The paradox of intragroup conflict

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The Paradox of Intragroup Conflict

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Cover Photo: "Nemesia's shoes". The photograph was taken by the author at the Museo Girón, Playa Girón, Cuba. The shoes depicted in the photograph belonged to Nemesia Rodriguez Montano, a young girl who was injured and whose mother was killed during the Bay of Pigs Invasion in Cuba, April 17-19, 1961 (see pp. 10-11).

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Chapter 1
The paradox of intragroup conflict: An introduction

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Humans are social animals. Whether it is at work, at home, or during leisure time, people tend to spend most of their time in the presence of other human beings. Being around other people and working together is not always easy, however. Worldwide, employees spend more than two hours every week – approximately one day a month – dealing with workplace conflicts (CPP, 2008). These conflicts may range from simple quarrels to disputes that have to be resolved in court, and may involve individuals, groups, or even whole departments.

In this dissertation I focus on the consequences of conflicts that occur within groups. More specifically, I investigate the consequences of conflicts that arise within a group of individuals that shares the same goal, and has a mutual interest in obtaining this goal. Examples of such groups are top management teams trying to maximize revenues, and research and development teams developing a new product, but also sports teams trying to defeat the opposing team, or political parties striving to extend their number of seats in parliament. Within these groups, conflicts may arise from diverging opinions or ideas, and may involve a wide range of issues including the group's core objectives, the division of responsibilities, preferences for different decision alternatives, or simply personal incompatibilities.

Understanding the consequences of such conflicts is essential for effective group and organizational performance and, therefore, intragroup conflict has received a considerable amount of research attention already (for reviews, see Jehn & Bendersky, 2003; De Dreu & Weingart, 2003b). Past research on intragroup conflict suggests that intragroup conflict poses a paradox for group functioning because groups may benefit from as well be hurt by it. That is, on one hand, conflict may stimulate critical thinking among group members and facilitate superior group performance (e.g., Amason, 1996; Jehn, 1995; Tjosvold, 2008), while, on the other hand, conflicts may deter group functioning, for example, due to interpersonal animosity and loss of time (e.g., De Dreu, 2008; Hinds & Mortensen, 2005; Lovelace, Shapiro, & Weingart, 2001). Thus far, and in spite of many decades of research, much remains to be understood however about whether and when groups will benefit from or be hurt by disagreements among group members.

The aim of this dissertation is to provide a better understanding of the consequences of intragroup conflict, and to examine how these

consequences differ across individuals, contexts, and types of conflict. In doing so, it will review and address the paradoxical findings of past research that have linked conflict to inferior, but also to superior, group outcomes. In this first chapter, the primary aim is threefold. The first aim is to show the paradox that exists in past research on intragroup conflict. The second aim is to show how this paradox can be partly resolved by controlling for contextual and individual factors that affect how people respond to conflicts. The third, and final, aim is to introduce the different studies presented in this dissertation, and to explain how they address and investigate possible resolutions to the paradox of intragroup conflict.

Research on Intragroup Conflict: A Short History

Intragroup conflict can broadly be defined as the process emerging from perceived incompatibilities or differences among group members (De Dreu & Gelfand, 2008). Traditionally, scholars thought of intragroup conflicts as a hindrance to effective group functioning (Argyris, 1962; Blake & Mouton, 1984; Pondy, 1967). Conflicts were assumed to confiscate precious time and energy, and to reduce team effectiveness by making group members more dissatisfied and less committed to their group (Argyris, 1962; Blake & Mouton, 1984; Brown, 1983; Pondy, 1967). In support of this pessimistic view of intragroup conflict, empirical evidence showed that group members' satisfaction with their group was higher in low-conflict groups compared to high-conflict groups (Gladstein, 1984; Wall & Nolan, 1986) and that low-conflict groups performed better at the group, as well as the individual level (Evan, 1965; Gladstein, 1984).

Over time, researchers started to embrace a more nuanced picture of intragroup conflict. They began to acknowledge the potentially positive effects of conflict on group decision-making, and started to highlight the problems that can arise when group members shy away from conflict and focus too much on maintaining intragroup consensus (Cosier & Schwenk, 1990; Janis, 1972; Mintzberg, Raisinghani, & Theoret, 1976; Schweiger, Sandberg, & Ragan, 1986). In particular, Janis's (1972) descriptions of the negative consequences of "groupthink" illustrated the potential functionality of intragroup conflict for group decision-making. Groupthink can be defined as the deterioration of mental efficiency, reality testing, and moral judgment that results from in-group pressures

and refers to the tendency for groups to become so concerned about group solidarity that they fail to critically and realistically evaluate their decisions, initial viewpoints, and assumptions (e.g., Mullen, Anthony, Salas, & Driskell, 1994; Park, 1990). Janis's most famous example of groupthink is the "Bay of Pigs fiasco," referring to the landing of 1,500 Cuban exiles at the Bay of Pigs in southern Cuba in 1961 in an attempt to overthrow the regime of Fidel Castro. The invasion was approved and supported by US President John F. Kennedy but was a clear and dismal failure. Not only were none of the military objectives achieved, the invasion worsened diplomatic relations between the US and Cuba (as well as the USSR) and almost instigated a nuclear war.

Janis's (1972) analysis of the fiasco highlighted that similarly to other highly cohesive groups, Kennedy's cabinet faced strong pressures to maintain "esprit de corps," causing a lack of internal debate about the support for the invasion. This, in turn, interfered with critical evaluation of their decisions and plans, and led to inadequate reality testing, and the unconscious development of shared illusions about their invulnerability as well as the advantages of the invasion (Janis, 1972). Although empirical research on groupthink has been limited (cf. Turner & Pratkanis, 1998) and Janis's analyses have been criticized (e.g., Kramer, 1998), groupthink theory has had a strong influence on how researchers, as well as practitioners, have approached group decision-making. By stressing the potential risks of too much consensus-seeking, and a lack of debate and conflict among group members, groupthink theory set the way for a more positive view of intragroup conflict.

Another, and related, stream of research also began to highlight the potentially positive effects of intragroup conflict. Research on group decision making showed that groups often make inaccurate decisions because group members neglect to exchange information that before the discussion is known to only one (or only a few) individual group member(s) (for overviews see Stasser, 1992; Wittenbaum & Stasser, 1996). Instead of exchanging this so-called "unshared information", it was found that group members have a tendency to discuss and make use of information that is already known and accessible to all group members. This focus on so-called "shared information" makes biased and inaccurate decisions more likely. More specifically, because group members neglect to share their "unshared" information, they fail to present information

that could challenge pre-dominant viewpoints and help groups to make more accurate decisions.

Conflicts came to be seen as an antidote to groupthink and biased information processing. Disagreements amongst group members were thought to ensure that different decision alternatives would be brought to bear, and that group members would consider different decision alternatives more critically and thoroughly. Soon, researchers began to examine whether groups could indeed benefit from stimulating debate between group members. Research on the "devil's advocacy" procedure (Herbert & Estes, 1977), for example, started to examine whether groups performed better when one group member (the "devil's advocate") would present counterarguments to the solutions that the other group members came up with. The assumption was that this debate (that is, conflict) would help group members to recognize all the limitations and disadvantages of their initial solutions, which would then, in turn, stimulate them to come up with more superior and creative solutions (e.g., Schwenk, 1984, 1990; Schwenk & Cosier, 1993). Several empirical studies indeed demonstrated that devil's advocacy, and other interaction techniques that compel group members to debate and disagree about different decision alternatives, facilitate superior decision-making. Groups employing one of these techniques were consistently shown to make better and more accurate decisions than groups using a consensus procedure (Schweiger et al., 1986; Schweiger, Sandberg, & Rechner, 1989; Schwenk & Cosier, 1993; Schwenk & Valacich, 1994).

These studies, thus, supported a more positive view of conflict. Yet, a closer look at the results showed several negative consequences inherent to intragroup conflict. For example, in groups that stimulated intragroup disagreements, group members showed less acceptance of the decision (e.g., Schweiger, et al., 1989), were less satisfied with the group, and also were less committed to the group (Schweiger et al., 1986; Schwenk, 1990; Schwenk & Cosier, 1993). Intragroup conflict, thus, seemed to pose a paradox: While it appeared to be important for high-quality decisions, it also appeared to be an impediment to group members' morale and acceptance of decisions, which could hurt group functioning especially in the long run (Amason, 1996).

Distinguishing Different Types of Intragroup Conflict

A solution to this paradox was sought in distinguishing different forms of conflict (e.g., Jehn, 1994; Pinkley, 1990; Rahim, 1983; Wall & Nolan, 1986). The negative effects of conflict were attributed to *relationship conflicts*, which involve disagreements among group members about interpersonal issues, such as personality differences or differences in norms and values, and which tend to be relatively emotional in nature (e.g., Amason, 1996; Guetzkow & Gyr, 1954; Jehn, 1994). The more beneficial effects of conflict were ascribed to *task conflicts*, which entail disagreements among group members about the content and outcomes of the task being performed.

Due to their more personal and emotional nature, relationship conflicts were assumed to be difficult to manage and more likely to escalate (e.g., Brehmer, 1976; Cosier & Rose, 1977; Priem & Price, 1991; Torrance, 1957). Relationship conflicts were also assumed to foster avoidance, cynicism, mistrust, and counter-efforts aimed at obstructing other group members (e.g., Amason, 1996). Likewise, the anxiety produced by relationship conflict was thought to inhibit cognitive functioning (e.g., Jehn, 1995; Jehn & Mannix, 2001). Hence, relationship conflict was assumed to reduce group members' satisfaction and willingness to work for the group, and to undermine group functioning, also because the time group members spent responding to relationship conflict could have been spent more efficiently on task accomplishment (Evan, 1965).

In contrast to relationship conflict, task conflict was assumed to have more beneficial consequences. Task-related disagreements were assumed to facilitate superior decisions but also to enhance creativity and innovation. For example, researchers argued that when a task conflict would arise over different decision-alternatives, it would stimulate a more critical evaluation by group members of each team member's ideas, thereby facilitating an increased understanding of the task at hand, and preventing premature consensus and confirmatory biases in group decision-making (e.g., Jehn, 1995; Pelled, Xin, & Eisenhardt, 1999; Schweiger et al., 1986; Schwenk, 1990; Van de Vliert & De Dreu, 1994). Moreover, given that task conflict facilitates group members voicing their own opinions, task conflict was assumed to aid the affective acceptance of group decisions and improve group members' commitment to these

decisions (e.g., Amason, 1996; Amason, Thompson, Hochwater, & Harrison, 1995; Nemeth, 1995).

In addition to relationship conflict and task conflict, later evidence was found for a third type of conflict: process conflict, entailing disagreements among group members about the logistics of task accomplishment, such as the delegation of tasks and responsibilities (e.g., Jehn & Bendersky, 2003; Jehn, Northcraft, & Neale, 1999). In contrast to task conflicts, which are about the content of the task itself, process conflicts are about the means to accomplish the specific tasks, such as the strategies for dealing with the task (Jehn & Bendesky, 2003). Examples of process conflicts are disagreements about who will be responsible for certain task requirements, or disagreements about when certain tasks need to be finished. For instance, when members of a top management team disagree about a certain investment decision, they are facing a task conflict. When they disagree about who will be responsible for setting the investment in motion, they are facing a process conflict.

Contrary to the assumed uniformly positive effects of task conflict and negative effects of relationship conflict, the impact of process conflict on group outcomes was assumed to be less straightforward. On the one hand, process conflicts were assumed to improve group outcomes and group performance in particular, because they may facilitate critical reevaluations of processes, standards, and task and resource assignments (e.g., Jehn & Mannix, 2001). On the other hand, process conflicts were assumed to diminish group outcomes, because the issues at the heart of process conflicts, such as task delegation or role assignment, often carry personal connotations in terms of implied capabilities or respect within the group (cf. Jehn & Bendersky, 2003). For example, when a process conflict arises over the delegation of tasks, members who disagree with their task assignments may feel the task is below them and feel that being assigned the task is a personal insult. In this way, process conflicts may become highly personal (cf. Greer & Jehn, 2007) and may have long-term negative effects on group functioning (Greer, Jehn, & Mannix, 2008).

Task, Relationship, and Process Conflict: Initial Research Findings

Early research on the different types of intragroup conflict mainly examined the consequences of task and relationship conflict. The first findings supported the belief that the task vs. relationship conflict

distinction would "solve" the paradox of intragroup conflict. Specifically, multiple studies showed that relationship conflict was indeed negatively associated with group outcomes such as decision quality (Amason & Mooney, 1999), overall performance (e.g., Jehn, Chadwick, & Thatcher, 1997), group members' satisfaction (De Dreu & Van Vianen, 2001) and affective acceptance of decisions (Amason, 1996). Task conflict, on the other hand, was found to be positively associated with decision quality (Amason, 1996), cognitive task performance (Pelled et al., 1999), and performance more generally (Jehn, 1994) whereas the general association between process conflict and group outcomes was consistently negative (e.g., Jehn et al., 1999; Jehn & Mannix, 2001; Thatcher, Jehn, & Zanutto, 2003).

Despite these results, theoretical as well empirical issues remained, especially regarding the potential positive effects of task conflict. Jehn (1995), for example, found that the positive effects of task conflict were restricted to groups working on non-routine tasks, during which conflict may have helped group members' understanding of the task at hand. Groups working on routine tasks, on the other hand, were found to suffer from task conflict, presumably because the potential benefits were outweighed by the potential costs associated with the conflict (for instance, the time spent on discussing different task-related viewpoints). Likewise, Lovelace et al. (2001) found that across 43 cross-functional new product teams, the level of task conflict was negatively related to the groups' level and quality of innovations. Moreover, several studies showed task conflict to be negatively related to group member satisfaction (DeChurch & Marks, 2001; Jehn, 1995).

To examine this heterogeneity in research findings, De Dreu and Weingart (2003b) performed a meta-analysis of 30 empirical studies on task and relationship conflict, to examine the associations amongst relationship conflict, task conflict, group performance, and group member satisfaction. Consistent with the assumed negative effects of relationship conflict, the results revealed a strong negative association between relationship conflict and both team performance and team member satisfaction. Contrary to the assumed beneficial effects of task conflict, their results, however, also showed that the overall associations amongst task conflict, group satisfaction, and group performance were strongly negative. Not only was the association between task conflict and group

performance negative, it also was just as strong as the association between relationship conflict and group performance. De Dreu and Weingart therefore concluded that "it seems safe to stop assuming that, whereas relationship conflict is detrimental to team performance, task conflict improves team performance" (De Dreu & Weingart, 2003b, p. 748).

In sum, intragroup conflicts pose a paradox for group functioning: disagreements among group members may have both detrimental and beneficial consequences for group performance and group member morale. Researchers sought the solution to this paradox in distinguishing among different forms of conflict (i.e., process, relationship, and task conflict). While relationship conflict, and to a lesser extent process conflict, were assumed to negatively affect group outcomes, task conflict was assumed to facilitate superior group outcomes (e.g., Amason, 1996; Jehn, 1994; Jehn & Bendersky, 2003; Pelled et al., 1999). Yet, reviews of the literature suggest that a distinction between conflict types does not solve the paradox. In contrast to what was generally assumed, the general association between each of the three types of conflict and group outcomes was consistently negative (e.g., De Dreu & Weingart, 2003b; Jehn et al., 1999; Jehn & Mannix, 2001; Thatcher, et al., 2003).

Intragroup Conflict: The Current State of Research

Since the meta-analysis by De Dreu and Weingart (2003b), more than 80 new empirical studies on intragroup conflict have been conducted to better understand the circumstances under which intragroup conflicts may either benefit or inhibit group outcomes (e.g., Bayazit & Mannix, 2003; De Dreu, 2006; Farh, Lee, & Farh, 2010; Gamero, Gonzalez-Roma, & Peiro, 2008; Goncalo, Polman, & Maslach, 2010; Langfred, 2007; Mannes, 2009; Mohammed & Angell, 2004; Olson, Parayitam, & Bao, 2007; Parayitam & Dooley, 2007; Rispens, Greer, & Jehn, 2007; Tekleab, Quigley, & Tesluk, 2009; Wilkens & London, 2006). Several of these studies showed relationships between intragroup conflict and group outcomes that were inconsistent with the conclusions of De Dreu and Weingart (2003b). For example, contrary to the findings of De Dreu and Weingart (2003b), experimental studies (Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006) as well as field studies linked (moderate) levels of task conflict to superior innovation and creativity, as

well as group performance (e.g., Bayazit & Mannix, 2003; De Dreu, 2006; Farh, et al., 2010; Wilkins & London, 2006). Likewise, some studies even showed a positive association between relationship conflict and group performance (Jehn, Greer, Levine, & Szulanski, 2008; Parayitam & Dooley, 2007).

Many of these studies moved beyond the assumption of a uniformly positive or negative association between conflict and group outcomes, and investigated more complex relationships between conflict and group outcomes. The impact of intragroup conflict, for example, was shown to be contingent on characteristics such as the timing of the conflict (Farh et al., 2010; Jehn & Mannix, 2001), the intensity of the conflict (De Dreu, 2006), the interaction between types of conflict (Shaw, Zhu, Duffy, Scott, & Shih, 2011), and norms facilitating the expression of different viewpoints (Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012). Moreover, in addition to performance and satisfaction, which were the two main outcome variables studied by De Dreu and Weingart (2003b), these studies examined the association between intragroup conflict and other group outcomes such as group members' commitment and intention to continue working for the group.

To examine these developments in the conflict literature, I decided to conduct a new meta-analysis, which is presented in Chapter 2 of this dissertation. The aim of the meta-analysis was to utilize this new wave of studies to re-examine the association between relationship, task, and process conflict and a broader set of group outcomes. Moreover, the meta-analysis aimed to investigate how these relationships are moderated by differences between studies in terms of context (e.g., task type or cultural context) and methodology (e.g., the way in which conflict was measured). Finally, I also aimed to examine different outcomes, and I focused not only on indicators of group performance, such as innovation, productivity, and effectiveness (Ancona & Caldwell, 1992; Van der Vegt & Bunderson, 2005) but also on the motivational and affective states of groups, such as intragroup cohesion, trust, group members' intention to remain working in the group, and group member satisfaction and commitment (Balkundi & Harrison, 2006; Barrick, Stewart, Neubert, & Mount, 1998; Hackman & Wageman, 2005; Marks, Mathieu, & Zaccaro, 2001).

As shown in Chapter 2, the meta-analysis examined 8880 groups across 116 studies (484 effect sizes). To address the variety in research findings and to better understand the effects of intragroup conflict on group outcomes, the meta-analysis examines a broad array of possible moderators. Moreover, in addition to task and relationship conflicts, the chapter provides a first meta-analysis of the effects of process conflict on group outcomes. Finally, to enable a more general comparison of the effects of conflict on a variety of group outcomes, it expands on the work of De Dreu and Weingart (2003b) by examining the relationships between intragroup conflict and a wider array of group outcomes.

The meta-analysis presented in Chapter 2 shows that distinguishing among different types of conflict only solves part of the paradox of intragroup conflict. The distinction between different types of conflict has helped to identify conflicts that have a tendency to hurt group outcomes (i.e., relationship and process conflict) and conflicts that have the potential to help group outcomes (i.e., task conflict). Yet, additional research is needed to identify the specific individual, situational, and conflict-specific characteristics that determine how intragroup conflict, and task conflict in particular, affects group outcomes. In response to this, in Chapter 3, 4 and 5, I report on six studies in which I examined how contextual characteristics (i.e., relationship conflict, considered in Chapter 3) and individual characteristics (i.e., psychophysiological coping appraisals, considered in Chapters 4 and 5) affect the association between task conflict and group performance.

The Damaging Effects of Relationship Conflict

The meta-analysis in Chapter 2 brings to light a strong need to identify the circumstances that may help or hinder the potential beneficial effect of task conflict on group performance (see also Behfar & Thompson, 2007; Jehn & Bendersky, 2003; De Dreu & Weingart, 2003a). One particularly important circumstance appears to be the presence of relationship conflict (see also Shaw et al., 2011). That is, in line with the meta-analysis of De Dreu and Weingart (2003b), the meta-analysis presented in Chapter 2 shows that the association between task conflict and group performance tends to be more positive in studies where the correlation between task and relationship conflict is relatively weak, or even negative. This finding suggests that groups are more likely to benefit

from a task conflict when at the same time there is little or no relationship conflict among the group members. However, neither of the two meta-analyses provides any direct evidence for this "damaging effect" of relationship conflict. That is, the meta-analyses draw inferences at the study level of analyses and, thus, are not able to examine what has truly taken place within the groups. Neither meta-analysis, therefore, can investigate the different processes that underlie this potentially damaging effect of relationship conflict (cf. Lau & Cobb, 2010).

To fill this void, in Chapter 3, I investigate whether and how relationship conflict impairs the link between task conflict and group decision-making. I hypothesize that relationship conflict inhibits the potentially beneficial effect of task conflict due to an increased tendency of group members to rigidly hold on to their suboptimal initial decision-preferences (e.g., Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007; Greitemeyer & Schulz-Hardt, 2003). That is, when people misinterpret a task conflict as a relationship conflict, it means they take the conflict "personally" and that their "ego" gets involved. Due to the misinterpretation of a task conflict as a relationship conflict, individuals may, therefore, become defensive (e.g., Baumeister, Smart, & Boden, 1996), which may cause an escalation of commitment and even positional bargaining in which individuals cling to a certain task-related viewpoint and argue for it as a goal in itself, regardless of any underlying interests (Fisher & Ury, 1981).

Yet, relationship conflicts may also occur independently from a task conflict, rather than arising through misinterpretations of task conflict. For example, besides being involved in a task-related disagreement, group members may also disagree about more personal matters, such as political or artistic preferences. This type of relationship conflict, which is not directly related to the task at hand, is likely to cause rigidity during a task-related debate as well. That is, when debates about more personal matters create friction, negative emotions, and interpersonal animosity, this may easily spill over, and determine the way group members react to a task-related debate. The presence of a relationship conflict, for example, may encourage hostile interpretations by group members of each other's task-related viewpoints, thereby creating "a self-fulfilling prophecy of mutual hostility and conflict escalation" (Simons & Peterson, 2000, p.104). Thus, instead of

approaching a task-related debate with an open mind, the presence of relationship conflict may cause group members to be more competitive during a task conflict and this may reduce their willingness to consider and use the viewpoints of their fellow group members (e.g., Janssen, Van de Vliert, & Veenstra, 1999). In sum, both the misinterpretation of a task conflict as a relationship conflict, as well as the co-occurrence of a task conflict with a relationship "conflict, are likely to augment group members' rigidity in group decision-making.

