked their items consistently with those of the experts received lower, but better scores than those who deviated more from the established ranking system.

For the last 18 groups in the study, the protocol differed from the other groups only in that the second, desert survival task was completed individually before it was completed as a group. Other than this adjustment, the protocol for all of the groups was consistent. This protocol adjustment aimed at heightening the level of conflict in the group. If each group member made individual determinations of rankings based on their own rationale, then they might feel more personally invested in advocating their ranking. Any differences encountered in determining a unanimous group ranking based on maintaining their individual position could encourage higher levels of conflict.

After the group task was completed, group members were given a questionnaire to individually respond to demographic items such as age, race/ethnicity, and gender. The questionnaire also included measures of social desirability, impression management, affect, and personality items. This questionnaire is outlined in detail in Appendix D. Once the task was completed, group members were debriefed using an approved script, which is outlined in Appendix E.

Pilot Studies

A pilot study was conducted as a pre-test of two different components of the research design. Specifically, the pilot study: (1) pretested three tasks to determine a single appropriate task for use in the dissertation study, and (2) helped to determine whether the conflict manipulations for both task and relationship conflict were effective. Several adjustments were made based on the results of the pilot study. For instance, the decision was made to provide a monetary inducement to participants in order to heighten the potential gain and by extension the level of conflict experienced from completing the tasks successfully. Further, a conflict-inducing forced choice pre-task was also used to

heighten the level of conflict in the groups. This pre-task aimed at activating attitudinal differences among group members which might be conflict inducing. A total of 22 four-member groups were piloted over a period of two weeks.

Task Selection

Three initial tasks were piloted in order to identify the single task that was used during data collection. The four criteria for task selection were that (1) participants should find the task engaging and enjoyable to encourage participation; (2) the level of difficulty should be appropriate to the population; (3) the task should not be too lengthy but should allow enough time for sufficient interaction and for conflict to emerge; and (4) the task should be able to generate group participation in discussion rather than have a single individual dominate. The three tasks being considered were the desert survival task, a lost at sea task, and a modified version of a murder mystery task. Based on the criteria, the desert survival task satisfied all of the requirements and, consequently, was used for data collection.

Desert Survival Task

The desert survival task began by establishing a background for the task. Team members were informed that the setting is approximately 10:00 in the morning on a mid-August day and they have just crash-landed in the Sonoran Desert in the southwestern United States. Their small plane, containing the bodies of the pilot and co-pilot, has completely burned and the rest of the participants are uninjured. The pilot was unable to notify anyone of the plane's position before the crash but the participants have an idea of their location: 70 miles from a mining camp, which is the nearest known habitation, and approximately 65 miles off the course that was filed in the Flight Plan. Before the plane

caught fire, the participants are able to salvage 15 items and they are tasked as a group with ranking these items according to their importance to survival. The items include a flashlight, jackknife, raincoat, a bottle of salt tablets, a parachute, .45 caliber pistol, and a book about edible desert animals.

For the desert survival task, possible scores range from 0 to 112, with lower scores representing better performance. Group scores are determined based on deviations from the ranking provided by a survival expert; a group whose ranking exactly matched that of the expert would receive a perfect score of 0. Alternatively, the greater the deviation from the established ranking system, the higher the group score and the poorer the group performance. Based on norm data for this task, the average team performance score was 54.3 for all teams, 42.0 for winning teams, and 68.1 for losing teams across 802 teams comprising 4116 participants. These differences across teams were statistically significant when compared to the group mean at the .001 level. Further, norm data also suggests that across 68 teams comprising only college students, the average team score was 59.6 and this finding was also statistically significant at the .001 level. The task in its entirety is outlined in Appendix F.

Conflict Manipulation

The pilot study was used to pretest several conflict manipulations to determine whether task and relationship conflict perceptions were salient and distinguishable. This was completed based on the considerations that strong enough levels of conflict should be generated to facilitate salience, and to ensure that subjects could distinguish between task and relationship conflict.

Either a task or relationship conflict manipulation was induced in separate groups using the same confederate for task and relationship conflict inducements during the pilot study. Two task manipulations and two relationship manipulations were piloted. The confederates were trained and provided with a standard script that guided their interaction with the other group members as well as maintained some level of consistency in the interactions from group to group. A unique set of initial statements was used by the confederate to induce conflict. Follow-up statements were planned and modified within appropriate parameters to fit the context of the group's unique discussions. Using scripts to guide their interaction, confederates induced both task and relationship conflict in several ways. In the post-task questionnaire, team members were asked to complete the conflict scale, which assessed their conflict perceptions for both task and relationship conflict as it related to the team.

Pilot Study Results

Twenty two groups consisting of four members took part in the pilot study. Ten of the groups were in the no conflict situation while the remaining 12 groups were split between the task and relationship conditions; five task conflict groups and seven relationship conflict groups. For the tasks, the desert survival task was used in 17 instances and the scores ranged from 16 to 34, while the lost at sea task was used in the remaining 5 instances and the group scores on that task ranged from 15 to 30. The sample of participants was 54% male and 46% female, with 85% of the sample between the ages of 20 and 22 years. Seventy five percent of the sample self identified as White American while the other 25% identified as African American, Asian American, and Hispanics.

Fifty three percent of the participants were undergraduate seniors and 43 percent were juniors.

Pilot study results showed that for group performance based on the conflict condition (no conflict, task conflict, and relationship conflict), mean performance scores were significantly different. Interestingly, the highest mean was for the relationship conflict condition ($M = 27.67$, $SD = 5.09$), the second highest mean was for the no conflict condition ($M = 21.58$, $SD = 5.74$), and the lowest mean was for the task conflict performance ($M = 20.43$, $SD = 4.74$). In general, this finding shows a preliminary relationship between conflict and group performance that might be better explained by examining specific, narrow, behavioral responses to conflict. Further, the task conflict may have been more salient to participants and resulted in decreased group performance, while the relationship conflict may have been much less salient and had little impact on the group's performance. A summary chart of group performance score by conflict manipulation is outlined in Appendix G.

Also, the pilot study examined whether the conflict manipulations for both task and relationship conflict were salient. Results indicated mean task and relationship conflict scores were significantly different by conflict group. As expected, in the no conflict group, mean scores were lower for perceptions of both task and relationship conflict. Interestingly, participants perceived a higher level of task than relationship conflict for *both* task and relationship conflict groups. That is, even in the relationship conflict group, there were higher levels of task conflict perceived. These results suggest that the conflict manipulation for relationship conflict was not salient enough to

distinguish it from task conflict. A summary chart of the task and relationship conflict scores by conflict manipulation is outlined in Appendix H.

Adjustments to the Study Design

Based on the findings from the pilot study, several adjustments were made to the study design. One major modification was the decision to try to integrate conflict into the design of the study rather than utilize a confederate. Given the inconsistent results from the attempts to independently manipulate task versus relationship conflict across conflict manipulations using a confederate, attempts to differentiate these two conflict types were dropped from the design. Instead, the objective was to produce conflict and then measure whether the conflict was perceived as task or relationship-related. Of greater concern was the presence of the confederate. Given that the behavioral interactions of the group were to be evaluated, there were concerns that the presence of a confederate may have introduced a confounding effect into the participant interactions and resulting behavior. Consequently, the confederate was removed from the research design. In order to heighten the conflict experienced by participants during the study without the confederate, a conflict inducing pre-task was used.

This pre-task was used because of its potential to elicit divergent responses from individuals while completing the task. The pre-task involved choosing a single recipient for a heart transplant from among five candidates. Each of the recipients had characteristics which might make them appear worthy or unworthy to receive the heart transplant. For example, one of the recipients is a mother to teenage children but is a heavy smoker and also has a husband who is out of prison on probation. Another

recipient is a markedly overweight environmentalist who is the sole caretaker of his disabled mother. The task is outlined in its entirety in Appendix I.

Also, a monetary incentive of \$1000 would be offered to increase the potential for conflict. Such a large incentive would serve to heighten the need to successfully complete the task and thus receive the award. The need to successfully complete the task might, by extension, increase the probability of conflict occurring during the task. In conjunction with the monetary incentive, the tasks were also timed to add an element of time pressure. Groups would be given fifteen minutes to complete the task. The combined effect of completing the task successfully in an abbreviated amount of time might increase the possibility of groups experiencing heightened conflict.

Measures

Independent Measures

Jehn's (1995) Conflict Scale was used as an individual self-report assessment of the perceived conflict experienced in the teams. This is an eight-item measure with subscales for both task and relationship conflict. Using team level constructs and relationships based on individual perceptual data necessitates aggregation (George and James, 1993). To estimate the appropriateness of such aggregation, intraclass correlation coefficients (ICC), which are based on within and between-analysis approaches, were used.

Task Conflict

The four task conflict items assess individual perceptions of the frequency of group disagreements about ideas, disagreements about decisions, differences about the content of decisions, and differences concerning professional experience. These items

include ‘how much do team members disagree about the content of group decisions’, ‘how frequently are there disagreements about ideas in your group’, ‘to what extent are there differences of professional opinion in your group’, and ‘how often do team members disagree regarding decisions of the group’. Coefficient alpha reliability for the task conflict scale in Jehn’s (1995) study was .87. A group score is derived from the aggregation of individual scores on the measure. The task conflict scale uses a five-point scale ranging from 1 = ‘never’ to 5 = ‘a lot’

Relationship Conflict

The four relationship conflict items assess individual perceptions of the frequency of personality clashes, personal tension, and friction, as well as the grudges evident among group members. These items include ‘how much personal friction is there among members of your group’, ‘how much are personality clashes evident in your group’, ‘how much tension is there among members in your group’, and ‘to what extent are there grudges evident among members in your group’. Coefficient alpha reliability for the relationship conflict scale in Jehn’s (1995) study is .92. A group score is derived from the aggregation of individual scores on the measure. The relationship conflict scale uses a five-point scale ranging from 1 = ‘never’ to 5 = ‘a lot’.

Dependent Measures

Intellective/Decision Making Task Performance – Desert Survival Task

In the desert survival task, participants first read a short document that places them into an airplane crash scenario in a desert with their team mates. There are 15 items that participants have to rank in order of their importance for survival. This decision-making task is scored using an expert solution identical to that used in the lost at sea task

above. The scores for the desert survival task potentially vary between 0 if the ranking was identical to the experts' and 112 if the ranking was the exact opposite of the experts'. A better decision is one that emphasizes the usefulness of items that allowed the group to stay together until help arrived rather than attempt to walk to the nearest town.

Control Variables

Past conflict research shows that group size, group composition, and demographics (Gladstein, 1984) affect group performance. Groups and teams research also suggests that personality, impression management, and social anxiety may also affect group functioning (Hollenbeck et al., 1995). Each of these variables will be assessed as a part of the study. Group composition and demographics such as age, gender, and race/ethnicity will be measured using self report measures where individuals will be asked to check the appropriate category. Prior experience with intellectual tasks in general and specifically with those included in this study will be ascertained before groups engage in the task.

Coding Scheme

The behavioral coding scheme used to classify the teamwork behaviors draws from Bales (1970) interaction process analysis methodology. In IPA, the researcher's task is to determine how frequently actions belonging to each category occur during the group encounter. In order to effectively code the task, the focus was on the interaction among the group members and the specific responses elicited by each group member.

An initial consideration when coding involved identifying "thought units," which Bales identified as the smallest discriminable segment of verbal behavior assigned by the researcher (Bales, 1967). A unit, which may be an act or a single interaction, is usually

reflected in a single simple sentence expressing or conveying a complete simple thought. Because thought units are seen as the smallest unit of interaction that can stand by itself and mirror how individuals naturally communicate on an everyday basis, they may be lengthy or short; there can be several thought units in one sentence, but other times a sentence or two can equal one thought unit. Further, because messages during interaction are also implicitly multifunctional, coders were trained extensively to code for the predominant function of messages as well as to utilize smaller, more manageable thought units for consistency.

For coding purposes, each individual within a group was assigned a reference number from one through four based on their seating assignment. The group member seated facing the camera on the left half of the screen was person number one; each other group member was numbered based on their clockwise position from this person. Whenever groups had only three members, reference numbers one through three were used. For each group, a coding matrix was used for each session that was coded. On the coding sheet, the rows represent each of the 12 behavioral categories and the columns represent individual thought units. Each thought unit was coded based on the corresponding group member who uttered the thought unit related to the behavioral category. An example of this coding matrix is provided in the Appendix J.

On each coding sheet, coders wrote down the code assigned to each taped group session and also initialed as a record of having coded that particular group session. Multiple coding sheets were sometimes used for the same group and the group code was listed on each of the related sheets to reflect this. This coding matrix was used to record instances of individual team member behaviors which represented specific types of the 12

behaviors discussed earlier (e.g. agreeing and giving suggestion). During coding, as behavioral instances related to each of the categories were observed, coders made a notation on the coding sheet for the relevant behavioral category and the group member who elicited the behavior. At the end of coding each taped session, row totals were determined on the coding sheet to indicate the number of behaviors observed during that session for each behavioral category.

Several different types of information were derived through the use of this coding matrix. First, individual scores by behavior types were recorded, as well as a total of individual behavioral instances across all the behavioral categories. Second, group scores on a single category as well as across all the categories were also obtained. Within the coding matrix, the total number of acts initiated by each team was also determined by adding the raw scores in each of the 12 categories. Sequential information related to group interaction was also obtained from the coding matrix. By having such fine grained behavioral information, it is possible to tie individual perceptions to individual behaviors based on a single category of behaviors as well as across all the behavioral categories. Also, within and across groups, comparisons can also be made with regard to specific behavioral categories as well as across all the behavioral categories.