In Chapter 3 I examine these ideas across two studies. In both studies, I confronted participants with exactly the same task conflict. The task conflict involves two other group members who openly disagree with the participants' initial opinion during a group decision-making task, and who both opt for an alternative solution to the task. In the first study, I examine the extent to which individuals misinterpret the task conflict as a relationship conflict. In the second study I manipulate the presence (vs. absence) of a relationship conflict in addition to the task conflict. To measure the level of rigidity, I examine individuals' tendency to change their initial viewpoint in response to the task conflict; in this case, participants are able to choose between sticking to their initial opinion and changing their initial opinion by adopting the viewpoints of their group members. The main research question in Chapter 3 is whether misinterpretation of task conflict as relationship conflict, or the presence of a relationship conflict, indeed inhibits the potentially beneficial effects of task conflict, and whether it does so due to an increased tendency of group members to rigidly hold on to their suboptimal initial decision preferences.

Coping with Intragroup Conflict

Although conflicts are often considered stressful (e.g., Jehn, 1997), in the vast literature on intragroup conflict, relatively little attention has been paid to the role of stress and coping appraisals (see Dijkstra, Van Dierendonck, & Evers, 2005 for an exception). Yet, across several research disciplines, ranging from organizational behavior (Kamphuis, Gaillard, & Vogelaar, 2011; Staw, Sandelands, & Dutton, 1981), to political science (e.g., Thorisdottir & Jost, 2011) to psychophysiology (Kassam, Koslov, & Mendes, 2009), stress has been shown to affect individuals' ability to make decisions and process diverging information.

Therefore, in Chapters 4 and 5 I examine how stress may shape the link between a conflict and decision-making.

To examine the experienced stressfulness of a conflict, in Chapters 4 and 5 I apply the biopsychosocial model of challenge and threat (BPSM; e.g., Blascovich & Tomaka, 1996; Blascovich & Mendes, 2010). The BPSM distinguishes challenge states (i.e., "adaptive stress") from threat states (i.e., "maladaptive stress") and pertains to situations that are goal relevant and require individuals to actively cope with stressors. According to the BPSM, challenge and threat states are the outcome of an evaluation of the demands of the situation (i.e., required effort, uncertainty, and danger) and the person's resources to deal with these demands (i.e., the available skills, knowledge, support, and dispositions). A threat state occurs when individuals evaluate the demands of a situation as exceeding their personal resources, while a challenge state occurs when individuals evaluate resources as matching or exceeding demands (e.g., Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996; Tomaka, Blascovich, Kelsey, & Leitten, 1993). Importantly, the BPSM suggests that threat and challenge states can be measured not only by demands and resource appraisals, but also by specific patterns of cardiovascular reactivity (e.g., Blascovich & Tomaka, 1996).

The key question addressed in Chapters 4 and 5 is whether the impact of a task conflict on group decision-making depends on whether individuals are in a threat or challenge state during the conflict. In Chapter 4, I present three studies in which individuals are confronted with a task conflict, and examine how individuals respond, in terms of information processing and rigidity in holding on to their initial viewpoint, and how this differs between those exhibiting a threat or a challenge state. Across the three studies multiple methods are used. The first study applies a threat/challenge prime in combination with a conflict scenario. In the second and third study I apply the experimental induction of task conflict that is also used in Chapter 3, and examine self-reported threat/challenge states regarding the task conflict. Finally, in the third study I replicate study 2 but also cardiovascular measurements are applied to examine threat and challenge states.

Across the three studies I expected that when group members exhibit a threat state (rather than a challenge state) during the task conflict, they are more likely to fail to adequately utilize the information central to

their diverging viewpoints, and show a bias towards their initially preferred decision alternative. For example, work on the biopsychosocial model has shown a negative relationship between physiological markers of threat and cognitive adjustment to initial anchors (e.g., Kassam et al., 2009). Likewise, work on the threat-rigidity hypothesis (e.g. Staw, et al., 1981) has shown that in the face of financial or physical threats, group members start to rely more on dominant and well-learned strategies or decisions, show less attention to peripheral information, and restrict their information processing (e.g., Kamphuis, et al., 2011). Hence, I assumed that during task conflict, a threat state (compared to a challenge state) will reduce motivation, as well as the capacity for information processing, and cause a so-called "closed-mindedness" towards others' opinions (e.g., Thorisdottir & Jost, 2011).

When Threat during Task Conflict May Facilitate Superior Decision-making

The findings presented in Chapter 4 suggest that psychological as well as physiological threat states during a task conflict are negatively related to decision-making quality. That is, Chapter 4 suggests that individuals exhibiting a threat state are more likely to make an incorrect decision because they are more likely to rigidly hold onto an incorrect initial viewpoint than individuals exhibiting a challenge state. This finding raises an interesting question, however. What happens when an individual's initial opinion is, in fact, correct? When, in such a case, individuals behave more rigidly, and defend and hold on to their initial answer, does that mean that a threat state can be beneficial for decision quality?

Chapter 5 aims to answer this question. To that end, I developed a new experimental induction of a task conflict in which the initially preferred decision alternative of the participants is actually correct. That is, the task used in Chapters 3 and 4 is a so-called hidden profile task, in which the initial opinion of the group members is inherently incorrect and only by falsifying an initial viewpoint and by using each other's information can group members solve the task. Therefore, in Chapter 5 I had to make use of another task in which participants' initial decision was correct. In addition, the task should make it possible to create a debate among group members and to measure the level of rigidity and the quality

of the decision that was made. The task I found to meet these requirements was the NASA dilemma (see Cammalleri, Hendrick, Pittman, Blout, & Prather, 1973), a joint decision-making task in which participants are presented with a moon-landing scenario and a set of 14 objects. It was the participant's task to order these items in terms of their usefulness for survival on the moon. The NASA dilemma, like similar tasks such as the "Lost at Sea" and "Desert Survival" dilemmas, is often used as tools to study and educate people in group decision-making techniques. In a pretest I identified several objects that most of the participants correctly considered to be crucial (or not) for survival on the moon. Based on these results, I developed an induction of task conflict, in which a confederate openly disagrees with the participants' correct initial solution, and provides several reasons for why she believes another ordering of the 14 items would be more appropriate.

In addition to introducing a novel task and task conflict, in Chapter 5 I also improve our physiological measurements by measuring threat and challenge states during the conflict itself, rather than during final decision-making. In this way, I was able to measure more directly how people react to task conflicts. In line with Chapter 4, in Chapter 5 I theorize that the outcomes of the NASA dilemma task are related to people's cardiovascular reactions when they and another group member disagree about the decision to be taken. More specifically, I expect that individuals whose cardiovascular pattern is indicative of relative threat (lower levels of cardiac output and higher levels of total peripheral resistance) are less likely to change their initial opinion than individuals whose cardiovascular pattern is indicative of relative challenge.

Summary and Overview

The aim of this dissertation is twofold. The first aim is to shed more light on the different forms of intragroup conflict and their relationship with group outcomes. To do so, Chapter 2 presents a meta-analytic review of the intragroup conflict literature in which I review 116 studies on intragroup conflict to examine the association between relationship, task, and process conflict and proximal group outcomes (i.e., emergent states, such as trust, and group viability, such as group member satisfaction and group member commitment) as well as distal group outcomes (i.e., group performance). The meta-analysis also examines how

these associations are moderated by differences between studies in terms of context (e.g., task type or cultural context) and methodology (e.g., the way in which conflict was measured).

The second aim of this dissertation is to better understand how contextual and individual characteristics determine how individuals deal with intragroup conflicts. To do so, I experimentally induced a task conflict during group decision-making tasks. Chapter 3 builds upon one of the main findings of the meta-analysis, and presents a series of experiments in which I investigated how the presence of a relationship conflict influences individuals' responses to a task conflict in terms of information processing and rigidity in holding onto initial viewpoints. Using the same design, Chapter 4 makes use of insights from the biopsychosocial model of challenge and threat (BPSM) to investigate how coping appraisals and physiological responses relate to individual responses to task conflict. I again examine the effects on information processing and rigidity in holding on to initial viewpoints. In Chapter 5 I used an alternative induction of a task conflict to replicate the findings of Chapter 4, but with the aim of demonstrating that physiological markers of threat may be linked to superior decision-making quality when rigidity is the functional response to a task conflict. Finally, Chapter 6 presents a general discussion that provides an overview of the results and a consideration of the practical and scientific relevance of this dissertation.

Chapter 2
The paradox of intragroup conflict: A meta-analysis

Since the meta-analysis by De Dreu and Weingart (2003b) on the effects of intragroup conflict on group outcomes, more than 80 new empirical studies of conflict have been conducted, often investigating more complex, moderated relationships between conflict and group outcomes, as well as new types of intragroup conflict, such as process conflict. To explore the trends in this new body of literature, we conducted a meta-analysis of 116 empirical studies of intragroup conflict (n = 8880 groups) and its relationship with group outcomes. To address the heterogeneity across the studies included in the meta-analysis, we also investigated a number of moderating variables. Stable negative relationships were found between relationship and process conflict and group outcomes. In contrast to the results of De Dreu and Weingart, we did not find a strong and negative association between task conflict and group performance. Analyses of main effects as well as moderator analyses revealed a more complex picture. Task conflict and group performance were more positively related among studies where the association between task and relationship conflict was relatively weak, in studies conducted among top management teams rather than non-top management teams, and in studies where performance was measured in terms of financial performance or decision quality rather than overall performance.

This chapter is based on: De Wit, F. R. C., Greer, L. L., & Jehn, K. A. (2012). The Paradox of Intragroup Conflict: A Meta-Analysis. *Journal of Applied Psychology*, *97*, 360-390.

In response to the broader deployment of groups in organizations, a large stream of research has emerged on the consequences of intragroup conflicts for group outcomes. Intragroup conflict can broadly be defined as the process emerging from perceived incompatibilities or differences among group members (De Dreu & Gelfand, 2008). Past work first distinguished two forms of intragroup conflict: relationship conflict and task conflict (e.g., Amason, 1996; Guetzkow & Gyr, 1954; Jehn, 1994), and later evidence has been found for a third type of conflict: process conflict (e.g., Jehn, Northcraft, & Neale, 1999). Relationship conflicts involve disagreements among group members about interpersonal issues, such as personality differences or differences in norms and values. Task conflicts entail disagreements among group members about the content and outcomes of the task being performed, whereas process conflicts are disagreements among group members about the logistics of task accomplishment, such as the delegation of tasks and responsibilities (Jehn & Bendersky, 2003).

Organizational scholars traditionally thought of intragroup conflicts as a hindrance to effective group functioning (Argyris, 1962; Blake & Mouton, 1984; Pondy, 1967). However, initial research began to suggest that conflicts between group members may not always have to be detrimental for group outcomes (e.g., Amason, 1996; Eisenhardt & Schoonhoven, 1990; Jehn, 1995, 1997; Van de Vliert & De Dreu, 1994). Task-related conflicts, for example, may facilitate innovativeness and superior group decision-making because they prevent premature consensus and stimulate more critical thinking (e.g., Amason, 1996; Jehn, 1995; Pelled, Eisenhardt, & Xin, 1999; Tjosvold, 2008; Van de Vliert & De Dreu, 1994). A meta-analysis by De Dreu and Weingart (2003b) of 30 empirical studies of intragroup conflict revealed, however, that both task conflict and relationship conflict generally have a negative effect on group outcomes. To reconcile this past meta-analytic finding with past assumptions of the value of intragroup conflict, a range of studies have been conducted in recent years to better understand the circumstances under which intragroup conflicts, and task conflicts in particular, may either benefit or inhibit group outcomes (e.g., Bayazit & Mannix, 2003; De Dreu, 2006; Gamero, González-Romá, & Peiró, 2008; Goncalo, Polman, & Maslach, 2010; Langfred, 2007; Mannes, 2009; Mohammed & Angell, 2004; Olson, Parayitam, & Bao, 2007; Parayitam & Dooley, 2007; Rispens,

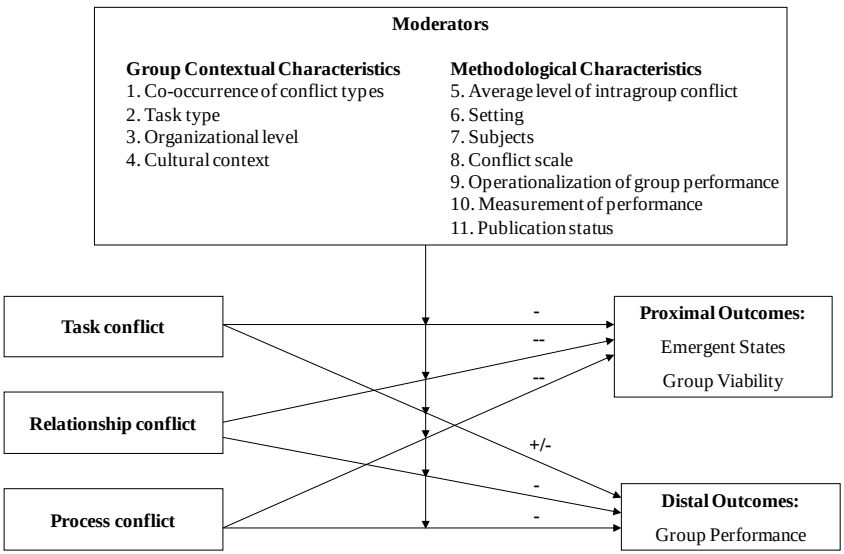
Greer, & Jehn, 2007; Tekleab, Quigley, & Tesluk, 2009; Wilkens & London, 2006).

In the current study, we utilize this new wave of studies focusing on more complex, moderated relationships between conflict and group outcomes to provide an updated, expanded and yet more fine-grained meta-analysis of the intragroup conflict literature than the De Dreu and Weingart (2003b) meta-analysis. The purpose of the current meta-analysis is to examine the impact of relationship, task, and process conflict on proximal group outcomes (i.e., emergent states, such as trust, and group viability, such as group member satisfaction and group member commitment) and distal group outcomes (i.e., group performance) as moderated by differences between studies in terms of context (e.g., task type or cultural context) and methodology (e.g., the way in which performance was measured; see also Figure 2.1).

The current meta-analysis extends earlier assessments of the intragroup conflict literature in six ways. First, since the July 2001 cutoff for articles included in the meta-analysis by De Dreu and Weingart (2003b), the number of studies available on intragroup conflict has tripled. The current study includes 116 studies (484 effect sizes) compared to the 30 studies (78 effect sizes) included in the De Dreu and Weingart (2003b) meta-analysis. Second, we expand on earlier reviews and meta-analyses by examining a broader array of possible moderators. This is line with both meta-analytic theory (Hunter & Schmidt, 2004) and conflict theory (e.g., De Dreu, 2008; De Dreu & Weingart, 2003a; Jehn & Bendersky, 2003), which both suggest that the heterogeneity in research findings demands a contingency approach to better understand the effects of intragroup conflict on group outcomes. Third, in addition to examining categorical moderators individually (see also De Dreu & Weingart, 2003b), we also perform weighted least squares multiple regression analyses (cf. Lipsey & Wilson, 2001) to gain better insight into the contribution of specific moderators to effect-size variability and to test the influence of continuous moderators (Steel & Kammeyer-Mueller, 2002). Fourth, in addition to task and relationship conflicts, we also provide a first meta-analysis of the effects of process conflict on group outcomes. Process conflict was not included in the initial meta-analysis of De Dreu and Weingart (2003b) but has generated a substantial body of research in recent years. Fifth, we use meta-analytic structural equation modeling

(MASEM) to test the incremental relationships between task, relationship, and process conflict with group outcomes. Finally, to enable a more general comparison of the effects of conflict on proximal group outcomes and distal group outcomes (i.e., group performance), we expand on the work of De Dreu and Weingart (2003b) by examining the relationships between intragroup conflict and a wider array of proximal outcomes (i.e., emergent states, such as trust and cohesion, and group viability, such as commitment and affect; Hackman & Wageman, 2005; Marks, Mathieu, & Zaccaro, 2001).

Figure 2.1 A conflict–outcome moderated model (see also Jehn & Bendersky, 2003).



The Effects of Intragroup Conflict on Group Outcomes

Past research has examined the effects of the three conflict types (task, relationship, and process) on a variety of group outcomes, ranging from team cohesion to task performance. The effects of the three types of intragroup conflict may differ across different outcome categories. Therefore, when examining the effects of intragroup conflicts on group

outcomes, we distinguish between two types of outcomes: distal group outcomes and more proximal group outcomes. In terms of distal group outcomes, we focus on group performance, which includes outcomes such as innovation, productivity, and effectiveness (Ancona & Caldwell, 1992; Van der Vegt & Bunderson, 2005). In terms of more proximal group outcomes, we focus on group emergent states and group viability. Group emergent states include the cognitive, motivational, and affective states of groups, such as intragroup trust or cohesion (Marks et al., 2001). Group viability is a broad, group-level construct that reflects group member affect and behavioral intentions and is represented by group members' intention to remain working in the group as well as group member satisfaction and commitment (Balkundi & Harrison, 2006; Barrick, Stewart, Neubert, & Mount, 1998; Hackman & Wageman, 2005). We suggest that the relationship between conflict and both types of proximal outcomes (emergent states and group viability) is equivalent and generally more negative than that between conflict and distal group outcomes (group performance). For instance, a task conflict may have a positive effect on a more distal group outcome, such as group performance, through a more critical evaluation of viewpoints and more educated decision making, yet at the same time, the task conflict may hurt more proximal group outcomes, such as trust within the group and group member satisfaction. This latter effect is especially likely when group members interpret their group members' diverging viewpoints as a negative assessment of their own abilities and competencies (e.g., Swann, Polzer, Seyle, & Ko, 2004). We elaborate in more detail below on the effects of each of the three types of intragroup conflict on both proximal and distal group outcomes.

Task Conflict

Past theory and research often suggested that task conflict has the potential to benefit a broad variety of group outcomes (e.g., Amason, 1996; Jehn, 1995). However, much research has found task conflict to impair both proximal and distal group outcomes (De Dreu & Weingart, 2003b; Hinds & Mortensen, 2005; Lau & Murnighan, 2005; Raver & Gelfand, 2005). The negative effects of task conflict on proximal outcomes, such as satisfaction, can be explained by self-verification theory (Swann et al., 2004), which suggests that group members become

dissatisfied when they interpret challenges of their viewpoints by other group members as a negative assessment of their own abilities and competencies. This, for instance, can cause people to ruminate and experience stress as a result of task conflict (cf. Dijkstra, Van Dierendonck, & Evers, 2005; Yang & Mossholder, 2004). The findings of the negative effects of task conflict on more distal group outcomes, such as group performance, support the information-processing perspective (e.g., Carnevale & Probst, 1998), which suggests that task conflicts are a distraction and require resources that cannot be directly invested into task performance. As task conflict increases cognitive load, it also interferes with effective cognitive processes (e.g., Carnevale & Probst, 1998) and may result in narrow, black-and-white thinking and, thereby, obstruct distal group outcomes, such as group effectiveness, creativity, and decision making (De Dreu, 2008).

On the positive side, task conflicts often have been suggested to potentially benefit group outcomes and distal group outcomes, such as group performance, in particular (e.g., Amason, 1996; Jehn, 1995; Olson et al., 2007). A main benefit of task conflict for groups and their members is thought to be an increased understanding of the task at hand and a more critical evaluation of each other's ideas (Amason, Thompson, Hochwater, & Harrison, 1995; Nemeth, 1995). In this way, task conflict may benefit distal group outcomes, such as by overcoming confirmatory biases in group decision-making (e.g., Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006; Schweiger, Sandberg, & Rechner, 1989; Schwenk, 1990) and enhancing innovation (e.g., De Dreu, 2006; De Dreu & West, 2001). Additionally, task conflict may benefit proximal group outcomes. As a task conflict facilitates group members to voice their own perspective of the task at hand (e.g., Simons & Peterson, 2000), task conflict may be positive for task commitment and member satisfaction (Behfar, Mannix, Peterson, & Trochim, 2011).

Relationship Conflict

Relationship conflicts have generally been found to have large negative effects on both proximal and distal group outcomes (cf. Amason, 1996; Jehn, 1995). Disagreements about personal issues heighten member anxiety (Dijkstra et al., 2005) and often represent ego threats because the issues central to these conflicts are strongly intertwined with the self-

concept. This ego threat (Baumeister, 1998) often increases hostility among group members, which, in turn, makes these conflicts more difficult to manage (De Dreu & Van Knippenberg, 2005) and more likely to negatively affect proximal group outcomes, such as identification or trust (e.g., Jehn, Greer, Levine, & Szulanski, 2008; Polzer, Milton, & Swann, 2002; Rispens, Greer, & Jehn, 2007) and member commitment or turnover intentions (e.g., Bayazit & Mannix, 2003; Conlon & Jehn, 2007; Elron, 1997; Raver & Gelfand, 2005). Relationship conflicts also tend to impair more distal group outcomes. Specifically, relationship conflicts can harm group performance because they reduce collaborative problem solving (De Dreu, 2006) and because the time group members spend responding to non-task-related issues could be spent more efficiently on task accomplishment (Evan, 1965). In support of this, relationship conflicts have often been found to harm distal group outcomes, such as group creativity (e.g., Farh, Lee, & Farh, 2010) and group performance (e.g., Brief & Weiss, 2002; Carnevale & Probst, 1998; De Dreu & Weingart, 2003b; Jehn, 1997; Staw, Sandelands, & Dutton, 1981).

However, research has suggested that the negative effects of these conflicts on both proximal and distal group outcomes can be reduced under certain conditions (e.g., Rispens, Greer, Jehn, & Thatcher, 2011). For example, recent research has begun to identify the conditions under which relationship conflict may be less likely to negatively affect both proximal and distal group outcomes, such as when members employ effective conflict management strategies (e.g., De Dreu & Van Vianen, 2001; Jehn, 1997; Murnighan & Conlon, 1991; Tekleab et al., 2009) or have low emotionality surrounding relationship conflicts (e.g., Jehn et al., 2008).

Process Conflict

A growing line of research has demonstrated a predominantly negative association between process conflict and both proximal and distal group outcomes (e.g., Behfar, Mannix, Peterson, & Trochim, 2002; Greer & Jehn, 2007; Jehn et al., 2008; Matsuo, 2006; Passos & Caetano, 2005; Vodosek, 2007). The negative effects of process conflict on group outcomes are thought to occur because the issues at the heart of process conflicts, such as task delegation or role assignment, often carry personal connotations in terms of implied capabilities or respect within the group

(cf. Jehn & Bendersky, 2003). For example, when a process conflict arises over the delegation of tasks, members who disagree with their task assignments may feel the task is below them and feel that being assigned the task is a personal insult. In this way, process conflicts may become highly personal (cf. Greer & Jehn, 2007) and may have long-term negative effects on group functioning (Greer, Jehn, & Mannix, 2008). Process conflicts, for instance, may harm the quality of emergent states and group viability (e.g., Jehn et al., 1999; Thatcher, Jehn, & Zanutto, 2003; Vodosek, 2007) and distract members from task accomplishment (Jehn, 1995), thereby negatively impacting both proximal and distal group outcomes.

However, there is reason to believe that under certain circumstances, process conflicts might be less likely to hinder group performance (e.g., Behfar et al., 2011). For example, disagreements about who is responsible for what and how things should proceed might facilitate crucial reevaluations of processes, standards, and task and resource assignments, which may even improve group outcomes (e.g., Jehn & Mannix, 2001) and distal group outcomes, such as group performance, in particular. Recent research has begun to examine potential moderating effects of process conflict and has found that the negative effects of process conflict on more proximal group outcomes, such as trust or negative affect, may be reduced when members can effectively resolve their process conflicts (Jehn et al., 2008) or when members perceive the process conflict as being about actual process improvements and not other members trying to obstruct them (Greer & Jehn, 2007). Additionally, process conflict may be more advantageous at the start of group project, when the group is still in the preparation stage and can still benefit from the examination of different alternatives to complete the task (Goncalo et al., 2010).

Differences Among Conflict Types and Group Outcomes

Taken together, past theory and research suggest that all forms of conflict may have a negative effect on group outcomes (De Dreu & Weingart, 2003b) and proximal outcomes in particular but that this negative effect can be reduced and even reversed under certain conditions. Additionally, differences may exist between the different conflict types in the magnitude of these effects. Specifically, past research suggests that the effect of task conflict on both proximal and distal group outcomes may be

less negative than that of relationship or process conflict. Task conflicts are less closely associated with negative emotions than the other conflict types (Jehn et al., 2008) and tend to carry fewer personal connotations (cf. Greer & Jehn, 2007). Compared to relationship and process conflicts, task conflicts have been to found to be less negatively related to more proximal group outcomes, such as groups' affective climate (i.e., as moods shared by team members; Gamero et al., 2008) and group members' satisfaction and intentions to remain working in a group (Bayazit & Mannix, 2003; De Dreu & Weingart, 2003b). For example, Thatcher, Jehn, and Chadwick (2007) found that with respect to group member morale (i.e., the degree to which individuals felt satisfied and committed about the group interactions), task conflict did not appear to have the expected negative relationship, whereas both process and relationship conflict did. This suggests that the bivariate relationship between task conflict and proximal group outcomes may not be as negative as that between relationship or process conflicts and proximal group outcomes.

Similarly, task conflicts, compared to process and relationship conflicts, are the least likely to negatively affect more distal group outcomes. This is because task conflicts, as compared to process and relationship conflicts, are the conflicts most directly related to the task at hand. Task conflicts are therefore the most likely to facilitate a crucial reevaluation of initial viewpoints, which can result in improved distal group outcomes, such as group performance (e.g., Amason, 1996). This implies that the potential for conflicts to be less negative and even positive for distal group outcomes is stronger for task conflicts than for process and relationship conflicts (see also Figure 2.1).

A Contingency Approach in Understanding the Effects of Intragroup Conflict

To address potential differences between different types of conflict and group outcomes, we apply a contingency framework in this meta-analysis in which the effects of conflict are proposed to depend on the type of conflict, the type of outcomes, and the presence of critical moderating variables (cf. Jehn & Bendersky, 2003; see also Figure 2.1). On the basis of past theory and research, we have identified two categories of critical moderating variables: contextual characteristics and methodological characteristics. We discuss in the following section the

theoretical rationale underlying the role of study contextual characteristics in determining the effects of conflict on both proximal and distal group outcomes and discuss in our Method section the methodological characteristics that may have also influenced the effects of conflict on proximal and distal group outcomes in past research.

Co-Occurrence of Conflict Types

The first critical contextual moderating variable we focus on is the co-occurrence of conflict types across different studies. Task conflict, for example, is suggested to be more positively related to group outcomes when it does not co-occur with relationship conflicts (e.g., Eisenhardt, Kahwajy, & Bourgeois, 1997; Gamero et al., 2008; Mooney, Holahan, & Amason, 2007). In contrast, when task conflicts are paired with relationship conflicts, the hostilities that characterize relationship conflicts (cf. Jehn, 1995; Jehn & Bendersky, 2003) may prevent any positive effects of task conflict from emerging (e.g., Amason & Sapienza, 1997; Mooney et al., 2007; Pelled, 1996; Simons & Peterson, 2000; Yang & Mossholder, 2004). Eisenhardt et al. (1997), for example, found that firms with top management teams that had high task conflict without interpersonal hostilities outperformed firms that either lacked conflict completely or were characterized by high levels of relationship conflict. Similarly, De Dreu and Weingart (2003b) found that task conflict and group performance were less negatively associated among studies where task and relationship conflict were weakly rather than strongly correlated.

We also expect task conflict to be more negatively related to group outcomes when it co-occurs with process conflicts. The additional time that is lost in resolving process-related issues may facilitate more negative effects of task conflicts on both proximal and distal group outcomes. In addition, due to reduced conflict resolution efficacy, the negative effects of process conflicts are likely to become augmented when group members simultaneously experience task conflicts and/or, especially, relationship conflicts (e.g., Jehn et al., 2008). Behfar et al. (2011), for example, found that people-related process conflicts tend to significantly reduce group viability through lower group member satisfaction.

Task Type

The second moderating variable we investigate is task type. We propose that structural aspects of the group context, such as the specific task at hand, may determine the extent to which intragroup conflict and task conflict in particular will be disruptive for group outcomes (e.g., Jehn et al., 1999; McGrath, 1984). In line with De Dreu and Weingart (2003b), we build on McGrath's (1984) task circumplex to distinguish four types of tasks: (a) creativity tasks, which require idea generation, innovation, research, and/or development of new ideas, services, or products; (b) decision-making tasks, which involve tasks where group members need to reach consensus about a certain solution but where there is no demonstrable right answer; (c) production tasks, which involve routine tasks that require overt physical and/or intellectual task execution and where individuals strive to meet certain standards; and (d) project tasks, which involve tasks that are concerned with problem solving and generating plans.

Theories of requisite variety (Ashby, 1956) and information processing (Galbraith, 1973; Tushman & Nadler, 1978) suggest that the amount of disagreement should match the type of the task. When the group task is to generate new ideas or to find solutions to a problem without a demonstrable best solution, groups need to derive multifaceted solutions that may be best found through disagreement and opinion variety (e.g., Jehn, 1995). In contrast, routine tasks and other simple tasks (together labeled as production tasks; McGrath, 1984) demand simple solutions found without disagreement. Hence, when a task is well understood and relatively straightforward, debates about the task or specific process will be counterproductive and interfere with group functioning (e.g., Gladstein, 1984; Jehn et al., 1999) and, thereby, distal group outcomes. Thus, production tasks such as assembly line work may not benefit as much from the exchange of information or ideas, as the task is clearly known and understood and task conflicts may be an unnecessary waste of time (Jehn, 1995). Hence, compared to creative, decision-making, and project tasks, we suggest that groups are less likely to benefit from task conflicts when they are working on production tasks.

The moderating effect of task type may not be limited to group performance but translate to proximal outcomes as well. Jehn (1995), for example, found that on more routine tasks, task conflict had a more

negative effect on group member satisfaction and intentions to remain working in the group than among less routine tasks. Therefore, we also expect that compared to production tasks, task conflict is less negatively related to proximal outcomes during creative, decision-making, and project tasks. Finally, we propose that the moderating effect of task type on group outcomes is restricted to task conflict. Whereas for creative, decision-making, and project tasks, task conflict may facilitate an exchange of information and ideas that is crucial for superior group outcomes, debates about relationship and process issues remain counterproductive. Hence, irrespective of the task at hand, we expect relationship and process conflict to interfere with group functioning and to be negatively related to both proximal and distal group outcomes (e.g., Jehn, 1995).

Organizational Level

The third critical moderating variable we investigate is the organizational level of the groups studied. Organizational level refers to the position of a group in the context of the broader organizational hierarchy (Greer, Caruso, & Jehn, 2011; Greer & van Kleef, 2010). Research has suggested that groups that differ in organizational level (such as service teams in branch offices vs. management teams in the head office) may differ in their conflict dynamics (Greer et al., in press; Greer & van Kleef, 2010). This is because members of teams higher up in the organization, such as management teams, are likely to be more politically savvy and better able to handle complex interpersonal situations, such as conflicts (Lazear & Rosen, 1981). Therefore, studies where groups were located generally higher up in the organizational hierarchy should show less negative effects of all forms of conflict on proximal group outcomes and potentially even positive effects of task conflict on distal group outcomes.

Cultural Context

The fourth group contextual moderating variable we investigate is cultural context. In line with theories of psychological stress and emotion (e.g., Frijda, 1993; Lazarus & Folkman, 1984), culturally shaped beliefs and expectations regarding conflict situations have been proposed and found to modify reactions and behaviors toward conflict (Fu et al., 2007; Gelfand et al., 2001; Markus & Kitayama, 1991; Tjosvold, Law, & Sun,

2006). Cultural context has been found to play an important role during negotiations (e.g., Brett et al., 1998). Japanese and American negotiators, for instance, differ in the extent to which they focus on winning or compromising during a negotiation (Gelfand et al., 2001), as well as whether they exchange information in a direct or indirect manner (Adair, Okumura, & Brett, 2001). Similar differences have been found with respect to negotiators' tendencies to stress relationships and social roles instead of logic and reasoning (Drake, 1995). Likewise, a culture's values and norms for power have been found to determine whether power strategies may help or hinder joint gains (Adair et al., 2004).

Although culture may play an important role in shaping the conflict–outcome relationship, research has mainly focused on (intergroup) negotiations, and relatively little attention has been directed at the impact of cultural context on intragroup conflict. We propose that the relationship between task conflict, relationship conflict, process conflict, and both proximal and distal group outcomes will depend on the cultural context. More specifically, differences in the way group members respond to conflicts and therefore in the way in which intragroup conflicts impact group outcomes might reflect differences in cultural dimensions such as power distance, uncertainty avoidance, individualism versus collectivism, long-term versus short-term orientation, and masculinity versus femininity (e.g., Hofstede, 2001; see also Cai & Fink, 2002; Fu et al., 2007; Gabrielidis, Stephan, Ybarra, Pearson, & Villareal, 1997; Sanchez-Burks et al., 2008). For instance, the extent to which process conflicts about roles and responsibilities hurt group outcomes might differ across cultures high and low on power distance as a greater acceptance of the unequal distribution of power might prevent process conflicts from escalating. Similarly, intragroup conflicts may be less negatively related to distal group outcomes among uncertainty-accepting (compared to uncertainty-avoiding) cultures as they generally are more tolerant of opinions different from their own (e.g., Hofstede, 2001). Similar effects may be found with respect to the collectivistic versus individualistic nature of the cultural context. European Americans, for example, have a greater preference for addressing conflict with a competing style (Fu et al., 2007) and hold more positive beliefs about relationship conflicts compared to Korean and Chinese participants, who generally score significantly higher on collectivism (Sanchez-Burks et al., 2008). Likewise, among cultures

characterized by a long-term orientation, group members may have a greater preference for preserving good relationships for obtaining future rewards and therefore may be more willing to compromise and find a mutually beneficial solution than to win the conflict. Finally, when the dominant values in a certain cultural context are relatively masculine, individuals may be more assertive, more rigid, and less caring for others during conflicts than among more feminine cultural contexts, in which individuals generally will be more cooperative in addressing conflicts (e.g., Leung, Bond, Carment, Krishnan, & Liebrand, 1990), and this may facilitate more negative effects of conflict in masculine, rather than feminine, cultures. Therefore, cultural context may have an important influence on the effects of the three conflict types on both proximal and distal group outcomes.

Method

Literature Search

The first step in developing the database for the present meta-analysis was a keyword search in several electronic databases and search engines for journal articles dated between 1990 and September 2010 (e.g., ABI/Inform, Google Scholar, PsycINFO, Web of Science, and proceedings of the Academy of Management conferences). To find published and unpublished articles on intragroup conflict, we used the keyword team or group in combination with conflict or disagreement and other keywords such as task, relationship, process, cognitive, affective, and emotional. We also searched using combinations of these words with indicators of proximal group outcomes, such as viability (e.g., satisfaction and commitment) and emergent states (e.g., trust and cohesion), and indicators of more distal group outcomes, such as performance. The second step was to closely examine the reference lists of past (meta-analytic) reviews of the conflict literature (e.g., De Dreu & Weingart, 2003b; Jehn & Bendersky, 2003) to make sure we included all articles they included. Third, using the cited reference search offered by Web of Science, we searched among publications that had cited important articles in the field (e.g., De Dreu & Weingart, 2003b; Jehn, 1995; Jehn et al., 1999; Pelled et al., 1999). Fourth, we examined the table of contents of the last 5 years of the relevant journals in social psychology and organizational behavior (e.g., Academy of Management Journal, Administrative Science

Quarterly, International Journal of Conflict Management, Journal of Applied Psychology, Journal of Management, Journal of Organizational Behavior, Journal of Occupational and Organizational Psychology, Journal of Personality and Social Psychology, Journal of Vocational Behavior, and Strategic Management Journal). Fifth, to address publication bias (e.g., Rothstein, Sutton, & Borenstein, 2005), we sent queries via Listservs and newsletters to members of, for example, the Academy of Management, the European Association of Experimental Social Psychology, the European Association of Work and Organizational Psychology, and the International Academy of Conflict Management for working papers or publications in this area. Finally, we contacted authors who in the past had published on conflict to ask if they would send us any (yet) unpublished work that could be included in our data set.

Inclusion Criteria

We used inclusion criteria that were equivalent to those of De Dreu and Weingart (2003b). Hence, studies were included if they (a) measured relationship conflict, task conflict, and/or process conflict; (b) included a measure of proximal and/or distal group outcomes; and (c) gave sufficient statistical information to compute effect sizes. Given that our research question is concerned with intragroup conflict, studies had to include groups; we therefore excluded studies on buyer–seller relationships, studies on dyads, and studies using only individual- or organizational-level measurements. As they did not report data at the group level of analysis, we decided not to include five studies that De Dreu and Weingart did include (i.e., Bradford, 1999; Duffy, Shaw, & Stark, 2000; Gardner, 1998; Pelled, 1996; Winters, 1997). Additionally, we were not able to locate two other studies included by De Dreu and Weingart (Nauta & Molleman, 2001; Nijdam, 1998). An explicit comparison of our sample and findings with those of the meta-analysis by De Dreu and Weingart (including, as well as excluding, these seven studies) is available upon request from Frank R. C. de Wit. Furthermore, to avoid using the results of one data set twice, in case two articles used an identical data set, we included only the most elaborate article or the one including the most variables of interest. Similarly, studies that collapsed task, relationship, and process conflict together into one variable were also excluded as our goal was to distinguish the effects of each type of conflict

separately. Finally, besides intragroup conflict, the study had to include one or more group outcomes. We included decision quality, effectiveness, financial performance, innovativeness, and overall performance as indicators of group performance. As proximal group outcomes, we included two emergent states (intragroup trust and group cohesion) and six indicators of group viability (group member satisfaction, commitment, identification with the group, organizational citizenship behavior, counterproductive workplace behavior, and positive affect; Balkundi & Harrison, 2006).

Data Set and Coding of Studies

Our literature search resulted in an initial collection of around 300 articles. Using the above inclusion criteria, the number of studies finally included in the present meta-analysis was 116 studies. The references considered but excluded from the meta-analyses are available online as supplemental materials. All articles (including those excluded) were examined twice, once by a trained research assistant and once by either Frank R. C. de Wit or Lindred L. Greer. Interrater agreement was high; similar codings were obtained for 96.7% of the coded effect sizes and moderator variables. Discrepancies were resolved by reaching consensus via discussion. Together, the 116 studies represent 484 effect sizes. The coders collected information on sample size and statistical artifact information, such as the reliability of the scales used to measure conflict and group outcomes. The coders also collected information on the four theoretical moderators: (a) the association between task, relationship, and process conflict (correlation of task, relationship, and process conflicts), to test whether the effect sizes depend on the extent to which the three types of conflict accompany each other (e.g., Gamero et al., 2008; Mooney et al., 2007); (b) group task, to test whether the effect sizes depend on the type of the task being performed (we used McGrath's, 1984, group task circumplex to distinguish five different tasks: creativity tasks, decision-making tasks, production-planning tasks, project tasks, and mixed tasks; in the mixed-tasks category, we included studies in which groups worked on a variety of tasks); (c) organizational level (top management teams vs. non–top management teams), to test for differences between groups at the top of the organizational hierarchy versus groups at lower levels of the organizational hierarchy (e.g., Greer et al., in press); and (d) cultural

context, to test whether the effect sizes differ across cultures (e.g., Tjosvold et al., 2006): We first determined the geographical location where a study was conducted and then assigned to the study the associated values of Hofstede's (2001) five cultural dimensions: power distance, individualism–collectivism, masculinity–femininity, uncertainty avoidance, and long-term versus short-term orientation. To avoid potential problems with multicollinearity, all scores were mean-centered.

In addition to the theoretical moderators included in this study, we also collected information about methodological aspects that may have had an influence on whether conflict was positively or negatively related to group outcomes. We examined the following methodological moderators: (a) average level of intragroup conflict, to test whether studies among groups with relatively high levels of conflict differ from studies among groups with relatively low levels of conflict (we adjusted and controlled for the number of answer categories that were used to measure conflict); (b) setting (field and nonfield), to assess whether results differ for studies conducted within organizations or within laboratories or classrooms; (c) subjects (professionals, undergraduates, and postgraduates), to test whether the effect sizes vary when group members were professionals instead of students; (d) conflict scale (Jehn and non-Jehn), to test whether the effect sizes vary across different scales used to measure conflict (e.g., Korsgaard, Jeong, Mahony, & Pitariu, 2008); (e) operationalization of group performance[3], to test whether results differ across five different operationalizations of group performance (e.g., De Dreu, 2008): decision quality, effectiveness, financial performance, innovativeness, and overall performance (in which multiple performance dimensions were combined into one measure, such as in overall course grades or measures that combined efficiency, output quality, and adherence to budget into one measure); (f) measurement of performance (objective and subjective), to test whether there is a difference in effect sizes when performance is measured via more objective, for instance, financial, measures or via more subjective ratings of performance (Arvey & Murphy, 1998); and (g) publication status (unpublished and published),

[3] It is important to note that there was little overlap between task type and what aspect of performance was measured. For example, whereas top management teams can be classified as decision-making teams, often their performance was not measured directly by assessing the quality of their decisions but more indirectly via financial indicators such as profitability of the organization.

to test whether the effect sizes are affected by publication selection bias. Descriptive statistics of the continuous moderators (e.g., cultural context and co-occurrence of conflict types) can be found in Table 2.1.

Table 2.1. Descriptive statistics for the continuous moderators

	Mean	Stdev	Minimum	Maximum
Uncorrected correlations				
Task Conflict – Relationship Conflict	0.52	0.32	-0.69	0.93
Task Conflict – Process Conflict	0.66	0.28	-0.50	0.93
Relationship Conflict – Process Conflict	0.67	0.15	0.24	0.90
Cultural Dimension				
Power Distance	43.32	11.15	13.00	80.00
Masculinity (vs. Femininity)	53.27	17.57	14.00	70.00
Individualism (vs. Collectivism)	79.25	22.17	17.00	91.00
Uncertainty Avoidance	49.81	12.69	8.00	104.00
Long/Short-term Orientation	37.67	22.59	19.00	118.00
Average level of Task Conflict	3.54	0.85	1.63	6.30
Average level of Relationship Conflict	2.72	0.70	1.36	5.35
Average level of Process Conflict	2.54	0.46	1.86	3.66

Meta-Analytic Procedures

All the effect sizes were first corrected for sampling error. Next, we corrected for the measurement error in the independent and dependent variables. This was done according to the approach developed by Hunter and Schmidt (1990, 2004); we divided individual effect sizes by the square root of the reliability estimates of the two correlated variables. We used internal consistency coefficients reported in the respective study as the reliability estimates. In case the authors did not report internal consistency coefficients, the internal consistency coefficient for each variable across all studies included in the meta-analysis was used. We assigned a reliability coefficient of 1.00 to objective performance indicators for which no reliability coefficient was reported (for similar procedures, see, e.g., Riketta, 2008). In case a study provided multiple estimates of a correlation between a predictor (X) and a criterion (Y), we used the formula for composites (Hunter & Schmidt, 2004) to derive a linear composite of the effect sizes to ensure the independence of effects sizes in the final data set. The analyses were conducted using the Schmidt-Le program (Version 1.1; Schmidt & Le, 2004). The precision of the effect

sizes was examined by calculating the 95% confidence interval (CI) around the effect size. Finally, we used the procedures described by Viechtbauer and Cheung (2010) to derive outlier and influence diagnostics, using the Metafor meta-analysis package for R (Version 1.4-0; Viechtbauer, 2010a, 2010b).