Within the coding matrix, the total number of acts initiated by each team was determined by adding the raw scores in each of the 12 categories. The next step involved converting the profile of raw scores in each category to percentage rates based on this total. Bales (1970) advised that researchers should be careful with rates based on small numbers, as a percentage profile based on less than a hundred total scores may not accurately reflect interaction patterns. These percentage rates were then compared to a

profile of estimated norms which have been developed by Bales (1970), using an inferential process across many iterations of the interaction process analysis. These norms show a medium range of rates for each of the 12 categories, which represent the range that approximately included the middle third of all rates available in the normative population. For example, the range of rates for category 1, “seems friendly,” extends from 2.6 to 4.8 behavioral instances. Rates that are lower than the medium range for each of the behaviors are classified as *low*, while those that are higher than the medium range are classified as *high*.

Two coders were used to classify the interaction behaviors of the groups in the study. Selection of the coders was based on recommendations from other researchers who had some prior knowledge of the coders. One coder was male and the other female. Both of the coders were undergraduate students at a four-year institution and each had prior experience with research. In order for coders to accurately code the videotaped sessions, each coder was provided training to assure that he or she had a full understanding of the rationale underlying the categories. A day-long coding session was organized to train coders together so that there was greater consistency in training. The training session introduced coders to each of the behavioral categories and how to identify them, demonstrated coding of the tapes by conducting a coding session, and tested whether coders accurately learned the coding system by independently coding a tape. Reliability of scoring is likely to depend very heavily on the training of the observer and agreement of approximately 70 percent or greater was established among judges before concluding inter-rater reliability.

In order to minimize inconsistency in coding, a central location was established for the coding to be completed. Coders were assigned to individual computer rooms within a university computer lab and the same computer room was used each time the coder used the computer lab. Each coder came to the lab based on a predetermined schedule and a general log book was placed in the lab to facilitate communication between coders and the researcher. Problems relating to the computer equipment and other related issues were noted in the logbook as they arose and the logbook was checked periodically to ensure that the process remained smooth.

Along with the logbook, two boxes labeled for each of the coders were also provided. These boxes contained copies of the DVDs of each taped group session and these were left alongside the logbook. Each DVD was in a sleeve labeled with the group code. Once a coder completed coding a specific DVD, the coder returned the DVD to its corresponding sleeve and to the assigned coder box. Each coder also had a folder with copies of blank coding sheets as well as a blank notebook for personal notation with regards to the coding process as necessary. Both the folder and the notebook were left in the lab at all times to ensure the safekeeping of information as it pertained to the study.

Initially, both coders each coded the same 15 DVDs using Bales's established coding scheme in order to determine inter-rater reliability. Once inter-rater reliability was established, the remaining 45 DVDs were split between the coders, so that each coder coded approximately 38 DVDs. Coders coded in intervals of two to three hours for any one coding period to avoid fatigue. Schedules permitting, coding was done twice daily provided that there was a four-hour interval between morning and evening coding periods.

Chapter 4 – Results

Data was initially collected for 61 groups; however five of the recorded group interaction sessions were unusable because the recording did not capture the full session. As such, a total of 55 groups including 188 student participants was used in the analyses for this study. Across all groups, 56 % of the participants were male. Participants spanned the ages of 18 through 26 years, with 88 % of participants between the ages of 20 and 22 years, inclusive. The majority of participants self-reported as White American (80 %), followed by Asian Americans (12 %). The remaining three groups, Hispanic, African American, and multi-ethnic American constituted seven percent of the sample. All of the participants were sophomore and above with 11 % self-identified as sophomores, 67 % as juniors and 21 % as seniors. Of the participants, 87 % were business majors.

Of the 55 groups used in the study, 23 of the groups were 4-person groups while 32 of the groups were 3-person groups. In terms of gender composition, 30 of the 55 groups had more males than females, 19 of the groups had more females than males, and the remaining 6 groups had an equal number of male and female participants. Ten of the groups were composed of all males while only 2 of the groups had all female participants. With regard to year in school, none of the groups had participants who self identified as freshmen. Fifty-one of the groups had at least one junior and 19 of the groups had members who were all juniors. In comparison, only 27 of the groups had members who were seniors and 16 of the groups had members who were sophomores. Group composition by race/ethnicity showed that only four groups had members who self-

identified as African-American/Black and only one group had a member who self-identified as Hispanic. Asian Americans were represented in 19 of the 55 groups.

Means, standard deviations, and zero order correlations for all study variables are presented in Table 6. Coefficient alpha reliability estimates derived from the individual responses for the task ($\alpha=.78$) and relationship ($\alpha=.78$) conflict scales are also included on the diagonal in Table 6. In general, the means and standard deviations for the conflict variables reflect consistently low levels of conflict. The means for task conflict was less than three on a five-point scale with low variability ($M = 2.56, SD = .42$). The mean and variability for relationship conflict was lower than that of task conflict ($M = 1.43, SD = .30$). This suggests that, in general groups, perceived low levels of both types of conflict and particularly low levels of relationship conflict.

Based on an intra-class correlation coefficient of $ICC = .78$ for task conflict and $ICC = .77$ for relationship conflict, the aggregation of individual level scores on both measures was justifiable (McGraw & Wong, 1996). The intra-class correlation describes how strongly units in the same group resemble each other by assessing the consistency of different observers measuring the same quantity. In the current study, the intra-class correlation quantified the degree to which individuals within each group rated perceptions of task and relationship conflict similarly. An ICC model corresponding with a two-way mixed effects model was used where the people effects are random and the measures effects are fixed.

The desert survival task used to assess performance was reverse scored, so that higher scores reflected better performance while lower scores reflected poorer performance. Scores on the performance variable were relatively consistent with a normal

Table 6: Means, Standard Deviations and Zero Order Correlations for Study Variables

Variable	Mean	SD	1.	2.	3.	4.	5.	6.	7.	8.	9.	10	11.	12.	13.	14.	15.	16.	17.	18.	19.
1. Task Conflict	2.56	.42	(.78)																		
2. Relationship Conflict	1.43	.30	.51	(.78)																	
3. Showing Solidarity	.021	.019	-.06	.04																	
4. Shows Tension Release	.075	.064	.01	.06	-.24																
5. Agrees	.126	.053	-.12	.03	-.15	-.08															
6. Positive Socioemotional	.222	.077	-.09	.08	-.06	.72	.59														
7. Gives Suggestion	.007	.010	.16	-.12	.26	-.18	-.02	-.09													
8. Gives Opinion	.527	.107	.24	.21	.14	-.24	-.28	-.36	.05												
9. Gives Orientation	.114	.055	-.06	-.11	.35	-.09	-.18	-.11	.27	-.24											
10. Active Task	.648	.111	.22	.14	.33	.30	-.36	-.42	.28	.86	.29										
11. Asks for Orientation	.061	.030	.03	-.10	.48	-.04	-.24	-.08	.27	.15	.54	.43									
12. Asks for Opinion	.092	.029	-.07	-.21	.03	-.41	-.10	-.41	.13	-.09	-.02	-.08	.07								
13. Asks for Suggestion	.002	.005	.09	.29	-.11	-.20	.44	.11	.12	-.11	-.07	-.13	-.15	-.09							
14. Passive Task	.155	.043	-.02	-.18	.35	-.32	-.20	-.32	.29	.03	.36	.24	.74	.72	-.06						
15. Disagrees	.0004	.002	.17	.06	-.08	-.02	-.15	-.13	.26	-.02	-.01	.01	.08	-.05	.05	.02					
16. Shows Tension	.000	.000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--				
17. Shows Antagonism	.000	.000	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
18. Negative Socioemotional	.0004	.002	.17	.06	-.08	-.02	-.15	-.13	.26	-.02	-.01	.01	.08	-.05	.05	.02	1.0	--	--		
19. Performance	50.6	16.5	.05	-.13	.08	.09	.02	.09	-.15	-.02	.10	.02	-.07	-.23	-.04	-.20	-.06	--	--	.01	

Note: N = 55 groups.

distribution and ranged from 15 to 110 with higher scores reflecting better performance. The mean score was $M = 50.6$ with a standard deviation of $SD = 16.5$. The mean and standard deviation for performance suggests that the task was of moderate difficulty and scores were not restricted by ceiling or floor effects. Further, based on norm data for this task, the average performance score produced here is consistent with those produced by similar samples as outlined in the Desert Survival manual. A majority of the participants reported that they found the task engaging (95%) and interesting (97%). Sixty one percent of the sample reported that they had no prior experience with the task. There was little to no relationship between prior experience with the task and performance ($r = -.08$). This suggests that there is a diminished likelihood that performance effects might have resulted from previous knowledge.

Consistent with Bales's (1970) recommendation, group totals for the interaction behaviors exceeded one hundred for the large majority of the groups ($M = 152.5$, $SD = 57.20$). The means and standard deviations for the four interaction behavior categories shows that there was some variability across almost all of the behaviors, and certain behaviors were more prevalent across groups. Active task behaviors were by far the most frequently occurring behavior (65%), followed by positive socio-emotional (22%) and passive task (16%). Negative socio-emotional behaviors occurred infrequently across the groups. Among the 12 interaction behaviors, *gives opinion* was the most frequently occurring behavior. Each of the other behaviors occurred less frequently and the instances of behavior ranged from 0% to 13%.

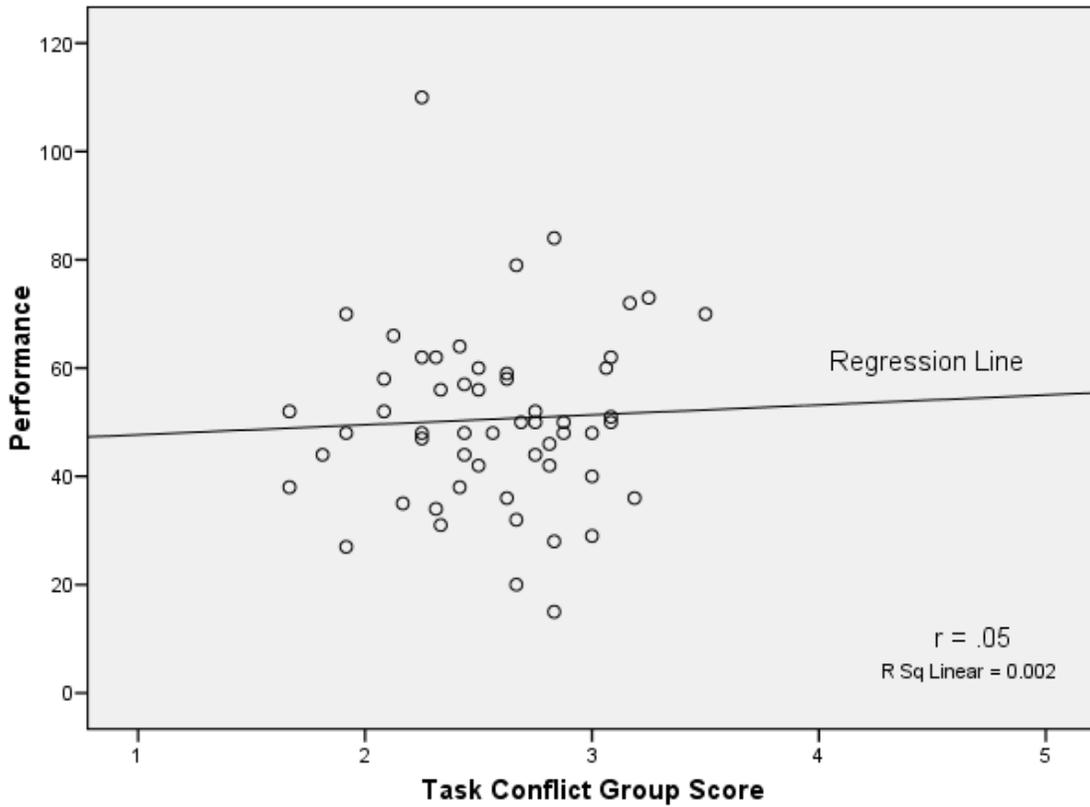
For the interaction behaviors, agreement of approximately 70% was desired among judges to conclude that inter-rater reliability was established, and the coder

assessments were correlated between raters across the 12 rated behaviors at $r = .89$.

Percentage agreement of 65.44 was also established between raters for the coding of the initial 15 group interactions. Further, in order to ensure the sufficiency of Bales's coding scheme, the author also coded 5 of the same 15 initial behavioral interactions which the coders completed. A percentage agreement of 69.89 was established among all three raters.

The relationship between task conflict and performance for the 55 groups in the study is illustrated using a scatter plot in Figure 3. The regression line reflects the limited relationship between these variables; it appears to have a very slight negative slope, reflecting that, on average, higher conflict scores were associated with slightly better task performance. There is also restriction of range on the task conflict variable since, across groups, the first three points on the five point scale were used most frequently and the majority of the responses were clustered between points two and three. The performance scores, however, reflect greater variability across groups. In general, at all levels of task conflict, performance scores vary so that the plot shows no clear pattern that relates task conflict to performance. This suggests that at every level of conflict there were both good and poor performers.

Figure 3: Group Performance Score by Task Conflict Score



Similarly, Figure 4 depicts a scatter plot of the relationship between decision-making performance and relationship conflict. The regression line again suggests a limited relationship between these variables. Unlike that of task conflict, the fit line for relationship conflict appears to have a slightly more pronounced positive slope, suggesting that higher relationship conflict scores are associated with slightly poorer decision making performance. In the case of relationship conflict, there is a greater restriction of range as the scores range from 1 to 2.4, with the majority of scores falling between 1 and 1.8 on the scale. While the relationship here is somewhat stronger, the overall trend is similar to the findings for task conflict: There does not appear to be a strong relationship between relationship conflict and performance. While a general pattern begins to appear, there are high and low performing groups at most levels of the conflict found in these data.