Moderator Analyses

Heterogeneity among the effect sizes of the relationship between intragroup conflict and group outcomes was examined by calculating 90% credibility intervals (Hunter & Schmidt, 2004). Subsequently, we assessed the significance of the categorical moderator variables by comparing the 95% CIs of the associated moderator categories. We interpreted nonoverlapping CIs as signifying reliable differences among categories (Hunter & Schmidt, 2004). We also performed meta-analytic weighted least squares (WLS) regression analyses to examine (a) the impact of continuous moderator variables and (b) the influence of multiple moderator effects simultaneously (Steel & Kammeyer-Mueller, 2002; Viechtbauer, 2007; Viswesvaran & Sanchez, 1998). In the WLS regression analyses, studies were given inverse variance weights based on their sample size (see Hedges & Olkin, 1985). These are weights that are inversely proportional to the variance of the study so that studies with a larger sample size, which are assumed to offer more precise estimations of an effect size than studies with a smaller sample size, are given larger weight in the analyses (see Heugens & Lander, 2009; Lipsey & Wilson, 2001). We used Wilson's (2005) SPSS macros for meta-analytic WLS regression analyses to derive fixed- and mixed-effects models. In fixed-effects models, the studies being analyzed are assumed to be homogeneous at the level of study population effect sizes, and differences between studies are attributed to sampling error and other study artifacts (Hunter & Schmidt, 2000). In mixed-effects models, this assumption is not made, and variance in effect sizes is attributed to sampling error, other study artifacts, and a remaining unmeasured random component (Lipsey & Wilson, 2001). Mixed-effects models, therefore, are more conservative, allowing for the possibility that the population parameter values can vary between studies (Hunter & Schmidt, 2000).

Results

Intragroup Conflict and Proximal Group Outcomes

Table 2.2 presents the overall mean corrected correlations between intragroup conflict and proximal group outcomes. In case of task conflict and its relationship with trust and commitment, the study by Parayitam and Dooley (2007) was identified as a positive outlier and was not included in the analyses. The results show that task, relationship, and process conflict are reliably negatively related to trust (respectively, $\hat{\rho}$ = -.45, $\hat{\rho}$ = -.53, $\hat{\rho}$ = -.59) and group member commitment (respectively, $\hat{\rho}$ = -.31, $\hat{\rho}$ = -.47, $\hat{\rho}$ = -.54). For all three types of conflict, the credibility intervals do not contain zero, indicating that the negative relationships with trust and commitment are generalizable across different settings. Table 2.2 further shows that both task and relationship conflict are negatively related to group member identification (respectively, $\hat{\rho}$ = -.30, $\hat{\rho}$ = -.49), organizational citizenship behaviors (OCB) (respectively, $\hat{\rho}$ = -.23, $\hat{\rho}$ = -.38) and positively related to counterproductive work behaviors (CWB) (respectively, $\hat{\rho}$ =. 53, $\hat{\rho}$ =. 54).

With respect to group member satisfaction, group cohesion, and positive affect, the results indicate a significant difference between the conflict types. First, the associated confidence intervals indicate that process and relationship conflict are more negatively related to group member satisfaction (respectively, $\hat{\rho}$ = -.54, $\hat{\rho}$ = -.61) than task conflict ($\hat{\rho}$ = -.24). These results replicate the findings of De Dreu and Weingart (2003b) who also found a less negative relationship between task conflict and group member satisfaction ($\hat{\rho}$ = -.27) than between relationship conflict and group member satisfaction ($\hat{\rho}$ = -.48). Secondly, whereas there is a strong negative association between relationship conflict and cohesion ($\hat{\rho}$ = -.44), there is not between task conflict and cohesion ($\hat{\rho}$ = .00). Thirdly, whereas relationship conflict is reliably negatively associated with positive affect ($\hat{\rho}$ = -.48), task conflict is not ($\hat{\rho}$ = .05). Moreover, the credibility intervals indicate that for the relationships between task conflict and cohesion, satisfaction, and positive affect, the presence of subpopulations (moderators) is likely.

Table 2.2 *Meta-Analysis Results Intra Group Conflict and Proximal group outcomes*

Predictor	k	N	Mean $\bar{r}$	Mean $\hat{\rho}$	$SD_{\hat{\rho}}$	90% credibility interval	$SE_{\hat{\rho}}$	95% confidence interval
Trust								
Task Conflict	16	1205	-.37	-.45	.20	-.78, -.12	.06	-.56, -.33
Relationship Conflict	16	1302	-.45	-.53	.29	-1.00, -.05	.08	-.68, -.38
Process Conflict	7	492	-.51	-.59	.16	-.85, -.32	.07	-.73, -.45
Cohesion								
Task Conflict	16	1326	.01	.00	.50	-.83, .83	.13	-.26, .25
Relationship Conflict	14	1175	-.37	-.44	.19	-.75, -.13	.06	-.55, -.33
Process Conflict	3	205	-.45	-.48	.20	-.81 -.16	.13	-.74, -.23
Satisfaction								
Task Conflict	26	1979	-.22	-.24	.38	-.87 .38	.08	-.40 -.09
Relationship Conflict	26	1901	-.47	-.54	.17	-.82, -.27	.04	-.62, -.47
Process Conflict	10	643	-.52	-.61	.05	-.70, -.52	.04	-.68, -.53
Commitment								
Task Conflict	13	1044	-.25	-.31	.19	-.62, .01	.06	-.43, -.18
Relationship Conflict	12	772	-.41	-.47	.28	-.93, -.02	.09	-.64, -.30
Process Conflict	8	538	-.45	-.54	.17	-.82, -.26	.07	-.68, -.40
Identification								
Task Conflict	5	229	-.26	-.30	.01	-.32, -.28	.07	-.44, -.15
Relationship Conflict	5	229	-.43	-.49	.12	-.69, -.29	.08	-.65, -.33
Process Conflict	1	38	-.05	-.05				
Organizational Citizenship Behavior (OCB)								
Task Conflict	7	427	-.19	-.23	.22	-.59, .12	.10	-.43, -.04
Relationship Conflict	7	436	-.32	-.38	.20	-.72, -.04	.09	-.56, -.20
Process Conflict	1	121	-.24	-.27				
Counterproductive Workplace Behavior (CWB)								
Task Conflict	4	296	.42	.53	.00	.53, .53	.04	.46, .60
Relationship Conflict	4	296	.43	.54	.39	-.10, 1.17	.20	.14, .94
Positive Affect								
Task Conflict	5	623	.05	.05	.57	-.89, 0,99	.26	-.46, .56
Relationship Conflict	4	387	-.40	-.48	.38	-1.11, .15	.17	-.87, -.09

Note. k = number of effect sizes; N = total sample size; $\bar{r}$ = mean estimate of uncorrected correlations; $\hat{\rho}$ = mean estimate of corrected population correlation, SD = estimated standard deviation of mean, and SE estimated standard error of mean.

Table 2.3 *Meta-Analysis Results for Group Performance*

Predictor	k	N	Mean $\bar{r}$	Mean $\hat{\rho}$	$SD_{\hat{\rho}}$	90% credibility interval	$SE_{\hat{\rho}}$	95% confidence interval
Task Conflict	95	7201	-.01	-.01	.23	-.38, .36	.03	-.06, .04
Relationship Conflict	80	5369	-.15	-.16	.16	-.43, .10	.02	-.21, -.12
Process Conflict	24	1752	-.13	-.15	.20	-.47, .17	.05	-.25, -.06

Note. k = number of effect sizes; N = total sample size; $\bar{r}$ = mean estimate of uncorrected correlations; $\hat{\rho}$ = mean estimate of corrected population correlation, *SD* = estimated standard deviation of mean, and *SE* estimated standard error of mean.

Intragroup Conflict and Distal Group Outcomes

Table 2.3 summarizes the overall mean corrected correlations between the three types of intragroup conflict and the primary distal group outcome we investigated: group performance. The results show that relationship conflict ($\hat{\rho}$ = -.16) and process conflict ($\hat{\rho}$ = -.15) are negatively related to group performance but that, overall, neither a positive nor a negative relationship exists between task conflict and group performance ($\hat{\rho}$ = -.01). As the associated confidence intervals for both process and relationship conflict do not include zero, the results suggest that the negative relationship between both process and relationship conflict and group performance is reliable (Whitener, 1990). Moreover, as the confidence intervals of process conflict and relationship conflict do not overlap with the confidence interval of task conflict, the results indicate that process and relationship conflict are significantly more negatively related to group performance than task conflict.

The results for relationship conflict replicate those of De Dreu and Weingart (2003b) who found a similar negative association between relationship conflict and group performance ($\hat{\rho}$ = -.22). The results for task conflict are notably different. De Dreu and Weingart (2003b) found a more negative relationship between task conflict and group performance ($\hat{\rho}$ = -.23) than we did ($\hat{\rho}$ = -.01). Similar to the findings of De Dreu and Weingart, for all three conflict types the 90% credibility intervals reported in Table 2.3 were relatively wide and included zero. This indicates that there are restrictions to the generalizability of the estimated correlations and there is a sufficient amount of heterogeneity in the observed results to justify an investigation of potential moderators of these effects.

Moderator Analyses

We performed subgroup analyses to test categorical moderators (e.g., Hunter & Schmidt, 2004) and weighted least squares (WLS) regression analyses to test continuous moderators (e.g., Lipsey & Wilson, 2001) and to test multiple moderators simultaneously (e.g., Steel & Kammeyer-Mueller, 2002). We only tested multiple moderators simultaneously when the total sample size for a specific effect size was larger than 50 studies as testing multiple moderators simultaneously may lead to misestimating moderator effects when the dataset is too small (see Steel & Kammeyer-Mueller, 2002). More than 50 studies were available for group performance and its association with task conflict and relationship conflict but not for group performance and process conflict, nor any of the proximal group outcomes. Hence, for the association between process conflict and group performance, and the proximal group outcomes we tested the moderators only individually.

Moderators of the Association Between Intragroup Conflict and Proximal Group Outcomes. The overall effect sizes reported in Table 2.2 indicate that for process conflict the negative relationships with proximal group outcomes are generalizable across different settings. With respect to relationship conflict, heterogeneity existed in the relationships with CWB and positive affect, and with respect to task conflict, heterogeneity existed in the relationships with cohesion, satisfaction, OCB, and positive affect. In the case of OCB (k=7), CWB (k=4), and positive affect (k=5) the sample size was too small to conduct meaningful moderator analyses. Therefore we examined the effects of group-contextual and methodological moderators only for the relationships between task conflict and group cohesion and between task conflict and group member satisfaction.

With respect to group member satisfaction, one study (Oliver, 2008) was identified as an outlier, and excluded from the analyses. We found one moderators (the co-occurrence of task and relationship conflict) to moderate the association between task conflict and group member satisfaction. The results presented in Table 2.4 show that the stronger the association between task and relationship conflict, the more negative the association between task conflict and group member satisfaction ($p < .001$). Table 2.4 further shows that the relationship between task conflict and group member satisfaction is not moderated by

the association between task conflict and process conflict. Finally, similar to group member satisfaction, we found that the stronger the association between task and relationship conflict, the more negative the association between task conflict and group member cohesion ($p < .001$).

Table 2.4 *WLS Regression Analyses with the Association Between Conflict Types as Predictor Variables*

Predictor	*B*	SE_B	ß	*Z*	*p*	90% confidence interval		R^2	*k*
Task conflict and Group Member Satisfaction									
Constant	.16	.17	.00	.97	.33	-.17	.50	.36	21
Association between task and relationship conflict	-.84	.25	-.60	-3.32	.00	-1.34	-.35		
Task conflict and Group Member Satisfaction									
Constant	-.19	.30	.00	-.63	.53	-.76	.39	.09	10
Association between task and process conflict	-.31	.35	-.29	-.87	.38	-1.00	.38		
Task conflict and Group performance									
Constant	-.14	.34	.00	-.41	.68	-.81	.53	.00	21
Association between task and process conflict	.03	.40	.02	.09	.93	-.76	.83		
Relationship conflict and Group Performance									
Constant	.38	.25	.00	1.52	.13	-.11	.88	.22	21
Association between relationship and process conflict	-.66	.30	-.47	-2.17	.03	-1.26	-.07		
Process conflict and Group Performance									
Constant	-.01	.43	.00	-.02	.98	-.84	.82	.04	19
Association between task and process conflict	.05	.56	.03	.09	.93	-1.05	1.15		
Association between relationship and process conflict	-.32	.50	-.21	-.65	.52	-1.31	.66		

Moderators of the Association Between Intragroup Conflict on Distal Group Outcomes. ***Task conflict and group performance.*** Two moderators were tested individually (the co-occurrence of task and process conflict and organizational level) as they could not be included in

the regression analyses due to the limited number of studies that provided information on these two variables. More specifically, only a limited number of studies on task conflict also measured process conflict (N = 22). Similarly, in case of organizational level, only 60 studies were conducted in a field setting whereas 35 were conducted in the lab or in the classroom. Of the 60 field studies, only 41 reported sufficient data on the organizational level. We tested the moderating effect of the co-occurrence of task and process conflict using WLS regression analyses. The study by Wan and Ong (2005) was identified as an outlier and therefore excluded from these analyses. As shown Table 2.4, we found no effect of the co-occurrence of task and process conflict (also if we controlled for the co-occurrence of task and relationship conflict). The moderating effect of organizational level was analyzed using subgroup analyses and as shown in Table 2.5, we found a reliable difference between studies conducted among top management teams and studies conducted among team lower in the organizational hierarchy; Compared to non-top management teams ($\hat{\rho}$ = -.21, CI = -.34 to -.09), the relationship between task conflict and performance was distinctly more positive for top management teams ($\hat{\rho}$ = .09, CI = -.01 to .18).

Table 2.5 *Results for Categorical Moderator Analyses of Organizational Level*

Predictor	*k*	*N*	Mean $\bar{r}$	Mean $\hat{\rho}$	$SD_{\hat{\rho}}$	90% credibility interval	$SE_{\hat{\rho}}$	95% confidence interval
Task Conflict – Group Performance								
Non-Top Management	22	1007	-.17	-.21	.23	-.60 .17	.06	-.34 -.09
Top Management	19	2464	.07	.09	.18	-.21 .39	.05	-.01 .18
Relationship Conflict – Group Performance								
Non-Top Management	18	871	-.21	-.25	.09	-.40 -.11	.04	-.34 -.16
Top Management	12	1344	-.17	-.18	.16	-.45 .08	.06	-.29 -.07
Process Conflict – Group Performance								
Non-Top Management	7	366	-.28	-.32	.00	-.32 -.32	.06	-.44 -.21
Top Management	2	259	-.07	-.08	.11	-.26 .11	.11	-.29 .13

Note. *k* = number of effect sizes; *N* = total sample size; $\bar{r}$ = mean estimate of uncorrected correlations; $\hat{\rho}$ = mean estimate of corrected population correlation, *SD* = estimated standard deviation of mean, and *SE* estimated standard error of mean.

The remaining moderators were tested simultaneously using WLS regression analyses. The residual component $Q_{residual}$ of the fixed-effects model was significant and as this violates the assumptions of fixed-effects

analysis (see Lipsey & Wilson, 2001), in Table 2.6 we only report the more conservative mixed-effects model. The mixed effects model fitted the data well and showed support for several of the hypothesized moderating effects. First, the results confirm that the relationship between task conflict and group performance becomes more negative when the association between task and relationship conflict among the groups within a study is higher ($p < .01$). This result is also depicted in Figure 2.2, showing the association between task conflict and group performance varies as a function of the association between task conflict and relationship conflict. This replicates the findings by De Dreu and Weingart (2003b) who found a more negative relationship between task conflict and group performance ($\hat{\rho} = -.35$, vs. $\hat{\rho} = -.10$) in studies that reported a relatively high (vs. low) correlation between task and relationship conflict. The results further indicate that compared to when performance was measured in terms of overall performance (i.e., the reference category), the relationship between task conflict and group performance was more positive when it was measured in terms of decision making quality ($p < .01$) or financial performance ($p < .01$). In addition, two moderators had a marginally significant effect on the relationship between task conflict and group performance. The relationship between task conflict and group performance was more negative when the average level of task conflict among teams within a study was relatively high ($p = .096$). Additionally, compared to when the study was conducted in a class room or laboratory setting, task conflict was more negatively related to performance in studies conducted in the field ($p = .073$).

The results presented in Table 2.6 show no support for the hypothesized effect of task type. Hence, the relationship between task conflict and group performance does not appear to differ across studies investigating mixed, project, creativity, decision-making or production/planning tasks when controlling for other moderating effects. This is in contrast with the meta-analysis of De Dreu & Weingart (2003b) who found that studies that investigated production teams ($\hat{\rho} = .04$) reported weaker negative correlations than studies that investigated decision-making teams ($\hat{\rho} = -.20$), project teams ($\hat{\rho} = -.26$) , or mixed teams ($\hat{\rho} = -.43$). Similarly, no support was found for a moderating effects of cultural context, the average level of relationship conflict, the scales

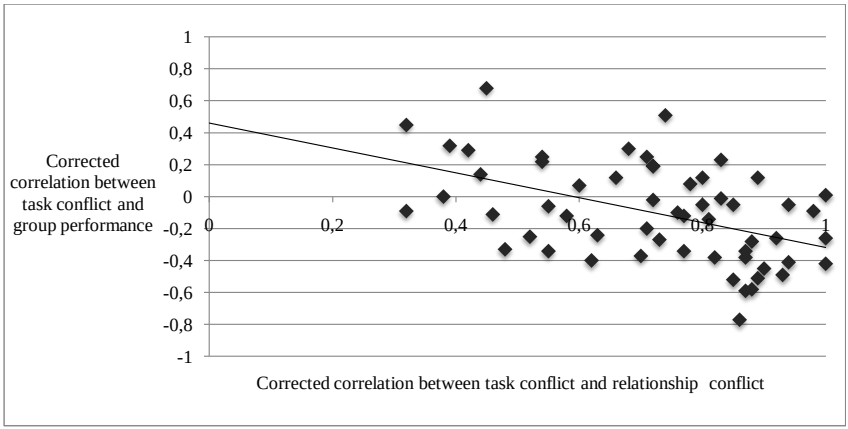
used to measure intragroup conflict, whether performance was measured objectively versus subjectively, or whether the study was published or not.

Table 2.6 *WLS Regression Analysis Results for Group performance*

Variable	Task Conflict - Performance		Relationship Conflict - Performance	
Group Contextual Moderators				
(1) Association task and relationship conflict	-.34	(.11)**	-.05	(.10)
(2) Group Task: Project	.06	(.12)	.10	(.11)
(2) Group Task: Creativity	-.13	(.19)	-.17	(.18)
(2) Group Task: Decision-Making	-.10	(.13)	-.02	(.12)
(2) Group Task: Production-Planning	-.15	(.16)	-.20	(.15)
(3) Cultural Dimension:				
Power Distance	-.86	(1.35)	-1.35	(1.26)
Masculinity (vs. Femininity)	.32	(.30)	.35	(.28)
Individualism (vs. Collectivism)	-.23	(.64)	-.69	(.59)
Uncertainty Avoidance	.37	(.38)	-.15	(.35)
Long/Short-term Orientation	.49	(.40)	.19	(.37)
Methodological moderators				
(5a) Average level of relationship conflict	.03	(.07)	-.09	(.06)
(5b) Average level of task conflict	-.12	(.07)†	-.04	(.07)
(6) Field Setting	-.21	(.12)†	-.08	(.11)
(7) Non-Jehn conflict scale	-.09	(.15)	.01	(.14)
(8) Performance Indicator: Decision quality	.44	(.14)**	.14	(.13)
(8) Performance Indicator: Innovativeness	.37	(.35)	.01	(.32)
(8) Performance Indicator: Effectiveness	.18	(.16)	.14	(.15)
(8) Performance Indicator: Financial performance	.47	(.17)**	.20	(.16)
(9) Objective	-.08	(.12)	.04	(.12)
(10) Published	-.09	(.10)	-.13	(.09)
Constant	.55	(.27)*	.28	(.25)
R^2	.60		.47	
K	55		55	
Q_{model} (p)	45.88	(.001)	27.29	(.127)
$Q_{Residual}$(p)	30.18	(.656)	31.40	(.596)
V	.04		.03	

[a] Unstandardized regression coefficients are presented with standard errors in parentheses. *k* is the total number of effect sizes; *Q* is the homogeneity statistic with its probability in parentheses; *v* is the random-effects variance component. † $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 2.2 The association between task conflict and group performance (n = 61) as function of the association between task conflict and relationship conflict.[4]



Relationship conflict and group performance. Two moderators were again tested individually; the co-occurrence of relationship and process conflict, and the organizational level. The results reported in Table 2.4 indicate that the association between relationship conflict and group performance becomes more negative when the association between process and relationship conflict within a study is stronger ($p < .05$). This effect was not found for the association between relationship conflict and task conflict, as can also be seen in Table 2.4. As shown in Table 2.5, we did not find a difference between studies conducted among top management teams and studies conducted among team lower in the organizational hierarchy. The remaining moderators were investigated using WLS regression analyses. The residual component of the fixed-effects model was significant. Therefore in Table 2.6 we again only report the more conservative mixed-effects model. The results indicate that when controlling for the presence of other moderators, none of the moderators affected the association between relationship conflict and group performance.

Process conflict and group performance. As the number of studies available on process conflict was too small to test moderators simultaneously we tested the moderators individually for the relationship

[4] Only positive correlations are included in this figure

between process conflict and group performance. Interestingly, none of our group-contextual and methodological moderators affected the association between process conflict and group performance. For example, as shown Table 2.4, neither the moderating effect of the co-occurrence of relationship and process conflict, nor the co-occurrence of task conflict and process conflict was significant (the study by Brauckmann (2007) was identified as an outlier and therefore excluded from these analyses). Likewise, as shown in Table 2.5, only for studies conducted among teams lower in the organizational hierarchy the negative association between process conflict and group performance is reliable and generalizable, yet the difference between studies conducted among top management teams and studies conducted among teams lower in the organizational hierarchy was not significant.

Supplementary Analysis

The results reported above are consistent with our hypotheses that relationship and process conflict are more negatively related to both proximal and distal group outcomes than task conflict. In addition, the findings show that the relationships between task and relationship conflict and group outcomes are moderated by several characteristics, such as the type of performance measure and the co-occurrence of conflict types. Yet, so far we have not looked at the unique contribution of the three types of intragroup conflict on group outcomes. In order to develop a clearer picture of the incremental relationships between process conflict, relationship conflict, task conflict, and proximal and distal group outcomes, we therefore conducted supplemental path analyses using meta-analytic structural equation modeling (MASEM) (e.g., Viswesvaran & Ones, 1995). Given the heterogeneity in our dataset, we used two stage structural equation modeling (TSSEM) in which correlation matrices are first tested for homogeneity and then pooled and used in a MASEM (Cheung & Chan, 2005). We used Cheung's metaSEM package for R to conduct these analyses (version 0.5-1; Cheung, 2010).

With respect to conflict and proximal group outcomes, we restrict ourselves to the results for satisfaction. Similar results were obtained for the other proximal outcome (i.e., group cohesion) and are available on request from the first author. The first stage of the MASEM indicated heterogeneity among the correlation matrices, χ^2 (91, N = 2257) = 528.61,

Root Mean Square Error of Approximation (RMSEA) = .25, Comparative Fit Index (CFI) = .76. This is in line with the results reported above which suggested that the relationship between task conflict and group satisfaction is moderated by the association between relationship conflict and task conflict. To address the heterogeneity in the correlation matrices we therefore used a random effects model to average the correlation matrices (see Becker, 1992) as suggested by Cheung and Chan (2005). Yet, as, the associated weighted covariance matrix was non-positive definite, we could not proceed to the second stage of the structural equation modeling (i.e., Cheung & Chan, 2005). This problem resulted from missing values in the many studies that did not measure process conflict in combination with pairwise deletion when synthesizing the correlation matrices. We therefore performed structural equation modeling without process conflict. The resulting pooled correlation matrix of task conflict, relationship conflict and group member satisfaction is found in Table 2.7. Based on the pooled correlation matrix we proceeded to the second step of the TSSEM and performed structural equation modeling to calculate the incremental relationships between the task and relationship conflict and group satisfaction. Given that the model was fully saturated, the fit indices cannot be used to test the fit of the model and therefore we restrict ourselves to describing the path coefficients. The results of the structural equation modeling showed that both the standardized path coefficient of task conflict (β = -.13, SE = 0.06, CI_L = -0.24, CI_H = -0.02, $p < .05$) as well as that of relationship conflict was significant and negative, β = -0.39, SE = 0.05, CI_L = -0.48, CI_H = -0.30, $p < .001$.

For group performance, the results of the first stage of the MASEM again indicated heterogeneity among the correlation matrices, χ^2 (295, N = 7905) = 1553.25, RMSEA = .24, CFI = .70[5]. We therefore used a random effects model to average the correlation matrices (see Becker, 1992). The pooled correlation matrix is reported in Table 2.7. The results of the second step of the TSSEM showed that the standardized path coefficients characterizing the effect of task conflict was significant and positive, β = .15, SE = 0.07, CI_L = 0.00, CI_H = 0.29, $p < .05$ while that of relationship

[5] The studies by Wan and Ong (2005) and Brauckmann (2007) were again identified as outliers and excluded from the analyses.

conflict, β = -.10, *SE* = 0.05, CI_L = -0.20, CI_H = 0.00, *p* = .059, and process conflict, β = -.21, *SE* = 0.11, CI_L = -0.43, CI_H = 0.00, *p* = .055, were negative but only marginally significant. The results suggest that controlling for the other two types of conflict, task conflict is positively related to group performance, while process conflict and relationship conflict are negatively related to group performance. Again, these results should be taken with caution because considerable heterogeneity existed among the correlation matrices.

Table 2.7 *Corrected Meta-Analytic Intercorrelations Among Study Variables*

	1. Process Conflict	2. Relationship Conflict	3. Task Conflict	4. Satisfaction
1. Process Conflict				
2. Relationship Conflict	.73 (*k* = 18, *N* = 1157)		.58 (*k* = 21, *N* = 1491)	-.47 (*k* = 25, *N* = 1765)
3. Task Conflict	.72 (*k* = 19, *N* = 1353)	.54 (*k* = 73, *N* = 4845)		-.36 (*k* = 25, *N* = 1843
4. Performance	-.18 (*k* = 21, *N* = 1428)	-.18 (*k* = 77, *N* = 5045)	-.07 (*k* = 92, *N* = 6877)	

Note. Values above the diagonal are the pooled correlation coefficients based on the correlation matrices including group member satisfaction. Values below the diagonal are the pooled correlation coefficients based on the correlation matrices including group performance, k = number of effect sizes; N = total sample size.

Discussion

In this meta-analysis of 116 studies on intragroup conflict, we examined the relationship of three types of intragroup conflict (i.e., task, relationship, and process conflict) with proximal group outcomes (i.e., group viability and emergent states) and distal group outcomes (i.e., group performance). Overall, we found that the three types of conflict are more negatively related to proximal group outcomes than to distal group outcomes (i.e. group performance). For several proximal outcomes, such as group member satisfaction and cohesion, we found that the relationships are less negative for task conflict as compared to process and relationship conflict. Similarly, we found that for task conflict, the overall association with group performance is neither negative nor positive,

whereas the overall association of relationship and process conflict with group performance is more uniformly negative.

Among the studies included in the meta analysis, considerable heterogeneity existed for each of the three types of intragroup conflict and their relationship with group performance. Further exploration of this heterogeneity revealed that the relationship between task conflict and group performance depends heavily on the presence of different moderating factors. We also found this to be true for the relationship between task conflict and proximal group outcomes such as group member satisfaction. Below, we address these moderating factors in more detail as well as the theoretical and methodological implications of this meta-analysis.

Theoretical Implications

Our meta-analysis suggests that the effects of conflict are better understood by a contingency approach. This offers an important extension to the meta-analysis of De Dreu and Weingart (2003b) as we have shown across 116 studies (86 studies more than the 30 studies included in their meta-analysis) that the effects of conflict are dependent on the type of conflict, the context studied, and the methods used. Factors such as the type of conflict, type of outcome, correlation between task and relationship conflict, organizational level, and how variables are operationalized and measured may explain when conflict is more negatively or positively related to group outcomes.

Extension of De Dreu and Weingart (2003b). Whereas some of the findings of the current meta-analysis are consistent with the findings of the De Dreu and Weingart (2003b) meta-analysis, such as the negative association between relationship conflict and group outcomes and the moderating effect of the association between task conflict and relationship conflict, other findings extend or refine the insights gained from their meta-analysis. First, we have expanded their review by examining a broader array of possible moderators and group outcomes and have provided a first meta-analysis of the effects of process conflict on group outcomes. Second, in contrast to their finding that task and relationship conflict are equally disruptive for group outcomes, we have found that task conflict has a less negative (and under certain conditions, a positive) relationship with group outcomes than process and relationship

conflict. Indeed, when entering all three conflict types into a path analysis together, task conflict actually became positive for group performance, whereas relationship and process conflict affected performance negatively. Third, De Dreu and Weingart found that task conflict had the least negative correlation with task performance in studies on production teams and more negative relations with performance in studies on decision-making and project teams. They concluded that "conflict interferes with information processing capacity and therefore impedes task performance, especially when tasks are complex and demand high levels of cognitive activity" (De Dreu & Weingart, 2003b, p. 747). We did not find support for this conclusion, however, as we did not find a difference between task types when testing all moderators simultaneously. Importantly, when testing the moderating effect of group task type in isolation (using subgroup analyses), we found a small and positive correlation among studies on decision-making tasks. Similarly, we also found that in studies in which performance was measured specifically in terms of decision-making quality or financial performance (instead of more global overall performance), task conflict and performance were more positively related. To test whether the differences between the results of De Dreu and Weingart and the current meta-analysis were due to coding decisions, we ran a separate analysis in which we restricted the analyses to the studies that existed when they performed their meta-analysis. The results of these analyses exhibited the same general pattern as De Dreu and Weingart, and thus, the difference between the two meta-analyses is not due to divergent coding decisions. Instead, the primary explanation for the difference in the two findings is the greater breadth of studies that we have included in the current meta-analysis. For example, at the time of De Dreu and Weingart's meta-analysis, only five of the available studies were qualified as decision-making teams. In contrast, in the current study, 23 studies of decision-making teams were included.

Theoretical moderators of the conflict–outcomes relationship. ***Co-occurrence of conflict types.*** One important moderator of the relationship between task conflict and both proximal and distal group outcomes (i.e., group performance and group member satisfaction) was the association between task conflict and relationship conflict. The moderator analyses revealed that task conflict was more negatively related to group performance and group member satisfaction

among studies where task conflict and relationship conflict were highly associated. These findings are in line with theory and research suggesting that if task conflicts can occur without relationship conflicts also occurring, task conflicts are less likely to be emotional (Yang & Mossholder, 2004), escalate (Greer et al., 2008), and impair group performance (Peterson & Behfar, 2003; Shaw, Zhu, Duffy, Scott, & Shih, 2011; Simons & Peterson, 2000). Interestingly, the association between relationship conflict and group performance was not altered when controlling for the association between task conflict and relationship conflict within a study. We did find that the association between relationship conflict and group performance was moderated by the co-occurrence of process conflict and relationship conflict; the stronger the association between process and relationship conflict reported by a study, the more negative the association between relationship conflict and group performance in that study. These findings suggest that if relationship conflicts can occur without process conflicts, they will have a less negative effect on group performance. Interestingly, the association between process conflict and group performance was not affected when controlling for the association between process conflict and relationship conflict or task conflict. Process conflicts seem to be negatively related to group performance irrespective of the extent to which they co-occur with relationship conflict or task conflict. The results of our two-stage meta-analytic path analyses provided additional support for these findings. When investigating the incremental effects of task, relationship, and process conflict, task conflict was positively related to performance, while relationship conflict and process conflict were negatively related to group performance. Moreover, instead of relationship conflict, process conflict appeared to be the most negative form of conflict for group performance. Given the heterogeneity among the correlations and the correlation matrices and the influence of the other moderating processes, this conclusion should, however, be taken cautiously.

Organizational level. We also found that the association between task conflict and performance was distinctly more positive among studies on top management teams than among studies on teams operating at lower levels of the organizational hierarchy. The same result was not found for relationship or process conflict or for other group outcomes. Interestingly, a closer inspection of the data revealed that the

average correlation of task conflict with relationship conflict among studies on top management teams was significantly lower than among the studies on non–top management teams. Since a weaker correlation between task and relationship conflicts is related to a more positive relationship between task conflict and group performance, an alternative explanation for why task conflicts in top management teams are more positively related to group performance is that members of top management teams are better able to prevent task conflict from turning into relationship conflict. It will be interesting for future research to investigate why, in top management teams, task and relationship are more weakly correlated than in non–top management teams. It might be that members of top management teams are under greater time constraints and therefore have a greater need to remain task focused or, alternatively, that members of top management teams are more politically savvy (Lazear & Rosen, 1981) and therefore better able to prevent task conflicts from escalating into relationship conflicts.

Task type. In contrast to the findings of De Dreu and Weingart (2003b), task type was not found to moderate the association between task conflict and group outcomes (even though we made the same coding decisions). Similarly, we did not find support for task type moderating the stable negative effect of process conflict on group outcomes. Although the WLS regression analyses showed that when controlling for other moderators, task type did not moderate the association between relationship conflict and group outcomes, a replication of the subgroup analyses by De Dreu and Weingart showed that, compared to studies in which groups worked on mixed tasks, relationship conflict was less negatively related to group performance among studies in which groups worked on project tasks. One possible explanation might be that during project tasks, group members are together for a short and limited period of time and work relatively independently throughout the project. This might prevent relationship conflicts from escalating or persisting over longer time periods and, therefore, could make relationship conflict less detrimental for group performance (Jehn, 1995). Future research should therefore investigate which specific factors cause outcomes of project tasks to be less affected by relationship conflicts and how this interacts with other potential moderating effects.

Cultural context. Finally, controlling for the effects of the other moderators, we did not find cultural context to affect the associations between intragroup conflict and group outcomes. Hence, contrary to our expectations, the relationships between intragroup conflict and group outcomes seems to be stable and generalizable across different cultural contexts.

Methodological Implications

We also found that differences in the methods employed in past studies of intragroup conflict may play a role in determining whether or not the effects of conflict were positively or negatively related to group outcomes. We found that the association between conflict and performance depended on the way in which performance was operationalized. Compared to overall performance, the relationship between task conflict and performance was more positive in studies where performance was operationalized in terms of financial performance. Additionally, the moderator analyses showed that, compared to overall performance, the relationship between task conflict and performance was more positive in studies where performance was operationalized in terms of decision quality. Since overall performance measures often include more subjective evaluations of performance than, for instance, objective financial performance indicators, these findings suggest that subjective evaluations of performance might be more susceptible to the negative affect that is triggered by conflict and that may cause more unfavorable and pessimistic overall performance evaluations (e.g., Ferris, Judge, Rowland, & Fitzgibbons, 1994; Mayer, Gaschke, Braverman, & Evans, 1992). Research has shown that those who experience negative affect have a more pessimistic outlook and easily link their negative affect to a certain target (Isen, Shalker, Clark, & Karp, 1978; Schwarz & Bohner, 1996). Since financial performance and decision quality are generally more objective indicators of performance, they are less affected by these negative biases and result in more positive performance evaluations, thereby showing a more positive association between conflict and performance. When controlling for the effects of the other moderators, we also found that the relationship between task conflict and group performance was more negative among studies conducted in the field than among studies conducted in the laboratory or the classroom. Although

this effect was only marginally significant, it suggests that as groups in laboratory settings normally have a clear common group goal (e.g., finish a student project) and as group members are only together for a relatively short period of time, task conflicts may be less likely to escalate and easier to resolve as members realize their collaboration is temporary and focus on the accomplishment of the immediate common goal.

With respect to relationship conflict and process conflict, the above effects were not found, reflecting their stable negative relationships with all types of group outcomes. For example, with respect to relationship conflict, we did not find that the different measures used to measure relationship conflict or performance affected the association between relationship conflict and group performance. Similar and exemplary of the stable negative relationship of process conflict with group outcomes is the finding that none of the studies on process conflict that were included in the current meta-analysis reported a positive association of process conflict with emergent states and group viability, despite the different methods used to measure process conflict and group outcomes. Moreover, 19 of the 24 studies reported a negative relationship of process conflict with group performance. Not surprisingly, therefore, none of the moderators that we included in this study affected the direction or the strength of the association between process conflict and group performance, emergent states, and group viability. In sum, process conflicts seem to be uniformly negative for group outcomes.

Limitations and Future Research

Our meta-analysis yields important insights into the effects of conflict on group outcomes, as well as potential boundary conditions of these effects. However, there are several limitations to our findings. First and perhaps most important, our meta-analysis was conducted at the study, and not group, level of analysis. As such, interpretation of our findings to the group level of interaction and analysis should be made cautiously to prevent committing the ecological fallacy of making inferences at a level of analysis different from the level at which the meta-analytic results exist (Robinson, 1950). For instance, we can only conclude that in studies where task conflict and relationship conflict are highly correlated, task conflict is more negatively related to team performance. We are unfortunately unable to conclude whether, in groups in which

relationship conflict and task conflict are both high, team performance will suffer. Therefore, future research should test this finding on the group level directly, to allow between-group, rather than between-study, conclusions to be drawn. Relatedly, because we could only investigate between-study differences, we were limited in the moderators we could examine in this chapter, as, for many theoretically relevant moderators, such as trust, conflict management style, and group demography, only a limited number of studies exist that have examined these moderators. Therefore, future research would also benefit from further investigation of theoretically relevant moderators of the conflict–outcomes relationship.

Another limitation of our study is that the effect sizes for the relationships with group performance are relatively small. However, they are comparable to other meta-analyses of the intragroup conflict literature (e.g., De Dreu & Weingart, 2003b). Furthermore, common method variance may potentially underlie the relatively strong relationship between intragroup conflict and proximal outcomes, such as intragroup trust. Future research, therefore, would benefit from (quasi-)experimental investigations that examine the relationship between intragroup conflict and proximal group outcomes more directly. Additionally, we did not find cultural context to moderate the association between intragroup conflict and group outcomes. Given that we could examine the moderating effect of cultural context only indirectly, conflict research would benefit from a more direct and systematic examination of the effect of cultural context to investigate whether the findings are truly generalizable across different cultural contexts. Finally, since the results from moderator analyses do not provide any evidence of a causal relationship between moderators and outcomes (Cooper, 1998; Viechtbauer, 2007), future research should aim to better understand exactly how the causal relationships between intragroup conflict and group outcomes are affected by the moderators identified in this study (Cooper, 1998).

Future research on conflict would benefit from taking a more multilevel, process-oriented view of intragroup conflict, including focusing on, for example, within-group, rather than between-group, studies of the development and dynamics of intragroup conflicts over time. Understanding more precisely what happens within a team when intragroup conflicts occur (who perceives what issues, who in the group engages in what conflict behaviors, etc.) and how these dynamics evolve

within the team over time may help provide further insights into how intragroup conflicts occur and how exactly they may eventually come to positively or negatively affect group outcomes.

Several promising research directions exist in this area. One research direction is that of asymmetric conflict perceptions (Jehn, Rispens, & Thatcher, 2010). By recognizing and better investigating how members within the same team may come to view the same conflict in different manners, researchers may be able to better understand the nuances and dynamics of intragroup conflicts. Another related and interesting future pathway is that of the dynamics underlying intragroup conflict involvement, or the number of people involved in the intragroup conflict (Greer, Jehn, & Lytle, 2009). By understanding the team-level and individual-level factors that may differentially lead individuals within teams to join intragroup conflicts, researchers and practitioners may be able to better understand and manage team conflicts. Last, another interesting research direction would be to focus on the temporal patterns within groups over time in terms of conflict types and performance (e.g., Gersick, 1988; Jehn & Mannix, 2001). For example, it could be insightful to look at whether periods of time in a group when task and relationship co-occur versus do not occur simultaneously are more or less productive periods. Relatedly, identifying the tipping points in groups in which task and relationship conflicts start to co-occur would also be interesting (the arise of asymmetric perceptions, emotional interpretations of conflict situations, etc.).

Future research should identify factors that determine whether groups are able to separate task from relationship conflicts. More generally, future research may examine moderators of the relationships between the three types of conflict. One possible factor may be the level of behavioral integration within the group: the extent to which group members meet regularly, exchange a significant amount of information, and are collaborative (Hambrick, 1994). Behavioral integration seems to go hand in hand with collaborative communication styles in which group members communicate their disagreement in a helpful, problem-solving, and nonpunitive manner (e.g., De Dreu & West, 2001; Lovelace, Shapiro, & Weingart, 2001). Moreover, behavioral integration appears to increase trust among group members (e.g., Polzer, Crisp, Jarvenpaa, & Kim, 2006) as well as a greater understanding of each other's emotions during conflict

(Yang & Mossholder, 2004). As such, behavioral integration may reduce misinterpretations of task conflict and thus weaken the relation between task and relationship conflict (Gamero et al., 2008; Mooney et al., 2007; Simons & Peterson, 2000).

Conclusion

The findings of the current meta-analysis offer hope for a less negative view of intragroup conflict. Whereas groups should be better off without relationship or process conflicts, we have found that task conflicts are not necessarily disruptive for group outcomes. Instead, conditions exist under which task conflict is positively related to group performance. For example, task conflict is more positively related to team performance when task conflict and relationship conflict are weakly correlated, when the conflict occurs among top management teams rather than teams at lower levels of the organizational hierarchy, and when performance is operationalized in terms of financial performance or decision quality (rather than overall performance). Hereby, the current results reemphasize the need for future research to adopt a contingency approach to understand the relationships between intragroup conflict and group outcomes.

Chapter 3
Task conflict, information processing, and decision making: The damaging effect of relationship conflict

A popular theoretical assumption holds that task-related disagreements stimulate critical thinking and, thus, may facilitate superior group decision-making. Two recent meta-analyses showed, however, that although some studies found a positive relationship between task conflict and decision-making quality other studies found a negative or even no relationship (C. K. W. De Dreu & L. R. Weingart, 2003b; F. R. C. De Wit, L. L. Greer, & K. A. Jehn, 2012). In two studies, we build upon the suggestion of both meta-analyses that it may be the presence of relationship conflict that determines whether a task conflict is positively or negatively related to decision making. The findings presented in this chapter show that the level of perceived relationship conflict during a task conflict (Study 1), as well as the actual presence (vs. absence) of relationship conflict during a task conflict (Study 2), increases group members' rigidity in holding on to suboptimal initial preferences during decision making and, therefore, lead to poor decisions. Moreover, in both studies we find that the effect on decision making is mediated by biased use of the information available.

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Many researchers and practitioners have argued that task-related disagreements can stimulate critical thinking and, thus, may facilitate superior group decision-making (e.g., Amason, 1996; Deutsch, 1973; Jehn, 1995; Nemeth, 1995; Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006). In contrast to these findings, two meta-analyses of the intragroup conflict literature found no support for an overall positive association between task conflict (disagreements that follow from different task-related viewpoints) and group performance (De Dreu & Weingart, 2003b; De Wit, Greer, & Jehn, 2012). Although De Dreu and Weingart's initial meta-analysis of 30 studies on intragroup conflict even showed an overall negative association between task conflict and group performance, the more recent meta-analysis of 116 studies by De Wit et al. (2012) showed that overall, the association between task conflict and group performance is neither negative nor positive. Moreover, De Wit et al.'s results showed that the association between task conflict and group performance depends on moderating factors such as the association between task conflict and relationship conflict (disagreements that arise from interpersonal incompatibilities and include affective elements such as feeling friction and tension; Jehn, 1994). More specifically, in line with earlier findings by De Dreu and Weingart, the findings of De Wit et al. showed that task conflict and group performance were more positively related among studies where the association between task and relationship conflict was relatively weak rather than strong.

These results can be interpreted as providing evidence for the idea that groups are more likely to benefit from a task conflict when the task conflict occurs in the absence (vs. presence) of a relationship conflict (e.g., Shaw, Zhu, Duffy, Scott, & Shih, 2011). Yet, because meta-analyses can only draw inferences at the study level but not at the group or individual level of analyses, the two meta-analyses could not test this hypothesis directly, nor could they investigate the processes that may underlie this damaging effect of relationship conflict (cf. Lau & Cobb, 2010). To fill this void, in this chapter we present two experimental studies in which we investigate how relationship conflict impairs the link between task conflict and group decision-making. We propose that the presence of relationship conflict during a task conflict has two important consequences. First, that it makes group members more likely to rigidly hold on to an initially preferred decision alternative. Secondly, that it makes group members

process information in a biased manner, such that group members will tend to use their own information during decision making rather than the information they receive from other group members.