A further examination of Table 6 reveals that the associations among the majority of the study variables are relatively weak. This suggests that the occurrence of robust findings are likely to be limited in these data. An examination of the results for each of the hypotheses follows.

Results for Tests of Hypotheses

Relationships Between Behaviors and Decision-Making Performance

Hypotheses 1 through 4 proposed relationships between group interaction behaviors and performance; none of these relationships were statistically significant. Specifically, hypothesis 1 states that active task behaviors (i.e., *gives suggestion*, *gives opinion*, and *gives orientation*) will be positively related to team decision making performance. The relationship between active task behaviors and performance was non-existent ($r = .02$, ns); thus, hypothesis 1 was not supported. None of the other active task behaviors--*giving suggestion* ($r = -.15$, ns), *giving orientation* ($r = .10$, ns) and *giving opinion* ($r = -.02$, ns)--were related to performance.

Hypothesis 2 states that passive task behaviors (i.e., *asks for orientation*, *asks for opinion*, *asks for suggestion*) will be negatively related to team decision-making performance. This hypothesis was not supported as the relationship was not significant. Though the relationship was not significant, the coefficient was slightly negative suggesting that the presence of more frequent passive task behaviors may co-occur with lower levels of performance. Of the passive task behaviors, *asks for opinion* ($r = -.23$, ns) was most related to performance, while *asks for orientation* ($r = -.07$, ns) and *asks for suggestion* ($r = -.04$, ns) were both unrelated to performance.

Hypothesis 3 states that positive socio-emotional behaviors (i.e., *shows solidarity*, *shows tension release*, and *agrees*) will be positively related to team decision-making performance. Hypothesis 3 was unsupported, as positive socio-emotional behaviors and performance were unrelated ($r = .09$, ns). Each of the positive socio-emotional behaviors

were also unrelated to performance: *shows tension release* ($r = .09$, ns), *shows solidarity* ($r = .08$, ns), and *agrees* ($r = .02$, ns).

Hypothesis 4 states that negative socio-emotional behaviors (i.e., *disagrees*, *shows antagonism*, *shows tension*) will be negatively related to team decision-making performance. In general, very few instances of negative socio-emotional behaviors were found in this study. Hypothesis 4 was not supported, as no relationship was found ($r = .01$, ns). Among the negative socio-emotional behaviors, there were few or no instances of *showing tension* and *showing antagonism*. Disagreement behaviors ($r = -.06$, ns) occurred relatively more frequently, but were essentially unrelated to performance.

This study also examined the combined relationship between all four behavioral categories and decision-making performance. These results are summarized in Table 7 below. Results show that the four main behavioral categories together accounted for a moderate amount of variance in performance ($R = .22$). Among the four main behavioral categories passive task behaviors accounted for the majority of variance in team decision making performance, with positive socio-emotional behaviors providing a modest incremental contribution. The 12 behavioral categories were also regressed onto performance. Together they accounted for slightly more variance than the four behavioral categories, but in general the total amount of variance accounted for was also moderate ($R = .32$).

Table 7: Summary of Regression Results for Interaction Behaviors & Performance

Variable	Performance	
	Model 1	Model 2
	β	β
Positive Socio-emotional	.059	
Shows solidarity		.065
Shows tension release		.030
Agrees		.060
Active Task	.090	
Gives suggestion		-.171
Gives opinion		.067
Gives orientation		.236
Passive Task	-.207	
Asks for orientation		-.172
Asks for opinion		-.168
Asks for suggestion		-.050
Negative Socio-emotional	.005	
Disagrees		.060
F	.643	.504
R	.22	.32
R ²	.05	.10
Adj. R ²	.00	.00

Relationships Between Conflict Perceptions and Behavior

Hypotheses 5 through 8 proposed relationships between task and relationship conflict and the 12 group interaction behaviors. The relevant effect sizes are detailed in Table 6. Specifically, hypothesis 5a states perceptions of task conflict will be positively related to *gives suggestion*, *gives opinion*, and *gives orientation* behaviors. This hypothesis was not supported, given that none of the relationships were statistically significant: *gives suggestion* ($r = .16$, ns), *gives opinion* ($r = .24$, ns), and *gives orientation* ($r = -.06$, ns). Of the three coefficients, *gives opinion* had a very slight positive relationship with task conflict suggesting that more frequent instances of giving opinion co-occurred with higher perception levels of task conflict

Hypothesis 5b states perceptions of relationship conflict will be negatively related to *gives suggestion*, *gives opinion*, and *gives orientation* behaviors. No support was also found for this hypothesis as none of the relationships were statistically significant: *giving suggestion* ($r = -.12$, ns), *giving orientation* ($r = -.11$, ns) and *giving opinion* ($r = .21$, ns). *Giving opinion* was the coefficient most related to perceptions of relationship conflict, but even this correlation was slight.

Hypothesis 5c states perceptions of both task and relationship conflict will have a stronger relationship with *gives suggestion* and *gives opinion* than with *gives orientation*; no support was found for this hypothesis. Though none of the relationships were statistically significant, the coefficients for the relationship between relationship conflict and *gives suggestion* or *gives opinion* ($r = -.12$, ns; $r = .21$, ns, respectively) were slightly larger than that for *giving orientation* ($r = -.11$, ns). Similarly for task conflict, the

coefficients for *gives suggestion* and *gives opinion* ($r = .16$, ns; $r = .24$, ns) were slightly larger than that for giving orientation ($r = -.06$, ns).

Hypothesis 6a states perceptions of task conflict will be negatively related to *asks for orientation*, *asks for suggestion*, and *asks for opinion* behaviors. No support was found for this hypothesis, as all three behaviors were found to be unrelated to task conflict (*asks for opinion*: $r = -.07$, ns; *asks for orientation*: $r = .03$, ns; *asks for suggestion*: $r = .09$, ns).

Hypothesis 6b states perceptions of relationship conflict will be positively related to *asks for orientation*, *asks for suggestion*, and *asks for opinion* behaviors. Partial support was also found for this hypothesis since *asks for suggestion* was the only behavior which was positively and significantly related to relationship conflict ($r = .29$, $p < .05$). The relationships between *asks for orientation* and *asks for opinion* and relationship conflict were not statistically significant ($r = -.10$, ns; $r = -.21$, ns).

Hypothesis 6c states perceptions of both task and relationship conflict will have a stronger relationship with *asks for suggestion* and *asks for opinion* than *asks for orientation*. This hypothesis was unsupported given that none of the relationships were significant. However, the coefficients for relationship conflict show slightly stronger relationships for *asks for suggestion* ($r = .29$, ns) and *asks for opinion* ($r = -.21$, ns) than for *asks for orientation*.

Hypothesis 7a states perceptions of task conflict will be negatively related to *shows solidarity*, *shows tension release*, and *agrees*. This hypothesis was not supported as none of the behaviors were related to task conflict; *shows solidarity* ($r = -.06$, ns), *agrees* ($r = -.12$, ns), *shows tension release* ($r = .01$, ns).

Hypothesis 7b states perceptions of relationship conflict will be negatively related to *shows solidarity*, *shows tension release*, and *agrees* behaviors. This hypothesis was unsupported, as none of the relationships between relationship conflict and *shows solidarity*, *shows tension release*, or *agrees* were meaningfully substantial ($r = .04$, ns; $r = .06$, ns; $r = .03$, ns).

Hypothesis 7c stated that perceptions of both task and relationship conflict will have the strongest relationship with *shows solidarity*, followed by *shows tension release*, and then *agrees* behaviors. This hypothesis was also unsupported as none of the relationships were statistically significant; however, contrary to the hypothesized relationships, *agreeing* had the strongest relationship with task conflict ($r = -.12$, ns) of any of the behaviors.

Hypothesis 8a states perceptions of task conflict will be positively related to *disagrees*, *shows tension*, and *shows antagonism* behaviors. No support was found for the hypothesized relationship between task conflict and *disagrees* ($r = .17$, ns). Given that there were almost no occurrences of interaction behaviors for showing tension and showing antagonism, it was impossible to evaluate any relationship between these behaviors and conflict.

Hypothesis 8b states perceptions of relationship conflict will be positively related to *disagrees*, *shows tension*, and *shows antagonism* behaviors. There was also no support for this hypothesis as the effect size for the relationship between relationship conflict and *disagrees* was relatively non-existent ($r = .06$, ns).

Hypothesis 8c states perceptions of both task and relationship conflict will have the strongest relationship with *shows antagonism*, followed by *shows tension*, and then

disagrees behaviors. Due to the limited number of instances of these behaviors, this hypothesis could not be tested.

Of the 12 behavioral categories, *asks for suggestion*, *gives opinion*, and *asks for opinion* were found to have the strongest relationship with task and relationship conflict. These results are summarized in Table 7 below. Specifically, *gives opinion* showed a strong relationship with both task and relationship conflict while *asks for suggestion* and *asks for opinion* both had strong relationships with relationship conflict. Each of these variables was regressed onto task and relationship conflict and both forms of conflict accounted for a moderately large amount of variance in each of the behaviors. Task and relationship conflict accounted for the largest amount of variance in *asks for suggestion* ($R = .30$) followed by *gives opinion* ($R = .26$), and then *asks for opinion* ($R = .22$). An incremental increase in association occurred for the combined effect of both forms of conflict and each of the behaviors; *asks for suggestion*, *asks for opinion* and *gives opinion*. By comparison, the zero order correlations for relationship conflict and each of the behaviors as well as for task conflict and *gives opinion* showed only slightly lower effect sizes. In contrast though, the zero order correlations for task conflict and *asks for opinion* and *asks for suggestion* showed a larger incremental increase.

Table 8: Summary of Regression Results for Conflict and Interaction Behaviors

Variable	Interaction Behaviors	
	β	β
Model 1	Asks for Suggestion	
Step 1		
Task Conflict	.094	-.075
Step 2		
Relationship Conflict		.329
F	.469	2.524
R	.094	.297
R ²	.009	.09
Adj. R ²	.000	.05
Model 2	Gives Opinion	
Step 1		
Task Conflict	.241	.179
Step 2		
Relationship Conflict		.120
F	3.271	1.920
R	.241	.262
R ²	.058	.069
Adj. R ²	.040	.033
Model 3	Asks for Opinion	
Step 1		
Task Conflict	-.070	.054
Step 2		
Relationship Conflict		-.242
F	.262	1.311
R	.07	.219
R ²	.005	.048
Adj. R ²	.000	.000

Whether Behavior Mediates the Relationship between Conflict and Performance

Hypotheses 9 and 10 proposed the mediating effect of group interaction behaviors between task and relationship conflict and performance. A variable may be called a mediator to the extent that it accounts for the relation between the predictor and criterion (Baron and Kenny, 1986). In mediation analysis, deeper understanding is gained when researchers are able to comprehend the process that produces the effect. In this study, the limited relationship between the predictor and criterion reduces the need to conduct mediation analyses. The weak relationships between conflict and performance present problems for conducting mediation analyses.

Specifically, the initial results between conflict and performance show a slight negative relationship between task conflict and performance ($r = .05$, ns), while a minimal positive relationship exists between relationship conflict and performance ($r = -.13$, ns). These effect sizes reflect little or no relationship between both types of conflict and performance in these data. Given that traditional mediation necessitates the presence of an initial relationship between the independent variable and dependent variable, the presence of a weak relationship limits the capacity to test for mediation.

In general, the findings from this study suggest that task related behaviors rather than socio-emotional behaviors appear to do a slightly better job of explaining performance. Similarly, task related behavior rather than socio-emotional behavior co-occurs more frequently with task related behaviors. More specifically, active task behaviors are more associated with task conflict while passive task behaviors are more associated with relationship conflict. These findings imply that relative to socio-emotional behaviors task related behaviors may be more important to group performance.

These findings should be interpreted with caution given the generally small magnitudes of the effect sizes.

Supplemental Analyses

Though no specific hypotheses were offered, further exploratory analyses were conducted to determine whether a closer examination of the behavioral patterns might offer additional insight into the utility of Bales interaction profiles for studying the relationship between conflict perceptions and decision-making performance. A second set of analyses attempted to determine whether the absence of an individual level performance control affected the amount of conflict which groups experienced or the interpretation of decision making performance scores. A final set of analyses included the findings related to the behavioral interaction from the pilot study. Each of these analyses is discussed in detail below.