By examining the damaging effect of relationship conflict on the link between task conflict, information processing, and decision making, the current chapter integrates and extends research on the connection between task and relationship conflict (e.g., Jehn, 1995) with experimental research on conflict and information processing in decision-making groups (e.g., Scholten, Van Knippenberg, Nijstad, & De Dreu, 2007; Schulz-Hardt et al., 2006). In addition, this chapter addresses the need for identifying the circumstances that may help or hinder the potential beneficial effect of task conflict on group performance (e.g., Behfar & Thompson, 2007; De Dreu, 2008; De Dreu & Weingart, 2003b; Jehn & Bendersky, 2003). More specifically, in the current chapter we will show that the presence of a relationship conflict inhibits the potentially beneficial effect of task conflict due to an increased tendency of group members to rigidly hold on to their initial decision-preferences (e.g., Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007; Greitemeyer & Schulz-Hardt, 2003).

Conflict and Rigidity in Decision making

When group members work toward a common group goal (e.g., designing a new product, or maximizing the return on investment) a task conflict may arise when group members have diverging task-related viewpoints. In this chapter we will focus on two different reasons why such a task conflict can co-occur with a relationship conflict. First, we focus on task conflicts that co-occur with relationship conflicts due to misinterpretations of a task conflict as a relationship conflict. This can happen when a disagreement about the task is taken too personally and group members therefore feel they also disagree on a more personal level. Secondly, we focus on task conflicts that co-occur with relationship conflicts because in addition to the task conflict, an unrelated relationship conflict arises about more personal matters, such as a disagreement that arises due to diverging political or artistic preferences, or from incompatible personalities. We propose that in both cases, thus irrespectively of whether a relationship conflict is directly related to the task conflict or not, the presence of relationship conflict is likely to cause

an increased rigidity during the task conflict. Below we will explain these two forms of relationship conflict, and their relation to information processing and decision making in more detail.

Task conflicts are easily misinterpreted as a relationship conflicts because task-related viewpoints often become strongly intertwined with group members' self-views, and individuals quickly develop a feeling of ownership of their viewpoints (e.g., De Dreu & Van Knippenberg, 2005). Self-verification theory suggests that scrutiny and/or rejection of task-related viewpoints, therefore, might often feel as a negative assessment of the self (e.g., Swann, Polzer, Seyle, & Ko, 2004). Hence, during task conflict, group members might easily feel that in addition to their task-related viewpoints, they are also being criticized at a more personal level. As a result, task-related debates might often be perceived as personal attacks and misinterpreted as relationship conflicts (e.g., Fisher & Ury, 1981; Jehn, 1997; Simons & Peterson, 2000; Torrance, 1957; Yang & Mossholder, 2004).

This misinterpretation of a task conflict as a relationship conflict is likely to cause counterproductive cognitions and behaviors (Simons & Peterson, 2000). That is, in response to attacks on to their self-views, individuals often become defensive (e.g., Baumeister, Smart, & Boden, 1996) and make a shift from a cooperative mindset towards a more competitive mindset (De Dreu & Van Knippenberg, 2005). Although such competitive mindsets may assist group members in protecting and maintaining their self-concepts, they will come at the expense of finding a mutually agreeable solution (e.g., Deutsch, 1973). More specifically, such mindsets may lead to an escalation of commitment and even positional bargaining in which parties hold on to a certain task-related viewpoint and argue for it as a goal in itself, regardless of any underlying interests (Fisher & Ury, 1981). In sum, group members are likely to become rigid in holding on to their initial opinion when they misinterpret a task conflict as a relationship conflict.

Relationship conflicts that are not directly related to the task conflict, but instead arise independently from the task conflict, are likely to cause rigidity during a task conflict as well. When debates about more personal matters create friction, negative emotions, and interpersonal animosity (all the ingredients of a relationship conflict), this may easily spill-over, and determine the way group members react to a task-related

debate. The presence of a relationship conflict, for instance, may encourage hostile interpretations of task-related viewpoints, thereby creating 'a self-fulfilling prophecy of mutual hostility and conflict escalation' (Simons & Peterson, 2000, p. 104). Hence, instead of approaching a task-related debate with an open-mind, the presence of relationship conflict may cause group members to be more competitive during a task conflict and to reduce their willingness to consider and use the viewpoints of their fellow group members (e.g., Janssen, Van de Vliert, & Veenstra, 1999).

Indeed, ample research on dyadic and group conflict suggests that such competitive mindsets can lead to rigidity in the form of distributive bargaining, derogation of counterparts, and the reluctance to disconfirm initial preferences (De Dreu, 2008; De Dreu, Weingart, & Kwon, 2000; Rubin, Pruitt, & Kim, 1994; Tjosvold, 1998; Toma & Butera, 2009). In sum, theory suggests that the misinterpretation of a task conflict as a relationship conflict, as well as the occurrence of an unrelated relationship conflict with a task conflict, is likely to augment group members' rigidity in holding on to an initial viewpoint during group decision-making. Therefore, we propose:

Hypothesis 1. During group decision-making, group members are more likely to rigidly hold on to their initial opinion when they encounter a task conflict in the presence (compared to the absence) of relationship conflict.

Conflict and Biases in Information Processing

In addition to becoming more rigid in holding on to an initial opinion, group members might also process information in a more biased manner when they encounter a task conflict in the presence (compared to the absence) of relationship conflict (e.g., Janssen et al., 1999). More specifically, due to the presence of a relationship conflict, group members may focus on information that they possess themselves and that supports their initial task-related viewpoint, rather than on information they receive from other group members and that may possibly be inconsistent with their initial preferences. These biases in processing of task-related information might mediate the impact of relationship conflict on individuals' tendency to hold on to their initial opinions during task conflict; because individuals focus primarily on their own information and

ignore the information they receive from their group members, they might automatically become more likely to hold on their initial opinion rather than changing it in deference of someone else's opinion.

There might be two distinct processes that explain why in the presence of relationship conflict group members' may process task-related information in a biased manner. First, in line with the motivated information processing in groups model (MIP-G; De Dreu, Nijstad, & Van Knippenberg, 2008), group members might more or less deliberately choose not to use the ideas and information from other group members because the presence of a relationship conflict reduces their motivation to process information systematically during a task conflict. Secondly, and less intentionally, group members might process information in a biased manner because they feel a reduced ability to cope with a task conflict when it co-occurs with a relationship conflict (which causes group members to focus primarily on information that is consistent with initial preferences; e.g., Fischer et al., 2011; Kamphuis, 2010; Kassam, Koslov, & Mendes, 2009).

According to the MIP-G (De Dreu et al., 2008) group members' motivation to systematically process information is determined by their epistemic motivation as well as their social motivation. Epistemic motivation is defined as the willingness to expend effort to achieve a thorough and accurate understanding of the task at hand. Social motivation is defined as the individual preference for outcome distributions between oneself and other group members. The MIP-G model postulates that epistemic motivation drives the degree to which information is attended to whereas social motivation drives the kind of information that individuals attend to. Social motivation, for example, may determine whether group members will focus primarily on information supporting their preferred alternative or on information that could integrate different decision alternatives (De Dreu et al., 2008).

The presence of relationship conflict is likely to reduce group members' epistemic motivation. A recent meta-analysis for example showed that relationship conflict is negatively related to group members' commitment to the group (De Wit et al., 2012). Therefore in the presence (vs. absence) of relationship conflict, group members might disengage from the group task and ignore what other group members have to say. In addition to reducing group members' epistemic motivation, the presence

of relationship conflict is also likely to affect group members' social motivation. More specifically, in line with the MIP-G, it can be expected that the presence of relationship conflict elicits a more competitive social motivation and therefore reduces group members' motivation to attend to information that would facilitate consensus and the integration of perspectives (e.g., Van Kleef & De Dreu, 2002). Put differently, the presence of relationship conflict may cause group members' to be more concerned with 'winning' the debate, instead of developing an accurate and deep understanding of the decision problems at hand (Fisher & Ury, 1981).

As a result, in the presence of relationship conflict, individuals may increase their attention to the task-related arguments of others, but only in the hope of detecting flaws in those arguments. Therefore despite an increased attention to others' task-related viewpoints, group members will not really process other task-related arguments systematically (for example, to find a mutually beneficial solution). Instead they will be motivated to only use information that supports initial viewpoints and/or information that depreciates others' viewpoints (e.g., Brodbeck et al., 2007; Greitemeyer, & Schulz-Hardt, 2003). Hence, they will be motivated to ignore information that is inconsistent to their initial viewpoints and would potentially help integrate different perspectives. In sum, when a task conflict co-occurs with a relationship conflict, group members may not be motivated to thoroughly process the alternative perspectives of their group members due to a lower commitment to the group and a more competitive social motivation.

In addition to this motivational explanation, group members' bias towards their own information and viewpoints may also result from the anxiety that is triggered by the presence of a relationship conflict. That is, when group members do not feel able to cope with a workplace conflict, it may elicit anxiety (e.g., Dijkstra, Van Dierendonck, & Evers, 2005; Narayanan, Menon, & Spector, 1999), especially when a conflict gets personal and emotional (e.g., Jehn, 1997). The presence of relationship conflict, therefore, may impair cognitive functioning, because the anxiety triggered by the presence of a relationship conflict is likely to narrow group members' field of attention and reduce the number of information channels they use (e.g., Kamphuis, 2010; Staw et al., 1981). In line with the threat rigidity hypothesis (e.g., Staw et al., 1981), research suggests that

feelings of anxiety reduce the likelihood of individuals to adjust task-related viewpoints (De Wit, Scheepers, & Jehn, 2012; Kassam et al., 2009). Likewise feelings of anxiety have been linked to biases in information processing, such that anxiety increases the likelihood of individuals to use information that corresponds to initial viewpoints (e.g., Fischer et al., 2011).

In sum, when a task conflict co-occurs (vs. not co-occurs) with a relationship conflict, group members are more likely to process information in a biased manner due to a self-reinforcing cycle of deliberate (motivation) and somewhat unintentional (anxiety) processes that both cause individuals to focus and use information that they possess themselves rather than information they receive from other group members. Hence, we propose:

Hypothesis 2. During group decision-making, group members are less likely to process the information provided by other group members when they encounter a task conflict in the presence (compared to the absence) of a relationship conflict.

As aforementioned, we propose that this biased information processing mediates the effect of relationship conflict on group members' rigidity in group decision-making. That is, in line with recent theorizing on decision making in groups, biases towards one's own information should make group members more likely to stick to decisions that are consistent with their initial preferences (e.g., Brodbeck et al., 2007). More specifically, because relationship conflict will increase group members' focus on information that is consistent with their own viewpoint, group members will fail to learn from information that may contradict their initial viewpoint. Moreover, through biased information processing, the presence of a relationship conflict augments individuals' tendency to hold on to suboptimal preferences even if all available information is exchanged (e.g., Brodbeck et al., 2007; Greitemeyer & Schulz-Hardt, 2003). That is, group members may not only judge their own information and preference-consistent information to be more credible, they may also fail to consider the information from others in the first place. Hence, the fact that the presence of relationship conflict may facilitate group members' tendency to hold on to their initial preferences is likely to be

due to a further decrease in the extent to which they process the viewpoints and information of others. Therefore we propose that:

Hypothesis 3. Biased information processing mediates the effect of the presence (compared to the absence) of relationship conflict on group members' rigidity during group decision-making. More specifically, during group decision-making, group members are more likely to rigidly hold on to their initial opinion when they encounter a task conflict in the presence (compared to the absence) of relationship conflict because they will make less use of the information provided by other group members.

Finally, we propose that two distinct factors, in turn, might mediate the effect of the presence (compared to the absence) of a relationship conflict on biased information processing. First, in line with the aforementioned research on motivated information processing in groups (e.g., Scholten et al., 2007), the more biased information processing could be ascribed to individuals reduced motivation to process information systematically. Secondly, when a task conflict co-occurs with a relationship conflict, group members may perceive the task conflict as more demanding and, therefore, feel less able to cope with the conflict. As a result, and in line with research on anxiety and biases in information processing (e.g., Fischer et al., 2011; Kassam et al., 2009), they might feel more anxious, which causes them to unintentionally focus on information that is related to their initial decision. Hence, we propose that group members are less likely to use the information they receive from other group members when they encounter a task conflict in the presence (compared to the absence) of relationship conflict because (i) they are less motivated to process information systematically (Hypothesis 4a) and (ii) because they feel less able to cope with the task conflict (Hypothesis 4b).

Our research

The aim of our research is to investigate whether group members are indeed less likely to use the viewpoints provided by others in their decision making and show more rigidity during decision making when a task conflict occurs in the presence (compared to absence) of a relationship conflict. To examine information processing and decision making we asked participants to work on a hidden profile task (see Stasser & Titus, 1985; Toma & Butera, 2009). In a hidden profile task, part of the

information is shared among group members whereas other pieces of information are unshared. When all information available to the group is considered, group members should be able to derive the correct solution. Yet, no group member can identify this best solution on the basis of only their own individual information. Instead, individual group members are directed to a suboptimal decision alternative by the subset of the information they receive, and therefore the use of each other's information, as well as the disconfirmation of group members' initial preferences is required to derive the correct solution (Schulz-Hardt et al., 2006). A hidden profile task, therefore, offers a well-suited possibility to examine group members' rigidity in holding on to their initial (but incorrect) preference (Hypothesis 1), as well as the extent to which they process and use the information they receive from the other group members (Hypothesis 2).

Participants were asked to solve the hidden-profile task together with two other group members. The other two group members were confederates, which enabled us to experimentally induce a task conflict. We operationalized task conflict in line with the common definition of task conflict (e.g., Jehn, 1994) as an overt disagreement about the solution to the task at hand. We induced the task conflict by having the two confederates (i) clearly state that they disagreed with the participants' preferred solution, (ii) explicitly mention their preferred alternative solution to the task, and (iii) explain why exactly they preferred this other solution to the task.

Participant did not interact directly with other participants for two reasons. First, we wanted to make sure that all participants encountered the same task conflict. Secondly, we wanted to make sure all the unshared information was shared by the group members. That is, in hidden-profile situations, group members often fail to discuss their unshared information because they focus on what information they have in common (Gigone & Hastie, 1993; Stasser & Titus, 1985). Group members therefore often stick to their initially preferred solution simply because they and other group members fail to share crucial and preference-inconsistent information. By experimentally controlling the reactions of the group members we could ensure that the group members discussed all the unshared information necessary to derive the correct solution, and participants also knew about the information that contradicted their initial opinion. In this way, we

could ensure that individuals' rigidity in holding on to their initial opinion was not due to any group's failure to share information but, instead due to an intra-person decision process affecting individuals' tendency (not) to use the information (see Greitemeyer & Schulz-Hardt, 2003 for a similar procedure).

We designed Study 1 to examine how the misinterpretation of the task conflict as a relationship affected participants' information processing and decision making. To this end, we examined the extent to which individuals' perceived relationship conflict during the task conflict, and how this affected individuals' information processing and decision making. In Study 2, we used the same experimental induction of task conflict, but now in combination with an experimentally induced relationship conflict (or no relationship conflict). We designed Study 2 to assess how the 'actual' presence (vs. absence) of a relationship conflict during the task conflict altered individuals' information processing and decision making.

Study 1

In the first study we examined how information processing and subsequent rigidity in decision making were affected by the extent to which group members perceived relationship conflict during a task conflict. In line with the hypotheses presented above, we expected that the extent to which group members perceived relationship conflict during a task conflict would be positively related to group members' tendency to rigidly hold on to their initial opinion (Hypothesis 1), and biased information processing (i.e., individuals' tendency to use their own information over the information they receive from other group members) (Hypothesis 2). Moreover, we expected that biased information processing would mediate the effect of the level of perceived relationship conflict on group members' tendency to hold on to their initial opinion (Hypothesis 3). Finally, we also expected that the more group members perceived relationship conflict during a task conflict, they less likely they would be to use the information provided by other group members because (i) they would be less motivated to process information systematically (Hypothesis 4a) and (ii) they would feel less able to cope with the task conflict (Hypothesis 4b).

Participants and Design

A total of 82 participants (50 women, 32 men) took part in this study in return for a monetary award (6 Euros) or partial course requirement. There were no experimental conditions; we induced the same task conflict for all participants and then measured the level of perceived relationship conflict during the task conflict as the independent variable.

Decision Task

Participants worked on a hidden profile task. Ostensibly, they had to work together with two other participants with whom they formed a group. The hidden-profile task was adapted from Toma and Butera (2009) and concerned a road accident investigation. Four persons are potential suspects in this accident, although based on a specific set of 9 clues three of them can be exonerated (Mr. X, Mrs. Y, and Mr. Z) and the fourth (Mr. X's son) incriminated. The task contained 28 items of information: 19 of them were shared and nine were unshared among the group members (see Appendix A). The 19 shared items describe the circumstances of the accident and some specific characteristics of the suspects. On the basis of the nine unshared items participants could identify Mr. X's son as the guilty person. A hidden profile was constructed by allocating three critical unshared items to each of the group members. Based on the three unshared items they received, each group member was oriented to a specific initial preference (Mr. X, Mrs. Y, or Mr. Z). To derive the correct solution, participants were required to use the unshared information of their group members and to disconfirm their own initial preferences. To have experimental control over the level of task conflict, we made participants believe that they really interacted with two other group members although in reality the reactions of the other two group members were pre-programmed. All participants were therefore directed to the same initial solution (Mr. X), whereas their two group members were ostensibly arguing for Mrs. Y and Mr. Z respectively (see for more details below and Appendix A).

Procedures and Independent Variable

When participants arrived in the lab, they were told that they were going to work on a decision-making task with two other participants who

were yet to arrive. Participants were seated in separate cubicles and told that they would work on the task as a group via the computer system. The participants were instructed to first study the road accident case individually and to decide who they identified as the guilty person. They were provided with the 19 shared items along with three unshared items that oriented them towards a specific suspect (Mr. X). These 19 pieces of shared information did not make any of the suspects seem more guilty than the other suspects. Participants knew which of their own items were shared and which items were unshared, and were aware that the other two group members would receive different unshared items. This transparency is important because such explicit knowledge allowed participants to deliberately choose not to use the other group members' unshared information in their decision making (Toma & Butera, 2009). Participants were given 1.5 minutes to find a solution. Next, they were invited to present their decision in front of the webcam, and give a clear motivation why they made this decision (Recording 1). They were told that (a) their statement would be recorded; (b) the other group members would watch their video-recording; (c) that the other group members would give a reaction to their video-recording; and (d) they [the participant] would be able to watch the reactions of the other group members to make a final decision. This set-up (as opposed to a real discussion) was used to control the task situation and to standardize it across participants (see Greitemeyer & Schulz-Hardt, 2003 for a similar procedure). Participants worked under the full impression that their group members actually existed, and knew the gender of the other two group members because they could see their group members (a female and a male confederate) directly via the video-recordings.

Induction of Task conflict

After participants announced their initial decision (Recording 1), and after a short waiting period, we induced the task conflict by means of the pre-recorded reactions of the other group members, in which the other group members openly stated their disagreement with the participants' initial solution. We made sure that all three group members had a different solution in mind (so that none of the possible answers had the majority number of group members supporting it) and that all previously unshared information was being shared during the conflict.

The actors portrayed the disagreement in a non-emotional way, so they were instructed not to make any gestures that could signal emotions such as anger or frustration, to express their opinion in a neutral tone of voice, and to keep a neutral face, so for example not to frown when expressing their opinion.

Based on the unshared items that participants had received (see Appendix A) we expected participants to initially argue Mr. X was the culprit, and therefore the reaction of the first (female) group member was: "Hi all, I don't agree, I don't think Mister X did it. My information said that the guilty person is less than 30 years old. Due to inexperience, the guilty person wasn't able to avoid the collision. Also it said that the guilty person claimed that he or she did not see others approaching the intersection. Therefore I thought it was Mrs. Y..."

Hereafter, a reaction from the second (male) group member followed. This person also disagreed but opted for Mr. Z. The second group member said: "Mhmm.. I don't agree either, I don't think it's X.. But I had Mr. Z because my info said that the guilty person was a man and that a family member was indirectly responsible for the accident and it said that the guilty person was driving at 110km/h... ."

To check whether this debate with their group members was indeed perceived to be a task conflict, right after participants had received their group members' reactions participants were asked to rate their agreement with three items adapted from Jehn et al. (2008). The three items were 'The solutions of my teammates are different from my own solution', 'The guilty person that my teammates have in mind is different from the guilty person that I have in mind' and 'Within our team we disagree about the solution of this dilemma', $\alpha = .68$. These and all other items were always presented in the same order, and there were no time-constraints on how long participants could take to answer these questions.

Next we checked the extent to which participants perceived relationship conflict during the task conflict. Participants were asked to rate their agreement with five statements regarding the amount of relationship conflict they had perceived. The items were adapted from Jehn (1995) and were "I felt somewhat irritated by the response of my teammates", "The exchange of our preferences got a bit personal", "The comments of my teammates were not really helpful", "I think I can get

along well with my teammates", and "I think our personalities do not work well together" (α = .74). After this, we measured the participants conflict-related coping appraisals (see below for more details), and participants were asked to present their individual final decision by means of a webcam recording and to provide an explanation for why they came to this decision (Recording 2). Finally, participants were asked to fill in a short survey, including our measure of their motivation to process information systematically (see for more details below), and to provide a final rank-order of whom of the four persons they thought was most likely to be the culprit (Mr. X, Mrs. Y, Mr. Z, or the son of Mr. X), after that they were debriefed, paid and thanked for their participation.

Dependent measures

Rigidity in decision making. The primary dependent variable was the final decision that was made. Following Toma and Butera (2008), the final decision was a categorical measure expressing whether participants chose the decision reflecting rigidity (Mr. X), the correct decision (Son of Mr. X), or a decision reflecting yielding (Mrs. Y or Mr. Z). Mr. X was considered as the rigid decision, because participants who made this decision stuck with their initial solution, despite the disagreements with the other group members and the unshared information items they received from them that should have directed them to the correct decision. Mrs. Y and Mr. Z were considered as the 'yielding' decision, because participants who made this decision 'yielded' by agreeing with (one of) their group members even though their own unshared information and the information they received from their group members directed them to a different solution. Given the three decision-types our dependent variable allowed us to examine whether an increased tendency to hold on to their initial opinion comes at the expense of individuals' tendency to yield and/or their tendency to derive the correct solution. We expected that compared to holding on to an initial opinion, individuals would be less likely to yield as well as less likely to derive the correct solution when a task conflict co-occurs with a relationship conflict and, therefore, we did not present separate hypotheses for each of these two answer categories.

Information Processing. The presentations of participants' final decision (Recording 2) were written out and then content-analyzed by two

research assistants. We first determined which of the nine unshared items participants used to support their final decision. Next, we determined how many of these items participants had initially received themselves and how many they had later received from other group members during the discussion. We also determined the proportion of others' vs. participants' own unshared information that was used to support a final decision. To do so, we divided the number of unshared items that were provided to participants through their group members by the total number of unshared items that participants used to support their final decision. So, for example, when participants used four unshared items to support their final decision, and three of these items were provided to participants through their group members, the proportion of other versus participants' own unshared information would ¾ = .75. Both coders evaluated all written out texts and were blind to the hypotheses. They were trained by the first author and were instructed to count the number of pieces of unshared information that were mentioned by the participant. The reliability of their codings was substantial (Cohen's kappa = .72) and one of the coders and the first author resolved the discrepancies among the codings by reaching consensus via discussion.

Motivation to process information systematically. We measured participants' motivation to process information systematically with the following four items adapted from De Dreu, Koole, and Oldersma (1999) "When solving the dilemma, I hardly thought about all the information I had received"(reverse coded), "I tried to use and combine all available information in my solution", "I have not paid much attention to the information that my teammates gave me" (reverse coded), and "I tried to utilize all available information in my solution" (α = .77).

Ability to cope with task conflict. Coping appraisals were measured by four items adapted from Tomaka, Blascovich, Kelsey, and Leitten (1993). Two items concerned the perceived demands of the task conflict, "It is difficult to get past the differences between our solutions" and "It is stressful that our solutions are so different" and two items concerned the perceived resources to cope with the task conflict, "I think that I am able to solve the differences between our solutions" and "Despite our different solutions, I think I am able to find the right solution to this dilemma" (α = .79).

Results

Manipulation Checks and Descriptive Statistics

Recall that to facilitate our manipulation of task conflict, participants initially received unshared information that directed them to one specific answer category (Mr. X). To check whether participants indeed opted for Mr. X, we content-analyzed the video-recordings to identify their initial solution. The results showed that except for one participant, all of the 82 participants initially thought that it was Mr. X who caused the accident (the one participant who did not chose Mr. X was excluded from further analyses because his answer made the manipulation obsolete). Results show the manipulation of task conflict was successful; the average level of reported task conflict was high and significantly higher than the midpoint on the scale (i.e., 4; $M = 6.54$, $SD = .68$, $t(80) = 33.63$, $p < .001$).

Rigidity in decision making

To test our first hypothesis, that the extent to which group members perceive relationship conflict during a task conflict will be positively related to group members' tendency to rigidly hold on to their initial opinion, we estimated a multinomial logistic regression predicting the answer categories, with the extent to which people perceived relationship conflict during the task conflict as a predictor variable. Model 1, in Table 3.1 shows that, in line with Hypothesis 1, the extent to which group members perceived the task conflict as a relationship conflict had a significant influence on their decision making ($\chi^2 = 17.63$, $df = 2$, $p < .001$). Specifically, participants were (1 / .281 =) 3.56 times more likely to stick to their incorrect initial solution (i.e., rigidity), instead of choosing the correct solution, with every one-point increase in the extent to which they perceived relationship conflict during the task conflict. Similarly, participants were three times more likely to hold on to their initial opinion instead of adopting one of the solutions of the other group members (Mrs. Y or Mr. Z; i.e., yielding) with every one-point increase in perceived relationship conflict.

Information Processing

To test our second hypothesis, that group members are less likely to use the unshared information provided by others when they perceive

Table 3.1. *Multinomial Logistic Regressions Examining The Decisions Made In Study 1*

	Model 1				Model 2				Model 3				Model 4			
Predictor	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*
Correct Solution (Son of Mr. X) versus Incorrect 'Rigidity' Solution (Mr.X)																
Intercept	2.83**	.97		8.52	-.91	1.34		.46	-8.17*	3.45		5.61	-4.58	3.94		1.35
Perceived Relationship Conflict	-1.27**	.39	.28	1.90	-.83*	.41	.43	4.09	-.51	.43	.60	1.43	-.55	.45	.58	1.47
Motivation to process information									.93*	.42	2.54	4.93	.17	.54	1.19	.10
Coping Ability									.90**	.30	2.46	8.81	.45	.34	1.57	1.75
Information Use					.06***	.02	1.07	14.31					.06**	.02	1.06	9.14
Incorrect 'Rigidity' Solution (Mr.X) versus Incorrect 'Yielding' Solution (Mrs.Y or Mr.Z)																
Intercept	-2.06*	1.03		4.01	.20	1.28		.03	2.32	3.37		.47	.01	3.65		.00
Perceived Relationship Conflict	1.09**	.41	2.97	7.19	.73†	.41	2.07	3.19	.86†	.47	2.37	3.34	.83†	.47	2.29	3.15
Motivation to process information									-.61	.41	.54	2.21	-.13	.50	.88	.07
Coping Ability									-.15	.29	.86	.27	.09	.33	1.09	.07
Information Use					-.04**	.01	.96	7.44					-.03†	.02	.97	3.56
Correct Solution (Son of Mr. X) versus Incorrect 'Yielding' Solution (Mrs.Y or Mr.Z)																
Intercept	.76	.97		.62	-.71	1.30		.30	-5.85	3.76		2.42	-4.57	3.90		1.37
Perceived Relationship Conflict	-.18	.42	.83	.19	-.11	.41	.90	.07	.35	.50	1.42	.51	.28	.49	1.32	.32
Motivation to process information									.32	.44	1.38	.52	.04	.52	1.04	.01
Coping Ability									.75*	.31	2.11	5.85	.54	.32	1.71	2.90
Information Use					.02	.01	1.02	2.38					.03	.02	1.03	2.21
Chi-square	17.63***				39.56***				33.99***				44.05***			
df	2				4				66				88			
-2 log likelihood	77.08				112.69				132.61				117.16			
Cox and Snell pseudo R^2	.20				.40				.35				.44			
Sample size	81				77				79				76			

Note. OR = odds ratio, † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

relationship conflict during the task conflict, we regressed the unshared information used by participants to support their final decision on the extent to which people perceived relationship conflict during the task conflict. In support of Hypothesis 2, the use of the unshared information that participant received from the other group members was negatively related to the extent to which participants perceived relationship conflict during the task conflict; both in absolute terms, $\beta = -.31$, $t(78) = -2.912$, $p = .005$, $R^2 = .10$, as well as relative to their use of their own unshared information they used, $\beta = -.38$, $t(76) = -3.524$, $p < .001$, $R^2 = .14$.

Mediation Analyses

To test our third hypothesis, that information processing mediates the effect of the perceived level of relationship conflict during the task conflict on group members' tendency to adjust their initial opinion, we followed the three-step procedure suggested by Baron and Kenny (1986). More specifically, to establish mediation our first step was to establish that our independent variable (the perceived level of relationship conflict during the task conflict) affected our main dependent variable (individuals' tendency to hold on to an initial opinion). The second step was to establish that our independent variable affected our proposed mediating variable (individuals' tendency to use the information received from other group members). The third and final step was to establish that the effect of our independent variable on the main dependent variable was significantly reduced when controlling for the mediating variable. The results presented in the previous two sections showed that the perceived level of relationship conflict during the task conflict indeed predicted individuals' tendency to hold on to an initial opinion (step 1) as well as individuals' tendency to use the information received from other group members (step 2). To test step 3, we estimated a multinomial logistic regression predicting the answer categories, with two predictor variables: (i) the extent to which relationship conflict was perceived during the task conflict, and (ii) the proportion of other group members' versus own unique information that was used during decision making ('information use').

As can be seen in Table 3.1, Model 2, the effect on decision making was mediated by information processing. That is, when information processing was entered in the model, the effect of perceived

relationship conflict was reduced, both for the correct solution versus the incorrect 'rigidity' solution and for the incorrect 'rigidity' solution versus the incorrect 'yielding' solution. We also conducted bootstrapping analyses as described by Preacher and Hayes (2004) for estimating the direct and indirect effects of perceived relationship conflict on participants' tendency to stick to their initial opinion. Using bootstrapping we derived a confidence interval for the indirect effect, that provides a more accurate estimate of the indirect effect with small-to-moderate samples size than does the Sobel test (see Shrout & Bolger, 2002). The indirect effect is significant at $p < .05$ if the 95% confidence intervals do not include the value of zero. As seen in Table 3.2, the test confirmed that the mediation was significant. Hence, supporting Hypothesis 3, the extent to which group members perceive relationship conflict during a task conflict is negatively related to group members' use of the information provided by other group members, that, in turn, is related to greater rigidity in decision making.

Motivation and Coping Ability. We then tested whether motivation (Hypothesis 4a) and coping ability (Hypothesis 4b) explain why participants made less use of their group members' information when they perceived more relationship conflict during the task conflict. Using regression analyses, we first established that the extent to which group members perceived relationship conflict during the task conflict was negatively related to their motivation to process information systematically, $\beta = -.42$, $t(1, 80) = -4.15$, $p < .001$, as well as their perceived coping ability, $\beta = -.36$, $t(1, 78) = -3.43$, $p < .001$. Next, and in line with both hypotheses 4a and 4b, we found that after entering motivation ($\beta = .56$, $t(75) = 6.006$, $p < .001$) and coping ability ($\beta = .33$, $t(75) = 3.559$, $p < .001$), the main effect of perceived relationship conflict on information processing was indeed reduced ($\beta = -.047$, $t(75) = -.469$, $p = .64$). As seen in Table 3.2, subsequent bootstrapping analyses showed these mediating effects were significant. In sum, in line with Hypothesis 4a and 4b, group members make less use of the information provided by others the more relationship conflict they perceive during a task conflict, and this effect is mediated by motivation to process information as well as their perceived ability to cope with the task conflict.

Table 3.2. *Bias-Corrected Bootstrapped Estimates of the Mediations of Studies 1& 2*

	Bias-corrected bootstrapped 95% confidence interval estimates	
	Study 1	Study 2
Mediation Analyses 1		
TC & RC [a] -> Information Use -> Final Decision	(-1.446; -.246)*	(-.301; -.046)*
Mediation Analysis 2[a]		
TC & RC -> Motivation to process information -> Information Use	(-.115; -.031)*	(-.104; -.002)*
TC & RC -> Coping Ability -> Information Use	(-.063; -.005)*	(-.034; .024)
Mediation Analysis 3[a]		
TC & RC -> Motivation to process information -> Final Decision	(-.742; -.005)*	(-.183; -.003)*
TC & RC -> Coping Ability -> Final Decision	(-.680; -.016)*	(-.035; .042)
Mediation Analysis 4		
Motivation to process information -> Information Use -> Final Decision	(.493; 2.164)*	(.051; .153)*
Coping Ability -> Information Use -> Final Decision	(.122; 1.113)*	(.009; .119)*

Notes. The mediation analyses examine the incorrect 'rigidity' solution (Mr.X) against the correct solution (Son of Mr. X) and the incorrect 'yielding' solution (Mrs.Y or Mr.Z) together. [a] TC & RC stands for the co-occurrence of task conflict (TC) and relationship conflict (RC) and refers to the extent to which group members perceived relationship conflict during the task conflict in experiment 1, and the manipulation of relationship conflict in experiment 2.

Supplementary analyses. Exploratory analyses also revealed main effects of motivation and coping ability on decision making. Both motivation (B =1.15, p = .004, OR = 3.51) as well as coping ability (B =1.02, p < .001, OR = 2.77) predicted whether participants chose the correct solution versus the incorrect 'rigidity' solution. Likewise, motivation predicted whether participants chose the incorrect 'rigidity' solution versus the incorrect 'yielding' solution (B = .96, p = .013, OR = 2.60). As the results of Model 3 in Table 3.1 show, after entering motivation and coping ability in the model, the main effect of perceived relationship conflict reduced, implying that motivation and coping ability mediate the effect of perceived relationship conflict on decision making (see also the bootstrapping results in Table 3.2). To test whether the effect of motivation and coping ability, in turn, was mediated by information processing, we also entered information processing in the model. As can be seen in model 4 in Table 3.1, and the mediation analyses in Table 3.2, information processing indeed mediated the effect of motivation and coping ability on decision making.

Discussion

Study 1 revealed that the extent to which group members perceived relationship conflict during a task conflict was positively related to their rigidity in holding on to their initial preferences during decision making. Hence, the more relationship conflict individuals perceived during the task conflict, the more likely they became to hold on to their initial opinion, and the less likely they became to derive the correct solution or to yield and adopt one of the other group members' opinion. This is in line with our first hypothesis, and given that all available information was exchanged, this finding shows that the presence of a relationship conflict augments individuals' tendency to hold on to a suboptimal preferences even if all available information is exchanged (see Brodbeck et al., 2007; Greitemeyer & Schulz-Hardt, 2003).

The results also show strong support for our second and third hypothesis, that underlying this preference for holding on to an initial opinion lies more biased information processing. More specifically, group members were less likely to use information provided by other group members when they perceived a relatively high level of relationship conflict during a task conflict, and this, in turn, explained why they were

less likely to adjust their initial opinion. Study 1 further revealed that group members become less motivated to process information, and also feel less able to cope with the task conflict, when they perceive a relatively high level of relationship conflict. In line with our fourth hypothesis, and the motivated information processing in groups model (De Dreu et al., 2008), group members' reduced motivation to process information led to lower use of the information from their group members. In line with fourth hypothesis, and research linking anxiety to confirmatory information search (e.g., Fischer et al., 2011), group members' perceived ability to cope with the conflict, also mediated the effect on information processing, such that group members became less likely to use the information from other group members, the more they felt unable to cope with the conflict.

The results of Study 1 are consistent with the idea that the potential advantages of task conflict may be erased by the misinterpretations of task as relationship conflict (e.g., Fisher & Ury, 1981; Janssen et al., 1999; Shaw et al., 2011; Simons & Peterson, 2000). That is, the more strongly individuals misinterpreted a task conflict as a relationship conflict, the less likely they became to derive the integrative and superior solution, or to change their opinion in deference of another group member's opinion. Instead, individuals were more likely to hold on to an suboptimal initial opinion, and to focus primarily on their own information, the more strongly individuals misinterpreted a task conflict as a relationship conflict. Together, these results illustrate the psychological and behavioral mechanisms that may underlie the findings of the meta-analyses by De Dreu and Weingart (2003a) and De Wit et al. (2012).

In the current procedure we measured (rather than manipulated) the spontaneous interpretation of task conflict as a relationship conflict. That is, participants did not receive explicit information about a relationship conflict. Hence, it is difficult to attribute the relationship conflict to other factors than the task conflict given that the groups were defined in terms of the task, and participants didn't have any other information about the group members except from the task-relevant information they shared. This converges with many situations where people are often not aware of how a relationship conflict emerges and where relationship conflict arises quickly by the misinterpretations of task as relationship conflict (e.g., Fisher & Ury, 1981; Janssen et al., 1999; Shaw

et al., 2001; Simons & Peterson, 2000). Nevertheless, it is difficult to tell where the individual differences in perceived relationship conflict precisely stem from (e.g., certain personality dispositions). In other words, the current design does not isolate the precise source of the variability in perceived relationship conflict, that was exactly one of the reasons we turned to an experimental design in the second study.

The aims with the second study were twofold. First, we sought to replicate the findings of Study 1, and to establish more causal support for the findings by experimentally controlling the presence of a relationship conflict. That is, a possible limitation of the first study is that it does not provide causal support, but only correlational evidence that the presence of a relationship conflict leads to more rigidity and biased information processing during a task conflict. Second, as outlined in the introduction, relationship conflict does not always have to involve the misinterpretation of a task conflict, but can also develop relatively independently of task conflict in a group. Therefore, our second aim with the second study was to examine whether this second form of co-occurring task and relationship conflict (i.e., a task conflict that co-occurs with an unrelated relationship conflict) can also account for the negative effects on information processing and decision making. That is, many relationship conflicts arise independently from a task conflict, for example, when group members have strong diverging viewpoints in more personal domains such as their norms, values, political preferences and/or their general lifestyle (e.g., Jehn, 1997). In such instances, the increased rigidity in individuals' tendency to hold on to their initially preferred decision alternative, might be due to defensive and competitive cognitions and behaviors that are triggered by the unrelated relationship conflict, and that spill-over to the task conflict (e.g., Janssen et al., 1999). Therefore, we designed Study 2 to examine whether the damaging effects on information processing and decision making are indeed also found when a relationship conflict arises independently form a task conflict, rather than due to the misinterpretation of the task conflict itself.

Study 2

In Study 2 we used the same experimental induction of a task conflict that we used in Study 1, but now in combination with an experimental manipulation of the presence (vs. absence) of a relationship

conflict. We again predicted that group members would be less likely to adjust their initial opinion (Hypothesis 1) and also make less use of the information given to them by their group members (Hypothesis 2) when they encountered a task conflict in the presence (compared to the absence) of a unrelated relationship conflict. Likewise we again predicted that information processing would mediate the effect of the presence (vs. absence) of relationship conflict on group members' tendency to hold on to their initial opinions (Hypothesis 3). Finally, we again predicted that the biases in information use would be due to a reduced motivation to process information systematically (Hypothesis 4a) and a reduced perceived ability to cope with the conflict (Hypothesis 4b).

Participants, Design, and Procedure

109 undergraduate students participated as part of a course requirement . The design consisted of one manipulated factor with two levels (relationship conflict present vs. relationship conflict absent). Like in Study 1 we induced a task conflict for all participants. Participants were randomly assigned to the experimental conditions.

The decision-making task and the procedure to induce a task conflict were identical to the first study. Yet, instead of measuring relationship conflict, we manipulated the presence (vs. absence) of a relationship conflict using a procedure adapted from Lücken and Simon (2005). More specifically, after participants were seated in separate cubicles, they were asked to rate the beauty (on a scale of zero to 100) of a set of paintings. This set of paintings consisted the work of four different artists, and for each of the four artists, the participants were presented three paintings. The paintings were presented one-by-one on the participants' computer screen and for each of the four artists, the computer automatically calculated the participant's average rating. These four average scores were then presented to the participants on their computer screen, and the participants' "preferred artist" (the artist who on average received the highest ratings of the participant) was clearly highlighted. Next, we invited participants to discuss their ratings with their group members as a way for them to get to know each other. Participants were asked to communicate via instant messaging with their group members about their preferred artist, and about the reasons why they appreciated this artist the most.

At this stage, we manipulated the presence versus of absence of relationship conflict. The participants in the non-relationship conflict condition were met with agreeable responses because the other group members preferred the same artist (see Appendix B). By contrast, participants in the relationship conflict condition were confronted with group members who disagreed about the preferred artist, and they received negative personal messages from their group members based on their artistic preferences. For example, in the relationship conflict condition, when referring to the participants' preferred artist [artist 1], the group members argued 'I could probably produce stuff like those other artists' and 'pretty much any poser or try-hard would "appreciate" artist 1' (see Appendix B for the complete text of these messages). In line with self-verification theory we expected that participants would feel this relative harsh scrutiny of their artistic preferences as a negative assessment of the self. We therefore expected this disagreement to elicit more anxiety than just a general difference of opinion and to make group members more likely to take the disagreement personally and, thus, to perceive it as a relationship conflict.

Following the discussion of the paintings, and in order to examine the effectiveness of the relationship conflict manipulation, participants were presented the same five items that were used in Study 1 to measure perceived relationship conflict ($\alpha = .88$). Thereafter, the same procedure as in Study 1 commenced, the only difference being that throughout the study participants continued to communicate through text-messages instead of video-recordings. Because the reactions were sent via text- instead of video-messages, in contrast to the Study 1, the participants in Study 2 were not aware of their group members' gender.

Results

Manipulation checks

Task conflict. We content-analyzed the text messages to check whether participants initially opted for Mr. X. The results showed that 105 of the 109 participants initially thought that it was Mr. X who caused the accident. As in study 1, the data of the four participants who did not opt for Mr. X were excluded from further analyses. Content analyses of the final decisions showed that seven participants in the relationship conflict

condition, and four participants in no-relationship conflict condition, did not provide one specific final decision but, for example, simply stated 'all were guilty', and therefore these participants were excluded from the analyses. The final sample size consisted of 94 participants who were divided equally across the two conditions. Analyses of the perceived level of task conflict (α = .76) showed that the induction of task conflict was again successful; the average level of reported task conflict was high, and significantly higher than the midpoint on the scale (i.e., 4; M = 6.08, SD = 1.13, $t(93) = 17.89$, $p < .001$).

Relationship conflict. The manipulation of relationship conflict was successful; directly after the manipulation of relationship conflict participants in the relationship conflict condition (M = 3.74, SD =1.31) reported higher levels of relationship conflict than did participants in the non-relationship condition (M = 1.92, SD = .85), $t(92) = 8.01$, $p < .001$.

Rigidity in decision making

To test our first hypothesis that when group members encounter a task conflict in the presence (compared to the absence) of a relationship conflict, they will more rigidly hold on to their initial opinion, we estimated a multinomial logistic regression predicting the answer categories with the presence (vs. absence) of relationship conflict as a predictor variable. Table 3.4, and Figure 3.1 show that the effect was significant (χ^2 = 6.69, df = 2, p = .035). Supporting Hypothesis 1, the presence of relationship conflict had a significant effect in predicting whether participants held on to their initial opinion instead of deriving the correct solution (B = -1.19, p = .013, OR = .30). These results indicated that participants were 3.3 times more likely to hold on to their incorrect initial solution (rigidity) instead of choosing the correct solution, when relationship conflict was present compared to when it was absent. Similarly, in the presence of relationship conflict participants were 2.3 times more likely to hold on to their initial opinion instead of adopting one of the solutions of the other group members (i.e., yielding), yet this effect was not significant (B =-.84, p = .146, OR = .43).