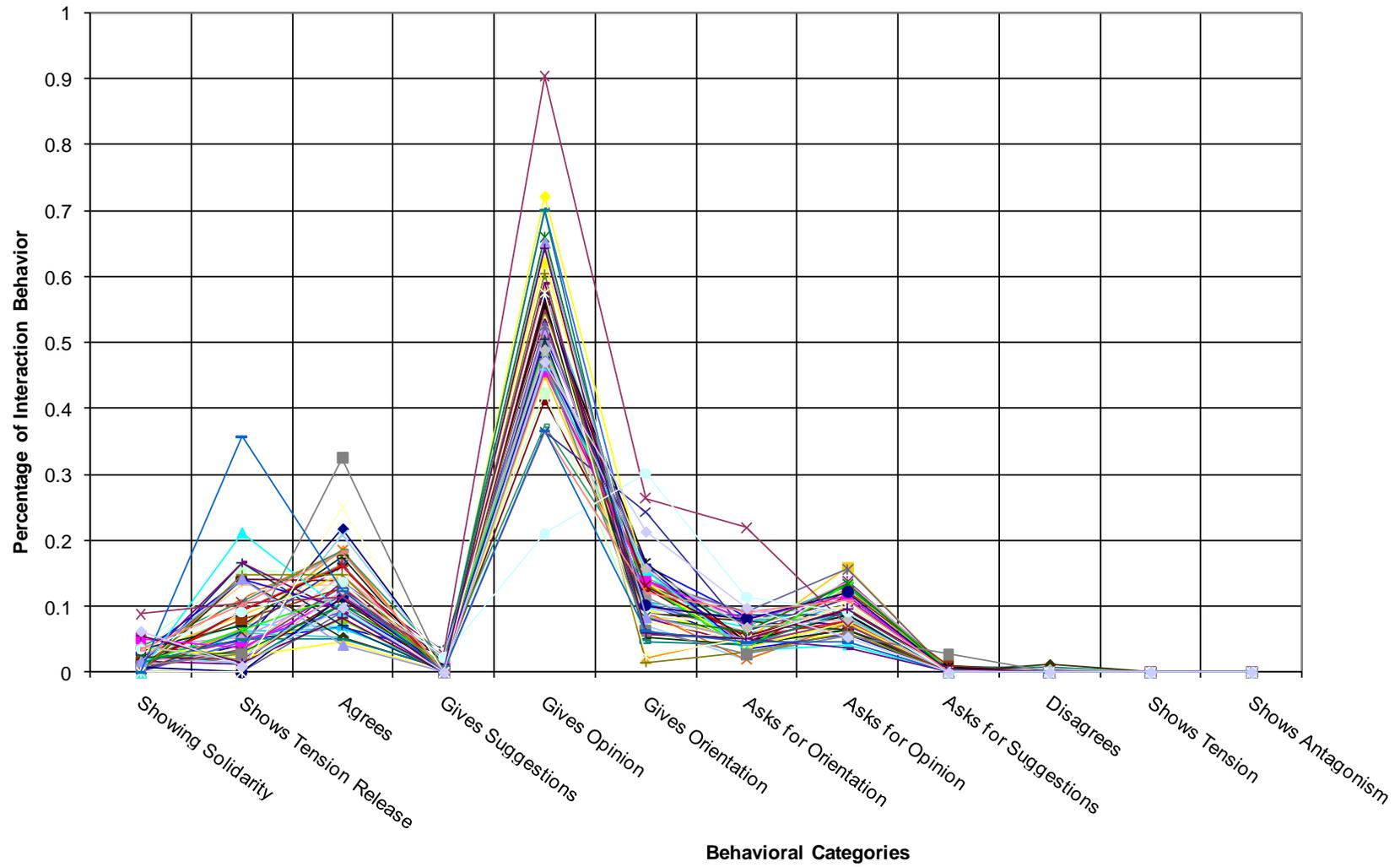
Examination of Behavioral Interaction

The interaction profiles found in the groups examined in the study are consistent with those found in previous groups. Bales's (1991) research on the IPA categories shows that active task activity (56%) has been found to characterize the largest percentage of behavior, with positive socio-emotional (26%) behavior second. A similar pattern was also found in this study as active task behaviors accounted for 64% of the interaction, behaviors while positive socio-emotional behavior accounted for 21% of the interaction behavior. Also, in Bales's (1991) study, a much smaller portion of behavior was categorized as negative socio-emotional behavior (12%) and a still smaller percentage of behavior was identified as passive task behavior (7%). One slight difference between the groups studied here and Bales observations of average patterns

across groups occurred for passive task behavior. In the present study, passive task behavior (15%) was almost as frequent as positive socio-emotional behavior and not at all as infrequent as negative socio-emotional behavior (0%).

Figure 5 below identifies the percentage of interaction behavior across the 55 groups on each of the 12 interaction behavior categories in this study. Each line in the figure represents one of the 55 groups in the study and shows its behavioral interaction pattern across all 12 of the behavioral categories. The figure shows the relative consistency in behavioral patterns across all the groups with very few exceptions. While some groups may be slightly higher or lower on a single behavior, the frequency of interaction by group falls within a very similar narrow range. This pattern also holds across behavioral categories, as groups are again relatively consistent across behaviors. A very small number of the groups have higher or lower behavioral frequencies on the behavioral categories; however, this pattern is not consistent for any single group.

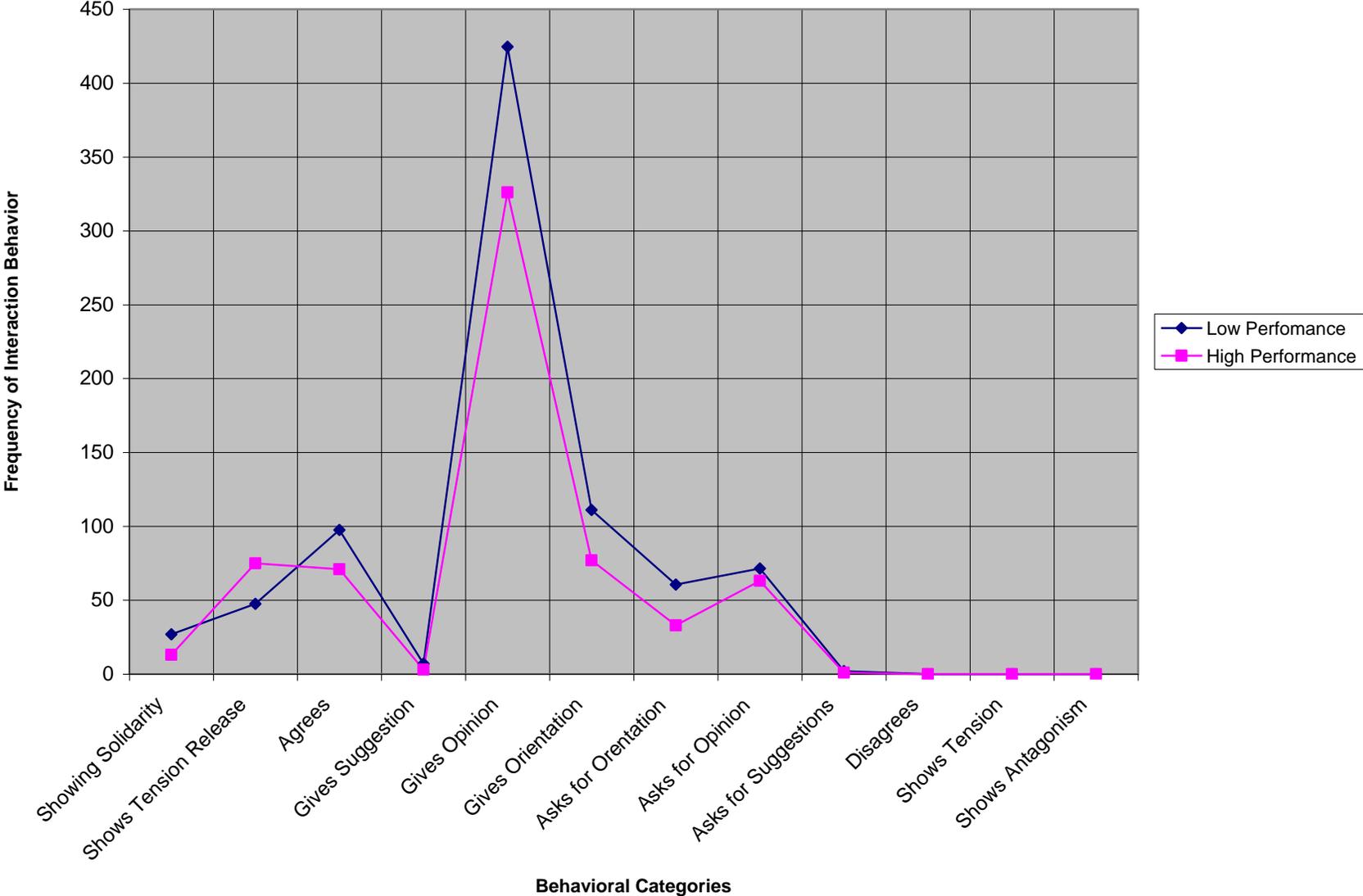
Figure 5: Interaction Profile for Behavioral Categories across Groups



To further understand possible roles of interaction patterns using Bales's framework, the behavioral interaction patterns of the highest and lowest performing groups were examined, as were the highest and lowest conflict perception groups. Data for the five highest and five lowest performing groups were examined to determine if behavioral patterns differed for these extreme groups. The average performance score for the five highest performing groups was 28.4, with the five scores ranging from 2 to 40. The average performance score for the five lowest performing teams was 88.2, with the five scores ranging from 88 to 97.

Figure 6 below outlines the frequency of interaction behaviors for the high and low performing groups. To a large extent, the interaction patterns across groups were similar for each of the behavioral categories, but high performance groups in general exhibited fewer behaviors across most of the categories. Active task behaviors accounted for the majority of interaction behaviors for both high and low performing groups. In particular, for active task behaviors, the frequency of the *gives opinion* behavior far exceeds any of the other behaviors for both high and low performance groups. There was a higher incidence of task-related behaviors in general in low performance groups relative to high performing groups. Of any of the task related behaviors, the frequency of *gives suggestion* and *asks for suggestion* was extremely low in both high and low performing groups. The frequency of passive task behaviors in general was also fairly consistent with the frequency of positive socio-emotional behaviors across high and low performing groups. The frequency of behaviors related to *asking for opinion* and *showing solidarity* were also consistent across high and low performance groups.

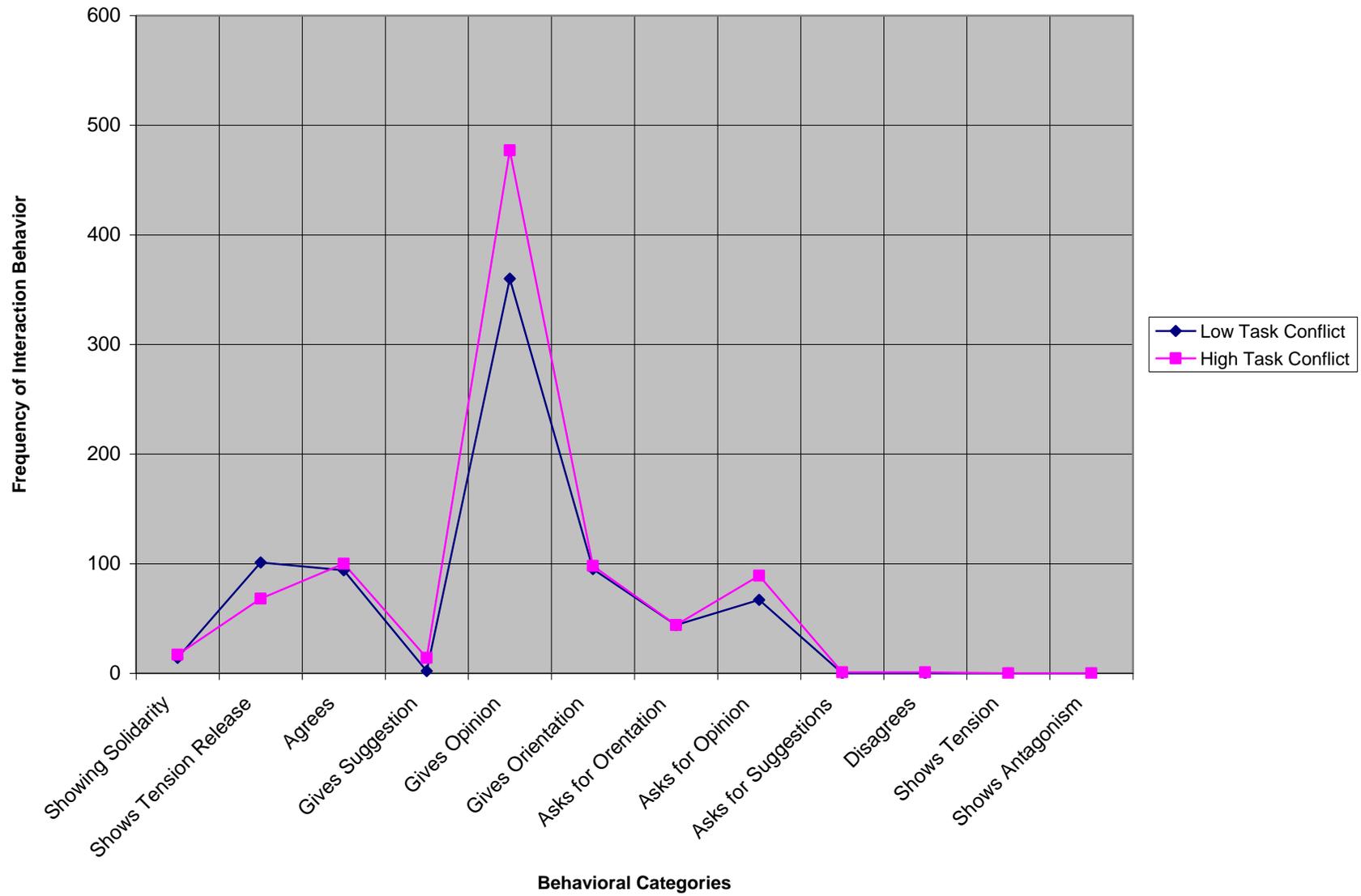
Figure 6: Frequency of Interaction Behaviors for High and Low Performance Groups



For task conflict scores, the average conflict score for the five highest task conflict groups was 3.24, with scores ranging from 3.08 to 3.5. For the five lowest scoring task conflict groups the average score was 1.80, with scores ranging from 1.67 to 1.92.

In Figure 7 below, the frequency of interaction behaviors in high and low task conflict groups are outlined. Again, across high and low conflict task groups behavioral patterns were fairly consistent. High task conflict groups in general had slightly more instances of behavior related to *giving opinion* than low task conflict groups. On average, the occurrence of passive task behavior and positive socio-emotional behavior was consistent. The frequency of behaviors for high and low task conflict groups were also indistinguishable on *gives orientation* and *ask for orientation*.

Figure 7: Frequency of Interaction Behaviors for High and Low Task Conflict Groups



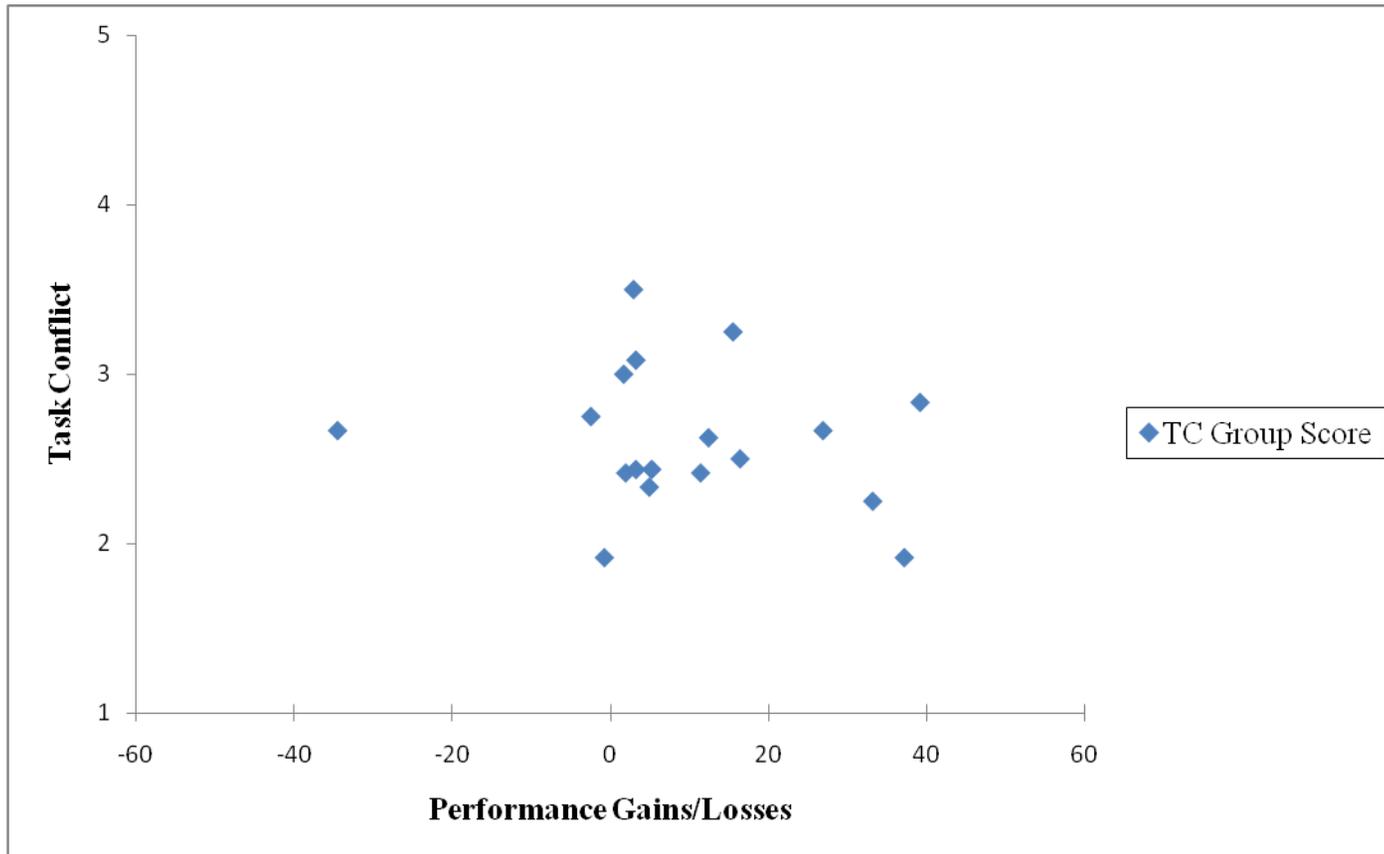
Controlling for Individual Level Performance

These analyses address a concern that individual prior knowledge may have influenced performance scores in the current study. This confounding variable may explain why conflict or behavior failed to demonstrated stronger relationships with decision-making performance. In some groups and teams studies using similar tasks, it is common practice for groups to be asked to perform the task individually before engaging in group interaction. In addition to minimizing the error variance around the performance variable, this practice might also help to produce more conflict. While my primary protocol did not include this step, for 18 of the groups in this study, the additional instruction of completing the task individually was incorporated in an attempt to increase the conflict scores. This occurred after the data from the first groups examined failed to produce strong perceptions of conflict.

Using the subsample of 18 groups, analyses were conducted to determine whether groups that had individual-level performance data experienced increased levels of task and relationship conflict. Further, the relationship between conflict and performance was also assessed, controlling for individual-level performance within groups. The average individual score was calculated for each group by determining the difference between the average individual score and the group performance score. Given that groups within the present study consisted of three or four members, using the average individual score would account for the difference in group size. Average individual scores ranged from 35.3 to 79.3 with a mean of $M = 62$ and standard deviation of $SD = 10.48$. In general, the majority of the groups experienced performance gains; that is, performance was worse across individuals ($M = 62$) than across groups ($M = 52$), indicating that groups performed better than individuals.

For task conflict, the mean level of conflict found in the subsample ($M = 2.61$) was consistent with that found in the larger sample of data ($M = 2.56$). Compared with groups that had no individual level performance data, no differences in task conflict levels were found. Further, no relationship between conflict and performance was found even after controlling for individual level performance ($r = -.02$). Figure 8 below visually depicts the performance gain/loss scores for task conflict. Performance gains or losses represent the difference between average individual performance and group performance. The figure shows that even though performance gains were realized for the majority of groups in the subsample, these gains were not associated with increased levels of conflict.

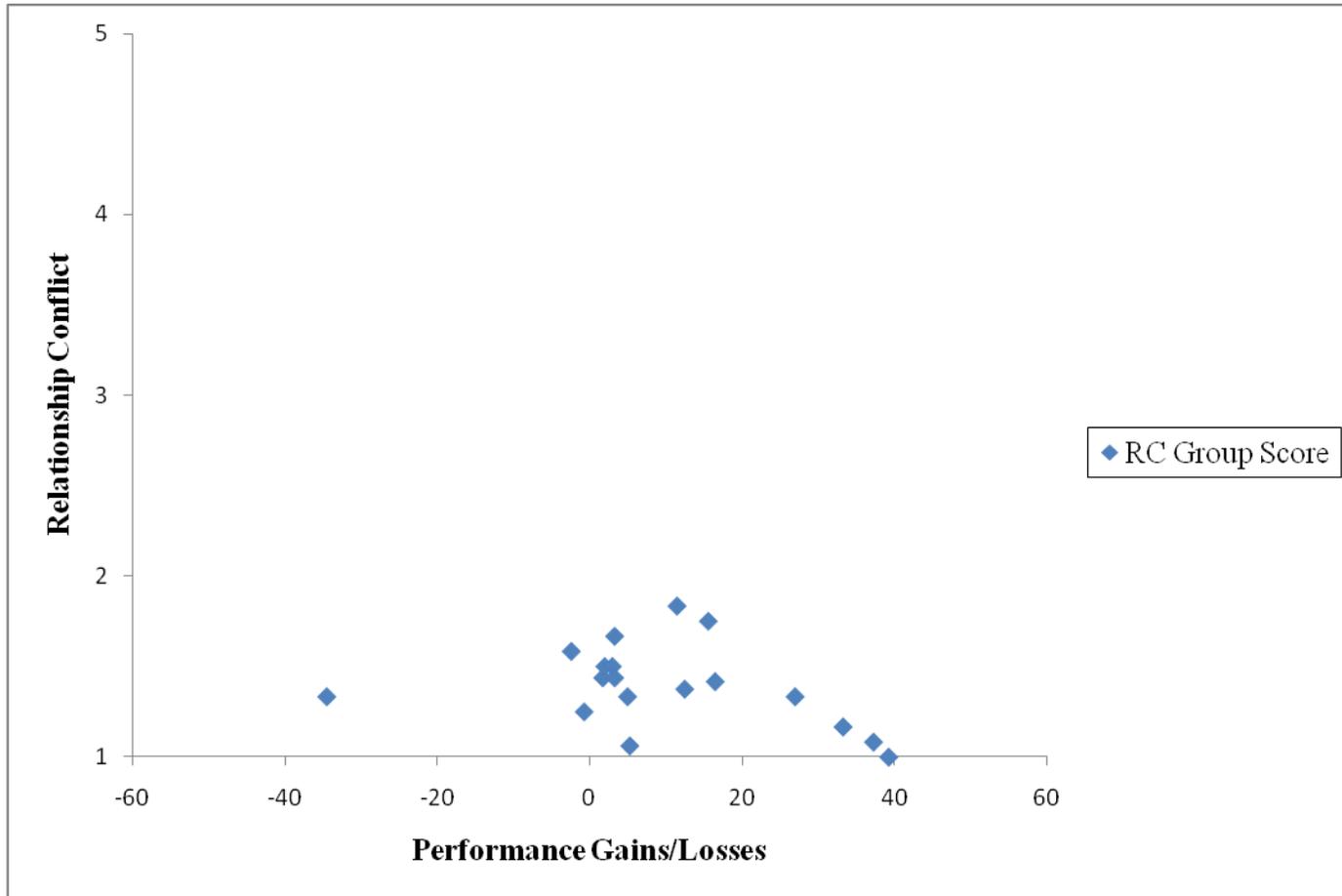
Figure 8: Group Performance Gain/Loss by Task Conflict



For relationship conflict groups, the mean level of conflict in the subsample ($M = 1.39$) was slightly lower than that of the larger sample ($M = 1.43$). There was also less variability on the relationship conflict measure in the subsample ($SD = .23$) than in the main sample ($SD = .30$). When compared with groups that had no individual level performance data, slightly lower levels of relationship conflict occurred within a narrower range in the subsample. With regard to the relationship between relationship conflict and performance, there was a slight improvement in the effect size in the subsample ($r = .26$) over the larger sample ($r = .13$). This relationship was also positive, suggesting that higher levels of relationship conflict are associated with poorer performance. After controlling for individual-level performance, only a slight improvement was noted in the relationship between relationship conflict and performance.

Overall, these findings showed that even with the error minimized around the performance variable, very low levels of both task and relationship conflict were experienced. Though a subsample was used in these analyses, this subsample represents approximately one third of the larger sample. Further, the characteristics across samples were consistent enough to warrant a comparison between samples. As noted earlier, the prevalence of low means and variance is commonplace among conflict studies. These findings reinforce the need in conflict studies to ensure that conflict is salient to participants. Achieving this goal represents a challenge that future conflict researchers will continue to face.

Figure 9: Group Performance Gain/Loss by Relationship Conflict



Chapter 5 – Discussion

“I have not failed, I’ve just found 10,000 ways that won’t work.” Thomas Edison.

Edison’s response encapsulates a common life idea that researchers must face: every wrong attempt discarded is another step forward. The objective of the current study was to use an examination of the interactions of decision-making groups to offer insight into how conflict perceptions lead to increases or decreases in decision-making performance. The primary findings of the current study offer limited insight into the focal relationships. The inability to generate sufficient levels of conflict contributed to the lack of a relationship between conflict perceptions and decision-making performance—the fundamental relationship that the analysis of behavioral interactions was expected to mediate. In addition, only modest relationships at best were found between conflict perceptions and the 12 categories of behaviors. The same was true for the relationships of categories of behavior and decision-making performance. However, the study’s primary contribution is the series of insights that it provides for future experimental conflict research.

No other conflict study to date has attempted to experimentally identify a subset of unambiguously defined behaviors that are integral to performance but also occur in conflict episodes. Identifying those behaviors related to conflict and associated with differences in performance is necessary to understanding how conflict impacts decision-making performance. As such, an exploration of features of the current study’s design, including the methods used to induce conflict levels and evaluate interaction behaviors and their effectiveness, can inform future studies. Developing approaches for conducting

research that offers insights into these behavior mechanisms is critical to advancing the understanding of the impact of conflict on performance.

Achieving Sufficient Levels of Conflict

The features of the research designs used here failed to yield strong perceptions of either task or relationship conflict in these adhoc decision-making groups. This occurred in spite of several different attempts to heighten perceptions of the level of conflict. Groups were provided with a cash incentive of one thousand dollars to raise the stakes for successful completion of the task and possibly generate conflict among team members. While this incentive was designed to increase the level of conflict in groups, it failed to yield higher conflict perceptions in the current study.

One reason why the incentive did not generate conflict could be that it was not salient to the groups. The idea of a large cash incentive was initially very exciting to groups, but if they believed that the incentive was too good to be true or out of their reach based on the difficulty of the task, their expectancy of completing the task successfully may not have been high. As a result, even though the task was rated as engaging, exerting maximum effort may not have been important. Once groups began the task, it may have become clear that probability of winning the cash incentive was not great. Given the myriad of ways that groups could incorrectly complete the task, group members could have felt less confident about their success.

Conflict inducing pre-tasks, which involved reaching group consensus in a timed period, were also built into the study. This pre-task was chosen because it forced groups to make a unanimous choice on underlying issues about which they might have strong attitudinal positions. The task involved deciding on a single recipient in a field of five

people who would receive a heart for transplant. None of these methods were as successful as initially envisioned and the low means and variances on the conflict measure reflect this.

One reason the pre-task was not successful in raising conflict is that the task might not have been seen as relevant by the participants. This was not evaluated directly. Each of the group members are likely to have views associated with giving a heart to an obese person, or a smoker, or a reformed alcoholic. But if the task does not resonate personally with them, their attitudinal biases might not have been affected. As a result, it may have failed to generate the expected levels of debate and conflict that were expected to carry over to the primary decision making task.

Completing the primary decision task individually prior to group interaction was also used in an attempt to increase the levels of conflict perceptions. Developing an individual position on the desert survival task allowed the group member to formulate their own opinion before group discussion. Any differences of opinion in the group interaction, especially if the task outcome was required to be unanimous, should have helped to increase the levels of conflict. However, no increase in levels of conflict was found in the 18 groups in this study that provided individual data. The low levels of conflict in this instance may have also been due to the nature of the groups. Even though individuals within these 18 groups were given the opportunity to formulate an individual position prior to making the group decision, individuals may still have been prone to social monitoring and agreeableness. As such, they might have been willing to adjust their position rather than taking a definitive stand for their own position.

As a consideration for future studies, studying the influence of conflict on performance requires, first and foremost, that the use of any conflict manipulation result in adequate levels of conflict. If financial inducements are used, these should be large enough so that completing a task that might be considered difficult or impossible does not become a deterrent. In this study, the inducement of \$1000.00 was thought to be sufficiently large, but it might not have been large enough to overcome the belief of the low probability of successfully completing the task. As such, a relatively large inducement might work best when paired with a task where success appears to be attainable.

Similarly, pre-tasks should also have personal salience if possible for the group members. In this sample, all of the group members were students at Virginia Tech. Consequently, a more salient pretest might have been one involving circumstances relevant to student life. A scenario in which the current economic climate caused students to lose the opportunity to attend football games, or required them to have their class schedule selected for them might have generated higher levels of conflict among groups.

In the current study, adhoc groups were formed from strangers and the relative unfamiliarity of group members with each other may have resulted in some behavioral suppression. Perhaps stronger perceptions of conflict could also have been achieved with the use of pre-existing groups. Pre-existing groups might be able to generate greater levels of conflict quicker because group members have a history with each other. This familiarity could result in certain predispositions to conflict. Further, their expression of these behaviors would be less likely to be restrained as they might be less prone to social

monitoring and agreeableness. In order to explore this further, future experimental conflict research should consider the use of pre-existing groups.

Perhaps the best consideration for improving the level of conflict in studies is using a confederate. The pilot study findings outlined in detail in Appendix L support this assertion. In particular, using a confederate resulted in higher mean levels of both task and relationship conflict than not using a confederate. Additionally, there was a higher frequency of interaction behaviors within groups when using a confederate. The relationships between some of the interaction behaviors and performance were also better for groups which used a confederate. Further, the findings related to task and relationship conflict and behavior were also more promising for the pilot study, which included the confederate. In general, the data suggests that the use of a confederate may be advantageous for generating higher levels of conflict and providing more interaction among group members.

In spite of the benefits associated with using a confederate, the potential for confound when using a confederate need to be minimized. This can be achieved by using multiple different confederates with similar demographic characteristics for each type of conflict. This allows each confederate to maintain clarity on the different types of conflict. Further, the confederates should also be trained extensively and be able to clearly distinguish between both types of conflict conceptually and behaviorally. Using a well-trained confederate, as was done in some groups in the pilot study, also allows for making immediate adjustments to the conflict inducements if the conflict manipulations are not immediately salient to group members. Further, when the confederate was used more instances of behavioral interaction were noted, and more meaningful relationships

were found between both types of conflict, performance and interaction behaviors. The promising nature of the pilot study findings indicates that using a confederate to induce conflict may be of value to future studies of conflict.

Future experimental conflict researchers might also consider manipulating the diversity of their teams in order to heighten the level of conflict. While diversity may contribute to performance, it also negatively affects intragroup relationships (Triandis, Kurowski, & Gelfand, 1994). Pelled (1996) discussed the relationship between different forms of conflict and diversity and argued that visible diversity is more likely to trigger relationship conflict, whereas diversity in job-related demographic variables such as education and tenure is more likely to lead to task conflict. Jehn, Chadwick, and Thatcher (1997) also examined the effects of value congruence and visible demographic dissimilarity on task and relationship conflict and performance. They found that gender diversity was associated with greater relationship conflict and educational diversity was associated with greater task conflict. They also found less task and relationship conflict in groups that shared the deep level characteristic of value congruence. These findings suggest that the presence of some surface characteristics as well as the discovery of attitudinal differences among group members might increase the likelihood of conflict occurring in groups. These studies together offer guidance on how groups should be composed to heighten both task and relationship conflict.

Though achieving high levels of conflict in studies is extremely difficult, the pilot study data suggests that there is value in using a confederate to heighten the level of conflict in ad hoc groups. All of the above suggestions taken together or in some

combination would provide a foundation for future experimental conflict researchers to design conflict studies with higher conflict levels.

Behavioral Coding Scheme

Across Bales's studies, his framework represented a typical pattern of interaction in groups. Even though the interaction patterns for groups in this study were quite consistent with those produced by Bales's groups, the pattern of interaction behaviors failed to distinguish between good and poor performing groups and between moderate and low task conflict groups. This begs the question of whether there is value in Bales' framework for experimental conflict studies, or whether like other behavioral frameworks its application is limited in the current context.

A plausible explanation for the lack of behavioral distinction across groups might be that group performance in this study was determined to a great extent by the specific knowledge of individuals. Though this was not the case in the subsample of 18 groups, that subsample represents only a third of the entire sample. Because limited data were collected to control for the effects of individual-level knowledge, there is no way to ascertain with certainty for the larger group that the performance effects were not a result of individual knowledge. This shortcoming of the current study limits the possibility of determining the nature of the performance effects. As a cautionary note, it is recommended that this individual-level control be established in group-level conflict studies in order to minimize error variance related to performance.

Considering that the groups were adhoc groups, it is possible that certain behavioral categories had little relevance for the types of interaction prevalent in groups of this nature. Specifically, socio-emotional behaviors in general were relatively less

frequent than task-related behavior. Across groups there were consistently few if any instances of negative socio-emotional behaviors. This finding is not surprising, given that these behaviors may be less prevalent in adhoc groups where social monitoring and agreeableness may be high. However, had greater levels of conflict been generated, it would be possible to determine whether differences in these behaviors impact group decision making performance.

Further, though task-related behavior in general occurred more frequently, active task behaviors as a whole were more prevalent than task behaviors. The relative infrequency of passive task behaviors might be accounted for by the adhoc nature of the groups or maybe even the low levels of conflict. During behavioral observation, many of the group members in the study appeared to be relatively passive in their interaction and often allowed the discussion to be dominated by one or two particular group members.

The prevalence of giving opinion behaviors relative to other task behaviors is an interesting finding. The frequency of these behaviors indicates that groups were focused on moving the task forward by advancing beliefs relevant to the task. Further, this finding might also suggest the occurrence of the “best member” group effect (i.e., the dominance of a select one or two members who adopt a leadership role). In the presence of this observation, groups were generally passive and the relatively more frequent active behaviors in this category could be attributed to one or two main individuals within the group.

Recent research on work groups has acknowledged the difference between teamwork and taskwork. According to Salas, Rosen, Burke and Goodwin (2009), taskwork closely parallels knowledge, skills, abilities, and other characteristics (KSAO's)

that are necessary for individual task performance. Teamwork, on the other hand, is recognized by Salas et al. (2009) as the KSAO's that allow members to function interdependently within the team. This view of teamwork suggests that team members should not only possess individual technical expertise, but also expertise related to social dynamics. This conceptualization of teamwork is consistent with the view that many group processes may actually involve emergent states, while taskwork more closely aligns with traditional input-process-outcome (I-P-O) models. According to Moreland (1996), the I-P-O framework is insufficient for characterizing teams in a number of ways. Many of the mediating factors that intervene and transmit the influence of inputs to outcomes are not processes and may be emergent cognitive or affective states (Marks et al., 2001). As such, an I-P-O framework limits research by implying a single cycle linear path from inputs through outcomes.

Bales's framework more closely mirrors an I-P-O framework, in that his behavioral categorizations more closely capture task-work than teamwork. As such Bales's framework would be insufficient to fully capture teamwork processes inherent in interaction behavior among groups. Even though Bales's framework includes task and social elements, one could argue that the depth of his behavioral categorizations is inadequate relative to Salas's teamwork conceptualization. Bales framework in spite of its inadequacies is not without advantages. Bales framework may still be more pertinent for adhoc teams, given that the emergent states likely to occur through teamwork may be more relevant for teams with a more long term orientation.

There certainly may be value in the use of Bales framework to identify interaction behavior. The question remains, however, as to whether that value is applicable in the

current study. Bales's average pattern of group interaction has been identified across time and different group contexts. It also includes behaviors that are fine-grained and specific enough to capture during a conflict episode. Undoubtedly, a randomly selected individual would more quickly identify a behavioral instance of *giving suggestion* or *agreeing* than behavior related to forcing. Nevertheless, the inability of Bales's framework to distinguish between behaviors related to high and poor performing groups and high and low conflict groups reflects a general limitation of the framework that also applies to the current study. Given the inadequacies of Bales's framework in this regard, future behavioral conflict studies could benefit from including insights from Salas, et al. (2009). Their article delineates specific, measurable behavioral indicators that relate to teamwork behaviors and also have established relationships with performance.

Limitations

Several methodological limitations in the current study require discussion. Experimental conflict researchers examining behaviors related to conflict should make use of these limitations as a benchmark from which to make improvements to future studies. The main limitation of this study is the low levels of conflict across study groups for both task and relationship conflict. This study was undertaken with the knowledge that conflict studies in general are plagued by low variance. Even though efforts were made to try to maximize the level of conflict groups experienced, these efforts did not have the intended effect. Further, it is possible that the low levels of conflict could have also limited the range of interaction behaviors. Future conflict studies in general, and those that examine conflict experimentally in particular, should try to ensure that conflict is salient to participants during studies. The use of a confederate or of pre-existing groups

as a sample represents some initial solutions to this problem. Additional measures designed to induce conflict, such as zero-sum tasks, may help to boost the level of conflict experienced by participants and thus ensure a more viable experiment.

Another limitation is the lack of individual-level performance controls. The absence of this data limits the ability to conclude that any group performance gains or losses resulted from conflict or behaviors and not from the individual knowledge capability of the group members. While this was overlooked in the initial design of the study, it is imperative to note that future group-level studies of conflict should ensure the collection of this data. Obtaining this information is integral to minimizing error variance on the performance variable and more reasonably concluding that any effects were related to the independent variable.

This study utilizes a student sample, which may have somewhat different characteristics than an organizational sample: this may also represent a limitation. The majority of the participants in the study were between the age of 20 and 22 years and 87 % of the sample were upperclassmen. Using an older, more experienced sample, rather than a college student sample, may have been more advantageous to the current study. However, the use of a student sample may also be valuable, given that the experience of conflict and decision-making are not limited to just an organizational sample. Further, since many students today also have jobs while in college, there may be some similarities between employed college students and organizational employees. Future studies should utilize an organizational sample to determine whether differences in findings exist.

A final limitation concerns the length of the study. Group sessions typically lasted between 50 minutes and one hour. Students completed the study in three different parts, which consisted of three unique tasks. Initially, they completed a conflict inducing task, followed by a performance task, and concluded with a 100-item questionnaire, which included demographic information and self report measures. No research has explicitly determined an optimal length of time for studies or identified when response quality begins to deteriorate. Nevertheless, recent research suggests that longer studies may have a negative impact on the validity of responses (DeVellis, 1991), and longer survey assessments have been found to decrease validity in the latter half of studies. While it is not clear whether the length of this study impacted the response validity, prior research suggests that this consideration should not be overlooked in future studies.

Conclusion

Conflict has continued to generate a great deal of research interest over the years, especially given the prevalence of interpersonal conflict in organizational settings. This study aimed to contribute to the literature by examining behaviors that are relevant to conflict perceptions affecting performance. Though this offering represents an initial step toward examining conflict as it occurs, the modest findings of this study should not deter other conflict researchers from studying conflict experimentally. Future research should continue to focus on developing sufficient levels of conflict perceptions, and clarifying the measurement issues surrounding behavioral interaction that are prevalent in the conflict literature. Success in conducting conflict research that examines the importance of behavior in explaining the link between conflict perceptions and performance is likely to shed some light on clarifying the conflict phenomenon.

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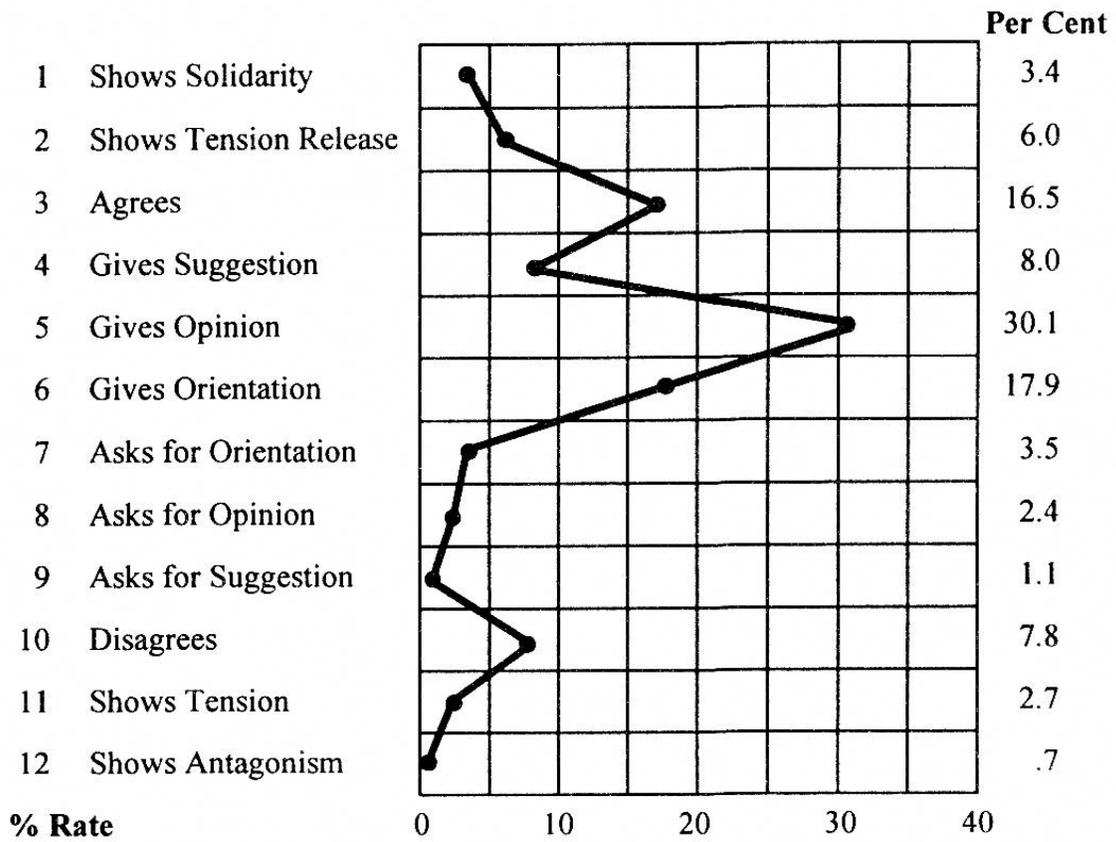
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Appendix A

Example of Bales' Mean Interaction Profile Chart

Interaction Profile for the Average of All Interactions
for Large Numbers of Small Discussion Groups



Appendix B

Examples of Bales' Interaction Profile Chart 1

Chart 6. Interaction profile of members in group with nondirective leader.

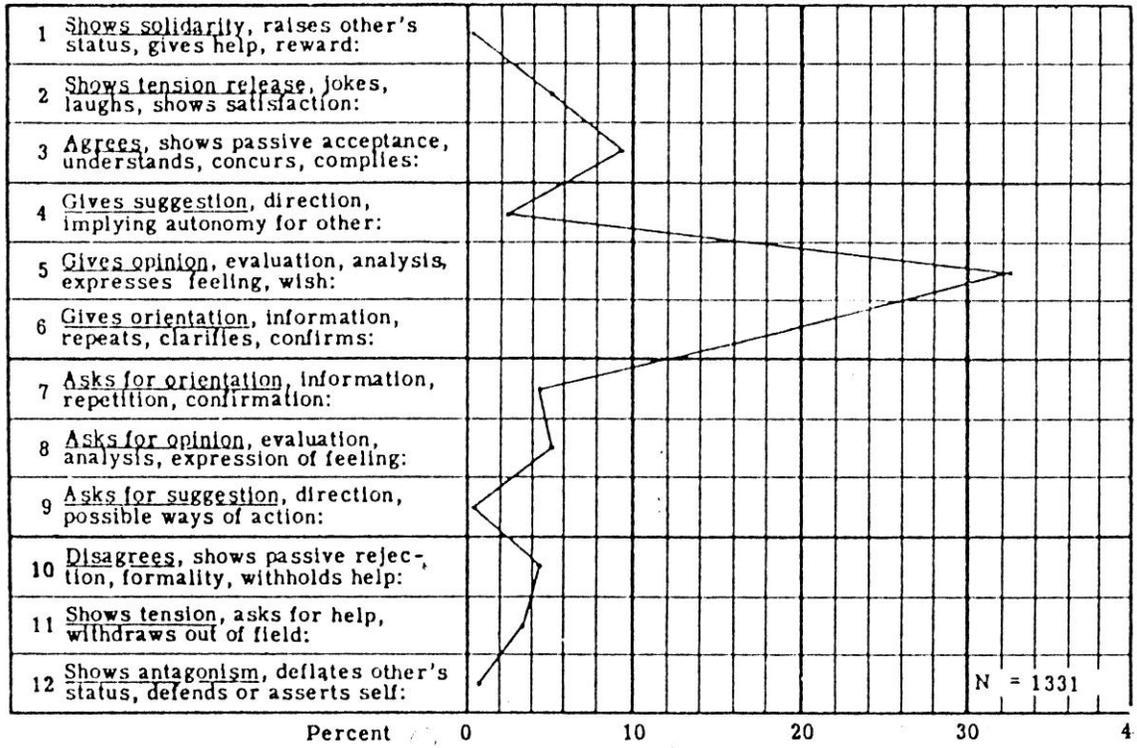
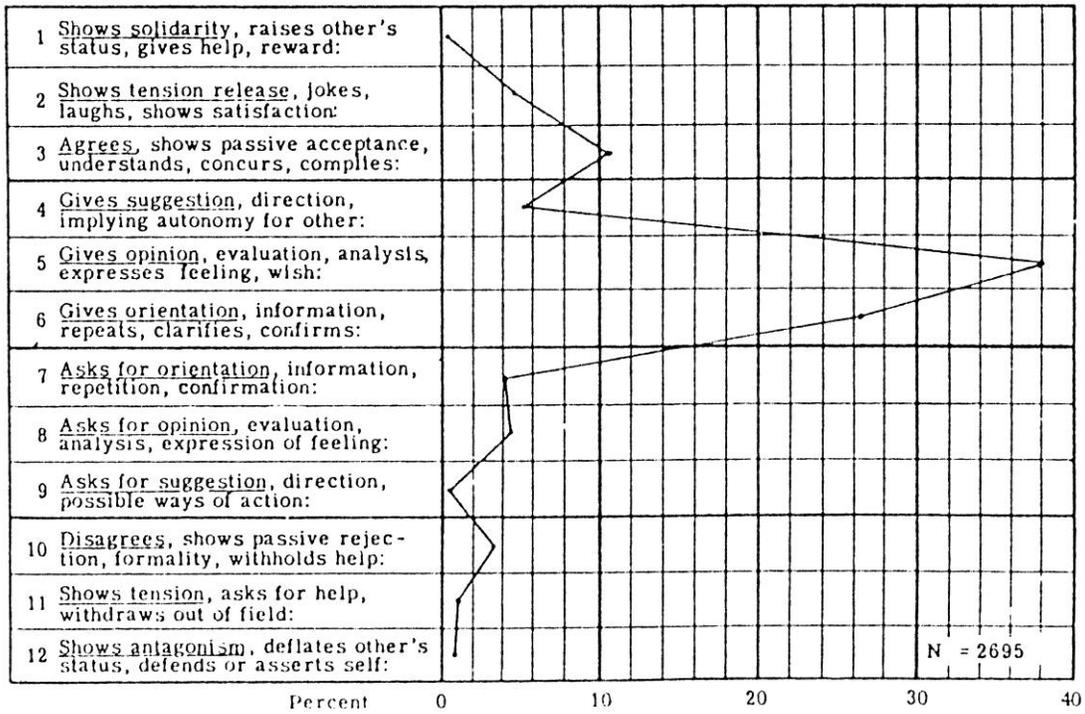


Chart 11. Interaction profile for thesis discussion group (The Group Mind).



Information Sheet

This study is about group relationships and the dynamics that are essential to their functioning. You will be asked to complete a group task and you will also be asked to respond to items on a questionnaire using a Scantron bubble sheet. This task will take approximately 1 hour of your time. Your interactive group session will also be audio and video taped as a means of complementing your written accounts. Participation in this study will earn you extra credit in your respective courses as well as provide you with experience in work team processes.

We hope that you are comfortable answering questions related to your group and their interaction, as well as recording your group's interaction. If not, you may be excused from further participation in this study without penalty. You are also free to refrain from answering any questions that you are uncomfortable with, but please understand that your responses will be anonymous and will remain completely confidential. This cover sheet will be removed before the data are entered into a computer. In addition, once all evaluations of the recordings of the session interactions associated with this research project are completed, the audio and video recordings will be erased. Even if you choose not to complete this questionnaire, you will still be awarded extra credit for your participation.

Several different dimensions are being assessed in this questionnaire. For each scale dimension, the number of responses available to you may vary. Thus, be careful to follow the specific instructions for each dimension when filling in the Scantron form. This is not a test. You cannot pass or fail. There isn't a best answer. And remember, your responses will remain completely confidential.

Statement of Permission: I have read and understand the conditions of this study. I have had all of my questions answered. I understand that I may choose not to answer any questions that I feel uncomfortable answering. I hereby acknowledge the above and give my voluntary consent for participation in this project. I understand that I may withdraw from this study at any time without penalty.

If I have any questions about this study I may contact:
Dr. Kevin Carlson (540) 231-4990
Principal Investigator

Dr. David Moore (540) 231-4991
Chair, Institutional Review Board

Thank you for your participation.

Signature

Date

Appendix D

Questionnaire

All data are being collected for research purposes. You can be assured of complete anonymity. Thus, please be as honest as you can be. These items must be completed individually. Please use your scantron bubble sheet to record your answers.

1. Gender: 1 = Male 2 = Female

2. Age: 1=18, 2=19, 3=20, 4=21, 5=22, 6= 23, 7=24, 8=25, 9=26+

3. Race/Ethnicity (choose the best “fit”):

- 1 = White American
- 2 = African American or Black
- 3 = Asian American
- 4 = Hispanic American
- 5 = American Indian
- 6 = Multi-ethnic American

4. Year in School:

- 1 = Freshman
- 2 = Sophomore
- 3 = Junior
- 4 = Senior
- 5 = Other

5. Major: 1 = Business 2 = Psychology 3 = Other

6. Did you have any prior experience that was relevant in helping you solve this task?

1 = no 2 = yes

7. Were you engaged during the task?

1 = no 2 = yes

8. Did you find this task interesting?

1 = no 2 = yes

Directions: Below are lists of statements or phrases used to assess group dynamics. Please rate every item; do not leave any item blank. Remember, there are no correct or incorrect answers, so try to describe the group interaction as accurately and honestly as you can. Please respond to all of the items. Rate each item on the scantron bubble sheet according to the 1 – 5 numeric scale listed below:

Please use the following scale for the items which follow:

Never	Seldom	Sometimes	Often	Always
1	2	3	4	5

9. How much do team members disagree about the content of group decisions?
10. How frequently are there disagreements about ideas in your group?
11. To what extent are there differences of professional opinion in your group?
12. How often do team members disagree regarding decisions of the group?
13. How much personal friction is there among members of your group?
14. How much are personality clashes evident in your group?
15. How much tension is there among members in your group?
16. To what extent are there grudges evident among members in your group?
17. I avoid being ‘put on the spot’; I keep conflicts to myself.
18. I use my influence to get my ideas accepted.
19. I usually try to split the difference with group members to resolve an issue.
20. I generally try to satisfy other group members’ needs.
21. I try to investigate an issue to find a solution that is acceptable to us.
22. I usually avoid open discussion of my differences with others.
23. I use my authority to make a decision in my favor.
24. I try to find a middle course to resolve an impasse.

Please use the following scale for the items which follow:

Never	Seldom	Sometimes	Often	Always
1	2	3	4	5

25. I usually accommodate to other's wishes.
26. I try to integrate my ideas with other's to come up with a joint decision.
27. I try to stay away from disagreements with others.
28. I use my expertise to make a decision that favors me.
29. I propose a middle ground for breaking deadlocks.
30. I give in to others' wishes.
31. I try to work with others to find solutions that satisfy both our expectations.
32. I try to keep my disagreement to myself to avoid others experiencing hard feelings.
33. I generally pursue my side of the issue.
34. I negotiate with others to reach a compromise.
35. I often go with other's suggestions.
36. I exchange accurate information with others so we can solve a problem together.
37. I try to avoid unpleasant exchanges with others.
38. I use my power to win the argument.
39. I use 'give and take' so that a compromise can be made.
40. I try to satisfy other group members' expectations.
41. I try to bring all our concerns out in the open so that issues can be resolved.

Please use the following scale for the items which follow:

Never	Seldom	Sometimes	Often	Always
1	2	3	4	5

- 42. I am interested in people
- 43. I sympathize with others' feelings
- 44. I have a soft heart
- 45. I take time out for others
- 46. I feel others' emotions
- 47. I make people feel at ease
- 48. I am not really interested in others
- 49. I insult people
- 50. I am not interested in other people's problems
- 51. I feel little concern for others
- 52. I am relaxed most of the time
- 53. I seldom feel blue
- 54. I get stressed out easily
- 55. I worry about things
- 56. I am easily disturbed
- 57. I get upset easily
- 58. I change my mood a lot
- 59. I have frequent mood swings
- 60. I get irritated easily

Please use the following scale for the items which follow:

Never	Seldom	Sometimes	Often	Always
1	2	3	4	5

61. I often feel blue

62. I would never take things that aren't mine

63. I would never cheat on my taxes

64. I believe that there is never an excuse for lying

65. I always admit it when I make a mistake

66. I rarely talk about sex

67. I return extra change when a cashier makes a mistake

68. I try to follow the rules

69. I easily resist temptations

70. I tell the truth

71. I rarely overindulge

72. I have sometimes had to tell a lie

73. I use swear words

74. I use flattery to get ahead

75. I am not always what I appear to be

76. I break rules

77. I cheat to get ahead

78. I don't always practice what I preach

79. I misuse power

80. I get back at others

Please use the following scale for the items which follow:

Never	Seldom	Sometimes	Often	Always
1	2	3	4	5

- 81. I am likely to show off if I get a chance
- 82. I am afraid that I will do the wrong thing
- 83. I feel threatened easily
- 84. I am easily hurt
- 85. I worry about things
- 86. I spend time thinking about past mistakes
- 87. I feel guilty when I say “no”
- 88. I feel crushed by setbacks
- 89. I don’t worry about things that have already happened
- 90. I am not easily bothered by things
- 91. I don’t let others discourage me
- 92. I listen to my feelings when making important decisions
- 93. I base my goals in life on aspiration rather than logic
- 94. I plan my life based on how I feel
- 95. I believe emotions give direction to life
- 96. I listen to my heart rather than my brain
- 97. I plan my life logically
- 98. I believe important decision should be based on logical reasoning
- 99. I listen to my brain rather than my heart
- 100. I make decisions based on fact not feeling

Debriefing Form

Thank you for participating in this study. Your input was greatly appreciated. The study in which you participated examined group dynamics related to decision making as well as conflict.

If necessary, I am available to answer any questions that you may have as well as address any confusion that you may still have concerning the study. Remember, your responses will remain completely confidential as this is not a test and you cannot pass or fail since there isn't a best answer.

We hope that you were comfortable answering questions related to your group and their interaction, as well as recording your group's interaction as your responses will be anonymous and will remain completely confidential. If not, you are free to request that the data obtained from the research be destroyed rather than used for data analysis.

Thanks again for your participation, and if you have any additional question after you leave today, feel free to contact

Dr. Kevin Carlson (540) 231-4990
Principal Investigator
kevinc@vt.edu

Felice Williams (540) 231-1124
Investigator
willif05@vt.edu

Statement of Permission: I have read and understand the conditions of this study. I have had all of my questions answered. I understand that I may choose to have my answers discarded because of my discomfort with the deception used in this study. I hereby acknowledge the above and give my voluntary consent for participation in this project.

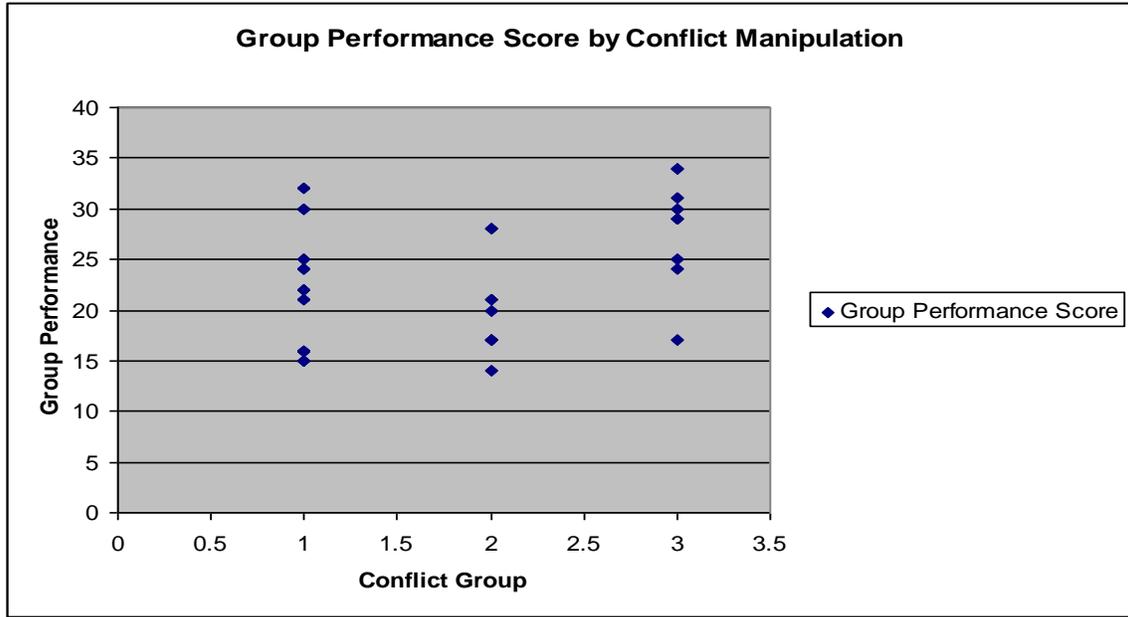
Signature

Date

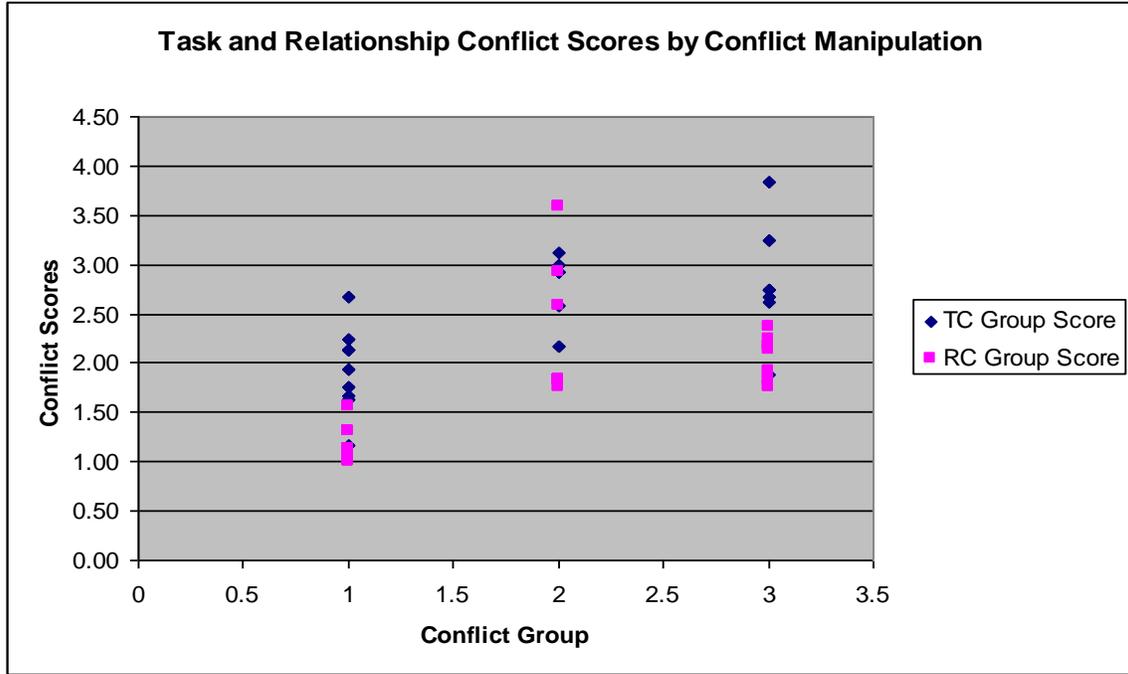
Due to a request by legal counsel for Human Synergistics, Appendix F has been removed.

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Appendix G



Appendix H



Appendix I

Group Pre-Task

Decision Making Pre-Task

You are a member of a team of individuals who is charged with the responsibility of selecting a heart transplant recipient from five candidates who are **equally medically compatible and eligible** for a heart that has become available.

All potential transplant candidates meet the medical criteria to receive the heart according to tissue tests, blood typing, and other medical criteria. All of the candidates are in immediate need of a heart transplant in order to live. Only one heart is available.

Rank the following possible heart recipients in order from (1) highest priority to (5) lowest priority for receiving the heart. Be prepared to present a clear rationale for your choices. No two candidates can be given the same ranking.

_____ (A) Pat is a mother in her early 40's with two teenage children and one pre-school child whose husband is out of prison on probation and employed as an auto-mechanic. She is a heavy smoker who has recently attempted to stop smoking, but without success.

_____ (B) Timothy is a widower in his 40s and the adoptive father of twin ten year old sons. He is the minister of a church in a crime ridden neighborhood of a large city and is a recovering alcoholic.

_____ (C) Chris is a markedly overweight environmentalist who is a middle aged single father of two adolescent children. He provides in home care for his disabled mother.

_____ (D) Frances is a laboratory assistant in her 20s who has just graduated with honors from college with a bachelor's degree in biology and has just been accepted to medical school. She is a registered eye donor. She has applied for, but not yet received, American citizenship.

_____ (E) Joe is a 55 year old stockbroker with two college age children and one elementary school age child. He promised to endow a new heart and lung research wing for the hospital if he receives a heart transplant.

Appendix K

Study Script for Desert Survival Task

This particular study is interested in how groups use information to make decisions. You will be given a task to complete where you are stranded in the desert and have managed to save a few items that may be helpful to your survival. As a group, please use the information that you were provided with and discuss how to rank in order of importance the items that were saved based on their importance to your survival. You will have 20 minutes with your group to come to a unanimous decision on how the items should be ranked.

I will not be present in the room and after your discussion you will be asked to complete a questionnaire individually. This should take approximately 10-15 minutes. Follow the instructions provided on the questionnaire and bubble in the corresponding responses on the scantron. Once you complete them please return them to me in the folder that they were provided in and wait for the group debriefing.

Appendix L

Pilot Study Findings

For the pilot study, a total of 22 groups were piloted over a period of two weeks. Groups were ad-hoc in nature and the sample consisted of 54% male and 46% female, with 75% self-identifying as White American and 12% as Asian American. The remainder of the sample included participants who were African American and Hispanic. Groups met in a laboratory setting to complete the desert survival task and a questionnaire. A confederate was included with these groups in order to heighten the level of task and relationship conflict within the groups.

In general, the levels for both task and relationship conflict appeared to be more salient in the pilot study than in the main study. The mean level of task conflict for the main study was $M = 2.56$, $SD = .42$, while that of the pilot study was $M = 2.71$, $SD = .34$. Similarly, for relationship conflict, higher mean levels were also noted for the pilot study $M = 2.89$, $SD = .57$ relative to the main study $M = 1.43$, $SD = .30$. Though both studies showed low levels of conflict overall for both task and relationship conflict, the moderately higher levels of conflict for the pilot study suggests that there could be additional benefits to using a confederate rather than building conflict into the study. Alternatively, using a conflict inducing pre-task in conjunction with a well-trained confederate might also represent an improvement over using either method individually for heightening the levels of conflict within a group.

In terms of the interaction behaviors, the behavioral patterns were fairly similar; however, there was a higher frequency of interaction behaviors in the pilot study than in the main study. The mean frequency of the interaction behavior in main study was $M =$

152.5, $SD = 57.2$, compared with a mean of $M = 171.3$, $SD = 57.2$ in the pilot study. Similarly, there were within-category behavioral differences between the main and pilot studies. While 65% of the behavior constituted active task behaviors in the main study, these behaviors represented 69% of the overall behavior in the pilot study. Similarly, for passive task behaviors there was higher occurrence in the pilot study (17%) than in the main study (13%). There were, however, less positive socio-emotional behaviors in the pilot study (15%) than in the main study (22%). In the pilot study, the general increased interaction and the relatively higher frequency of task behaviors relative to positive socio-emotional behaviors are interesting. This phenomenon might again support the presence of a confederate as a means of encouraging behavioral interaction. Similarly, the decrease in positive socio-emotional behaviors even when interaction behavior has increased overall might represent the potential of the confederate to at least promote relationship conflict. Further, the increased task related behaviors might again suggest the possible importance of the confederate of also creating task conflict.

In the pilot study, for behavior and performance, all of the coefficients—task and socio-emotional behaviors as well as for the 12 sub-categories related to performance—were larger for the main behavioral categories than they were in the main study. Though the coefficients increased, the majority of the coefficients were still too close to zero to be meaningful, and the relationships were still not statistically significant. The only exception of the 12 behaviors was *asks for opinion* ($r = -.43$, $p < .05$). More frequent instances of asking for opinion were negatively related to performance. Given that this behavior does not direct the task nor offer any task-relevant information, too much of this behavior is likely to be counterproductive to performance.

The pilot findings for task conflict and behavior were also more promising than the main findings related to task conflict and behavior. Two of the three positive socio-emotional behaviors were significantly related to task conflict: *showing tension release* ($r = -.58, p < .001$) and *agrees* ($r = -.66, p < .001$). This suggests that the presence of these behaviors did not co-occur with task conflict. This relationship supports the idea that task conflict might also be perceived negatively by group members given the absence of positive socio-emotional behaviors when task conflict behaviors occur.

A similar pattern of relationships were noted for relationship conflict where *showing tension release* ($r = -.59, p < .001$) and *agrees* ($r = -.55, p < .001$) were also negatively related. The rationale here is similar to that used to justify the negative relationship between task conflict and positive socio-emotional behaviors. It appears that in the presence of conflict, regardless of the type of conflict, group members become less inclined to display positive socio-emotional behaviors. Further, relationship conflict was also significantly related to *asks for opinion* ($r = .47, p < .05$) and *showing tension* ($r = .57, p < .001$). This finding perhaps represents some possible insight into the kinds of behaviors which may be perceived negatively by group members.

These pilot study findings indicate that a shift in the study approach to one that uses a confederate to generate higher levels of conflict may provide better results using the same behavioral coding scheme. Future researchers should consider the use of a confederate to first achieve greater levels of conflict. Once this has been accomplished, conflict researchers should be better able to examine the impact of conflict on team interaction and performance among other possible outcomes.