Information Processing

To test our second hypothesis that information processing following the task conflict would be affected by the presence (vs. absence)

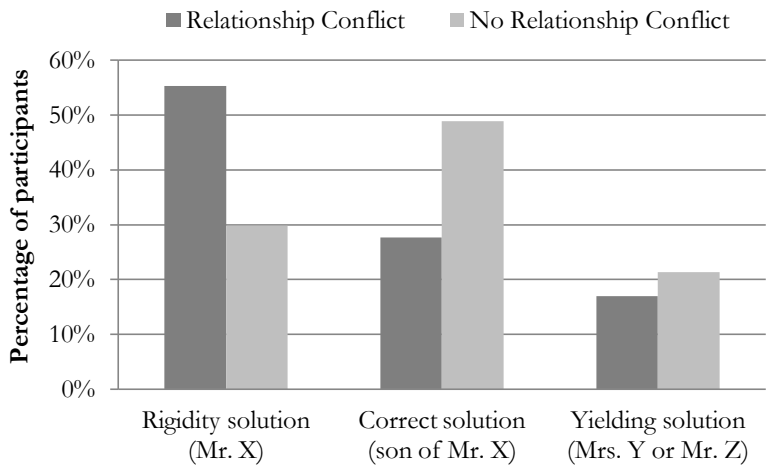
Table 3.3. *Multinomial Logistic Regressions Examining The Decisions Made In Study 2.*

	Model 1				Model 2				Model 3				Model 4			
Predictor	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*
Correct Solution (Son of Mr. X) versus Incorrect 'Rigidity' Solution (Mr.X)																
Intercept	1.69*	.76		4.94	-.93	1.08		.75	-2.63	1.77		2.19	-3.84†	2.30		2.78
Presence of Relationship Conflict	-1.19*	.48	.30	6.14	-.63	.58	.53	1.21	-.99*	.50	.37	3.86	-.73	.60	.49	1.47
Motivation to Process Information									.69**	.26	1.99	6.96	.21	.32	1.23	.41
Coping Ability													.46	.28	1.59	2.70
Information Use					.05***	.01	1.05	17.97					.04**	.01	1.05	11.47
Incorrect 'Rigidity' Solution (Mr.X) versus Incorrect 'Yielding' Solution (Mrs.Y or Mr.Z)																
Intercept	-.51	.92		.30	1.44	1.25		1.33	7.17**	2.69		7.10	8.18*	3.49		5.50
Presence of Relationship Conflict	.84	.58	2.32	2.12	.47	.67	1.61	.50	0.60	0.62	1.83	0.94	.18	.73	1.19	.06
Motivation to process information									-1.21**	0.39	0.30	9.41	-1.26*	.50	.28	6.47
Coping Ability													.28	.32	1.32	.76
Information Use					-.04**	.01	.96	9.57					-.03*	.02	.97	4.37
Correct Solution (Son of Mr. X) versus Incorrect 'Yielding' Solution (Mrs.Y or Mr.Z)																
Intercept	1.18	.88		1.80	.51	1.22		.18	4.54†	2.71		2.81	4.34	3.42		1.62
Presence of Relationship Conflict	-.35	.59	.71	.35	-.16	.63	.85	.06	-0.39	0.60	0.68	0.43	-.55	.70	.58	.61
Motivation to process information									-0.52	0.40	0.59	1.74	-1.06*	.51	.35	4.30
Coping Ability													.74*	.29	2.10	6.37
Information Use					.01	.01	1.01	.65					.01	.01	1.01	.85
Chi-square	6.69*				32.77***				22.37***				49.08***			
df	2				4				4				8			
-2 log likelihood	15.70				74.06				83.91				133.07			
Cox and Snell pseudo R^2	.07				.31				.21				.42			
Sample size	94				89				94				89			

Note. OR = odds ratio, † $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$

of a relationship conflict, participants (relative) use of the unshared information used by participants to support their final decision was analyzed with one-way ANOVAs with the presence (vs. absence) of relationship conflict as independent variable. In the relationship conflict present condition, the unique information provided by other group members' was used less often (M = .98) than in the relationship conflict absent condition (M = 1.57), $F(1,92) = 5.88$, $p = .017$, $\eta^2 = .06$. Likewise, there was a significant difference in the proportion of own versus other group members' unique information that was used by participants; Compared to those in the relationship conflict absent condition (M = .46), in the relationship conflict present condition, participants used relatively fewer information items from others than from themselves (M = .28) $F(1,89) = 8.68$, $p = .004$, $\eta^2 = .09$ (See Table 3.3). These results support our second hypothesis.

Figure 3.1. *Percentage of participants choosing the rigid (Mr. X), correct (Son of Mr. X), or yielding solution (Mrs. Y or Mr. Z) as a function of presence (vs. absence) of relationship conflict (Study 2).*



Mediation Analyses

The above results showed that that the presence (vs. absence) of relationship conflict during a task conflict predicted (i) whether participants derived the correct solution instead of holding on to their initial suboptimal opinion, and (ii) the extent to which participants used

the information provided by other group members during their decision making. Hence, we continued with a test of our third hypothesis, whether the extent to which participants used the information provided by other group members mediated the effect of the presence (vs. absence) of relationship conflict on decision making. Table 3.4, Model 2 shows that in line with the findings of Study 1, the third hypothesis was again supported: After entering the relative use of other group members' information, the effect of relationship conflict was reduced for the correct solution versus the incorrect 'rigidity' solution. As seen in the third column of Table 3.2, bootstrapping analyses confirmed that the mediation effect was significant.

Motivation to Process Information and Coping Ability. One-way ANOVAs on motivation to process information, and coping ability, with the presence (vs. absence) of relationship conflict as independent variable revealed a significant main effect for the motivation to process information, $F(1, 94) = 4.04$, $p = .047$, $\eta^2 = .04$, yet not for perceived coping ability, $F(1, 92) = .01$, $p = .95$, $\eta^2 = .00$, see also Table 3.4. Subsequent mediation analyses tested whether group members' motivation to process information mediated the effect of the absence (vs. presence) of relationship conflict on information processing. After entering motivation as a mediator ($\beta = .363$, $t(88) = 3.808$, $p < .001$) and coping ability as a control variable ($\beta = .328$, $t(88) = 2.144$, $p = .035$), the effect of relationship conflict was indeed reduced ($\beta = -.216$, $t(88) = -2.285$, $p = .025$). As shown in Table 3.2, bootstrapping analyses showed that the mediating effect of motivation to process information systematically was again significant, supporting Hypothesis 4a. In contrast to Study 1, we did not find support for Hypothesis 4b.

Additional analyses. We also examined the main effects of the two mediating variables on decision making. We found that motivation to process information ($B = .66$, $p = .012$, OR = 1.926), and coping ability ($B = .56$, $p = .017$, OR = 1.757) predicted whether participants chose the correct solution versus the incorrect 'rigidity' solution. We then conducted mediation analyses to test whether motivation to process information mediated the effect of the presence (vs. absence) of relationship conflict on decision making. The results of Model 3 in Table 3.3 show that after entering group members' motivation to process information, the effect of the relationship conflict manipulation was indeed reduced for the correct

solution versus the incorrect 'rigidity' solution. As seen in Table 3.2, the mediating effect was significant. To test whether the effects of motivation and coping ability on decision making, in turn, was mediated by information processing, we also entered information processing in the model. As can be seen in Model 4 in Table 3.3, and the results of bootstrapping analyses in Table 3.2, information processing indeed mediated the effect of motivation and coping ability on decision making.

Table 3.4 *Means And Standard Deviations - Study 2*

	Condition			
	Relationship Conflict		No Relationship Conflict	
Measure	*N* = 47		*N* = 47	
Motivation to process information	5.69[a]	(1.17)	6.12[a]	(0.89)
Coping ability	4.39	(1.15)	4.37	(1.22)
Use of others' unique information	0.98[a]	(1.05)	1.57[a]	(1.31)
Use of own unique information	1.74	(0.82)	1.57	(0.85)
Relative use of other's vs. own information	.28 [a]	(.27)	.45[a]	(.29)

[a] Difference between conditions $p < .05$

Discussion

In Study 2, we manipulated the presence (vs. absence) of a relationship conflict in combination with an experimental induction of a task conflict. In line with the results of the first study we found support for our first hypothesis that, compared to deriving the correct solution, participants were more likely to hold on to their initial suboptimal solution when the task conflict co-occurred with a relationship conflict. Again, this effect was mediated by more biased use of information; In the presence of a relationship conflict, participants were less likely to use the information provided by others (relative to their own) in their final decision (supporting Hypothesis 2 and 3). Replicating the findings of Study 1, we again found that the biased use of information was due to a reduced motivation to process information systematically. In contrast to the findings of Study 1, we did not find that the presence of relationship conflict made participants feel less able to cope with the task conflict, so

the mediating effect of conflict-related coping appraisals was not supported. One possible explanation may be that in the relationship conflict condition, participants used the relationship conflict as a reference point and therefore perceived the task conflict as not very stressful. Yet, supporting the importance of the appraisal of the task conflict as a threat, we did again find that conflict-related coping appraisals led to more biased information processing, as well as more preference-consistent decision making. Overall, Study 2 showed strong support for the damaging effect of relationship conflict on the link between task conflict, information processing, and decision making. Moreover, Study 2 replicates and extends Study 1 by showing that, in addition to the misinterpretation of a task conflict as a relationship conflict, the 'actual' presence (vs. absence) of relationship conflict during a task conflict also causes more biased information processing and rigidity during decision making.

General Discussion

The results presented in this chapter show that the presence of relationship conflict affects group members' motivation and ability to deal with diverging task-related viewpoints and causes rigidity and biased information processing and, thereby, plays a crucial role in the link between task conflict and decision making. Many researchers and practitioners consider task conflicts a potential asset to improve a group's performance and creativity (e.g., Amason, 1996; Deutsch, 1973; Klein, 2008), yet the evidence for this relation has been inconsistent (e.g., De Dreu & Weingart, 2003a; Jehn & Bendersky, 2003). To shed more light on the somewhat controversial relationship between task conflict and group decision-making, several reviews of the intragroup literature have suggested that it is crucial to examine the factors that may moderate the link between task conflict and group decision-making (e.g., Jehn & Bendersky, 2003; De Wit et al., 2012). In line with this suggestion, the present research investigated how relationship conflict affects the link between task conflict and decision making. We found that when a task conflict occurred in the presence (compared to the absence) of a relationship conflict, group members showed more biased information-processing and were more likely to hold on to suboptimal solution alternatives. More specifically, we found that the level of perceived relationship conflict during a task conflict (Study 1), and the 'actual'

presence (vs. absence) of a relationship conflict (Study 2), are related to biased information processing and rigidity in decision making.

In both studies we found that biased information processing mediated the effect of the co-occurrence of task and relationship conflict on decision making. More specifically, because they were less likely to use the information provided by others, those who perceived relatively high levels of relationship conflict (Study 1) and those who had just encountered a relationship conflict (Study 2) were less likely to yield and/or derive the correct solution, instead of rigidly holding on to an initial incorrect opinion. In Study 1, two different processes (motivation to process information systematically and perceived ability to cope with a task conflict) were found to explain the harmful effect of the co-occurrence of task and relationship conflict on information processing. More specifically, perceived relationship conflict was negatively related to motivation to process information systematically as well as the perceived ability to cope with a task conflict, and both were negatively related to the extent to which participants used the information provided by others relatively to information from themselves. Study 2 replicated the effects for motivation. Because our manipulation of relationship conflict did not affect group members' perceived ability to cope with a task conflict, no mediation for threat appraisal was found in Study 2, yet the effects of conflict-related coping ability on information processing and decision making were identical to those in Study 1. Together these results imply that group members are less likely to shift from their initial standpoint to a more correct decision alternative or to adopt another one's standpoint when a task conflict co-occurs with a relationship conflict. This because they are less motivated to systematically process information and/or they feel less able to cope with a task conflict, and, therefore, make less use of information provided by others in their final decision.

Implications

In contrast with the commonly held belief that task conflict can enhance group decision quality through the debate and exchange of divergent thoughts and viewpoints, two recent meta-analyses suggested that a consistent and generalizable positive relationship between task conflict and decision-making quality does not exist (De Dreu & Weingart, 2003a; De Wit et al., 2012). More specifically, whereas some studies did

indeed find that intragroup disagreement enhances group functioning (Jehn, 1994; Li & Hambrick, 2005; Pelled, Eisenhardt, & Xin, 1999), several others found conflict to be a liability for group performance (e.g., Jehn, Northcraft, & Neale, 1999) or found neither a positive or negative relationship (e.g., Barsade, Ward, Turner, & Sonnenfeld, 2000). The current study moves beyond the usually proposed uniform positive or negative relationship between task conflict and performance, and proposes a more complex picture. In line with previous studies that indicated that individuals differ in the way they perceive disagreements (e.g., Jehn & Chatman, 2000; Pinkley, 1990), we recognize that people differ in their reactions to a task conflict in the presence (vs. absence) of relationship conflict. Moreover, we recognize that these different reactions (e.g., rigidity vs. yielding) play an important role in the association between task conflict and group outcomes. Herewith, the current research addresses two important limitations of past conflict research. First, by illustrating the differences between individuals' perception of one and the same conflict, it challenges the implicit assumption in past conflict research that conflict parties perceive a conflict in a similar way (e.g., Amason, 1996; Jehn, 1994 cf. Jehn & Chatman, 2000; Jehn, Rispens, & Thatcher, 2010). Second, by illustrating that the way people perceive and experience a task conflict can be an important determinant of how conflicts affect team performance it addresses the often assumed uniform relation between conflict and performance.

This research also contributes to the literature on hidden profile situations. The majority of the research on hidden profile situations has focused on the dominance of shared information during group discussions and the failure of groups to exchange and discuss important information possessed by only one or only a few group members. More recently, attention has been directed at the difficulties of group members to derive the correct solution even when all information is shared and known (e.g., Greitemeyer & Schulz-Hardt, 2003). For instance, it has been shown that when there is no process accountability, or low epistemic motivation, group members show poorer and less systematic information processing and, thereby, lower decision quality compared to situations where group members are held for the decision process (Scholten et al., 2007). Likewise, group members tend to hold on to their initial suboptimal solutions even though all information is shared (Greitemeyer

& Schulz-Hardt, 2003). The results of the current research extends these studies, showing that the co-occurrence of a task and relationship conflict augments this initial preference effect, for instance, because it undermines group members' motivation to process information systematically and to cause group members to focus too much on their own information.

Finally, in the vast literature on intragroup conflict relatively little attention has been paid to stress and threat appraisals (see Dijkstra et al., 2005 for an exception). Yet, both studies presented in this research emphasize that conflicted-related coping appraisals are strongly related to information processing and decision making in the context of an intragroup conflict. In line with studies on threat rigidity (e.g., Kamphuis, 2010; Kassam et al, 2009), participants were more likely to hold on to an initial solution instead of deriving the correct solution when they felt relatively threatened by the conflict. Moreover, the findings supported recent work on threat and confirmatory information search (Fischer et al., 2011), that has shown that congruent threat (threat that is contextually related to the subsequent decision) results in increased levels of confirmatory information search in a decision-making context.

Limitations and Future Research

To induce a task conflict in the present research, the discussion between the group members was experimentally controlled. This controlled, as opposed to a real, interaction had three important advantages. First, it enabled us to make sure that all participants were confronted with exactly the same task conflict. In this way, we could cancel out differences between groups and conflicts, such as the emotionality of the conflict, the acquaintanceship of group members, and the duration of the debate. Secondly, the controlled interaction allowed us to make sure that all the unshared information necessary to derive the correct solution would be available to the participants. This allowed us to exclude an alternative explanation of the effects on decision making, namely whether the information was actually shared or not. Thirdly, as all the unshared information necessary to derive the correct solution was available to the participants, we could directly assess the extent to which individuals processed the information provided by other group members in their decision making.

Yet, an important limitation of the design in the present research is that the group members never interacted directly. Likewise, the conflicts consisted of only one round of discussion, which meant that group members could not go back and forth on an issue. Hence, there was not a full decision process involving extensive collective information processing, and only a low level of differentiation could take place in the current set-up (cf. integrative complexity theory; Suedfeld, Tetlock, & Streufert, 1992). In relation to this in real groups group members can interact more directly, and are more interdependent on each other, while the task conflicts arising in such situation are also often more complex, with a greater variety of opinions, more people involved, and more lengthy discussions. Recent research, however, provides initial evidence for the generalizability of our results to settings outside the laboratory. Shaw et al. (2011), for instance, found among real organizational teams that the association between task conflict and group member performance was more positive when levels of relationship conflict were low rather than high. Likewise, Janssen et al. (1999) found that group members reported to be more likely to push through their own ideas when high levels of task conflict occurred alongside high (vs. low) levels of relationship conflict and they and their group members did not share a superordinate goal. Future research should, however, attempt to integrate these different insights and examine in real teams whether the damaging effect of relationship conflict on the link between task conflict and group decision-making can indeed be explained by group members' increased rigidity in holding on to initially preferred task-related viewpoints.

Another issue worth discussing is that in the current research we did not manipulate the presence versus absence of a task conflict. That is, task conflict was held constantly high, and we only varied the level of relationship conflict. The advantage of manipulating task conflict would have been that we could test whether relationship conflict also has a damaging effect when task conflict is absent. Moreover, it would allow us to examine whether task conflict would facilitate superior decision making over no task conflict. Yet, although we acknowledge that this is a limitation in our research design, there are two reasons why we did eventually choose only to manipulate relationship conflict, and to hold task conflict constant. First, our main aim with this research was not so much to demonstrate a damaging effect of relationship conflict persé, nor

to demonstrate that task conflict would lead to superior decision making than no task conflict. Instead, our aim was merely to examine whether people respond differently to a task conflict in the presence (vs. absence) of a relationship conflict. Second, examining a situation where task conflict was absent would also have made it more difficult to include one of our proposed mediators (i.e., conflict related threat appraisals) because it applies only applies to situations where there is task conflict.

Yet, to address this limitation of our design, we recently conducted a follow-up study in which we used the same design as in Study 2, except that task conflict was absent (rather than present). The design again included one manipulated factor with two levels (relationship conflict present vs. relationship conflict absent). The results showed that relationship conflict did not have a damaging effect when task conflict was absent. Moreover, in these two new conditions - where there was no task conflict - participants were significantly more likely to hold on to their initial solution (rather than to yield or derive the correct solution) compared to the two conditions of Study 2, where task conflict was present. A closer look at the data also showed that this result was contingent on the presence of relationship conflict. More specifically, individuals were more likely to hold on to their initial solution (instead of choosing the yielding or the correct decision) when task conflict was absent (rather than present) but only when the task conflict occurred in the absence of relationship conflict. In sum, these results indicate that in the absence of task conflict, people are not very likely to change an incorrect initial opinion, yet that the likelihood that they will change their opinion increases when there is task conflict, but only when the task conflict is not accompanied by a relationship conflict.[7]

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[7] 101 individuals (74 women and 27 men) participated in the follow-up study and were randomly divided across a relationship conflict present condition (N = 52) and a relationship conflict absent condition (N = 49). The texts we used to make sure task conflict was absent are reported in Appendix A. The results showed that in the absence of task conflict, the decisions that the participants made were unaffected by the presence (vs. absence) of relationship conflict, $\chi^2 = 1.41$, $df = 2$, $p < .494$ and that in both conditions, 67.3% of the participants held on to their initial viewpoint. This was significantly higher than in the two "task conflict present" conditions of Study 2 in which the percentage of participants holding on to their initial viewpoint was 42.6%, $\chi^2 = 13.42$, $df = 2$, $p < .001$. Finally, a closer examination of the data showed that this result depended on the presence of relationship conflict; the tendency of individuals to hold on to their initial viewpoint (instead of choosing the yielding or the correct decision) only dropped significantly when the task conflict occurred in the absence of relationship conflict (29.8%, χ^2's >13.54, ps < .001), but not when task conflict occurred in the presence of relationship conflict (55.3%, χ^2's < 1.47, ps > .21).

Another restriction of the chosen design was that during the task-related disagreement, participants' initial solution to the dilemma was always incorrect. Therefore, 'rigidity' was always dysfunctional for decision-making quality. What we do not yet know, and what future research could address is what happens if participants' initial son is actually correct. When an initial solution is correct, then rigidity (and the co-occurrence of task and relationship conflict for that matter) might become beneficial for decision-making quality. Another limitation is that although we expected and found in Study 1 that perceived relationship conflict affected individuals' appraisal of the task conflict as a threat, this finding was not replicated in Study 2. More precisely, in Study 2 the actual co-occurrence did not affect individuals' threat appraisals. This finding seems to suggest that appraisals of task conflict as a threat are only augmented when task and relationship co-occur due to misinterpretations of task conflict. Despite this inconsistency, across the two studies we did find that threat appraisals had an important effect on information processing and decision making. Because threat appraisals are associated with distinct patterns of cardiovascular reactivity (Blascovich & Mendes, 2000; Blascovich & Tomaka, 1996), future research might examine more precisely when group members react more threatened to a task conflict and also investigate more broadly whether distinct vascular reactions might explain how conflicts affect decision making (see also De Wit, Scheepers, & Jehn, 2012).

Future research could also more closely examine the causal pathway between information processing and decision-making. In line with common theorizing on group decision-making (see for example also Brodbeck, et al., 2006) we assumed a causal pathway from information processing to decision-making (i.e., individuals held on to their initial opinion because they processed information in a biased manner). Yet, on the basis of our research the opposite causal pathway (from decision-making to information processing) cannot be fully excluded. Indeed, group members may have end up justifying their decision by only mentioning pieces of information that supported their decision. Because we did not ask the participants to list all the pieces of information they remembered, we do not know whether the participants only mentioned those pieces information during decision-making because that were the only items they processed, or because that were the only items that

supported their decision. Therefore, an idea for future research might be to also examine individuals' ability to recall as many pieces of unshared information as they can. That is, when information processing mediates the effect on decision making, individuals can be expected to recall relatively few pieces of unshared information (individuals will primarily mention their own information because that is the only information they processed). Yet, when decision making mediates the effect on information processing, individuals can be expected to recall relatively many pieces of unshared information (individuals process all the information but only mention their own information because that supports their initial opinion).

Another issue to reflect on is that an alternative prediction would be that relationship conflict not only causes group members to become more rigid in holding on to their initial viewpoint, but also to become more likely to yield in deference of other group members. That is, because the presence of relationship conflict is likely to induce a competitive mindset, it may cause individuals to frame the task in terms of the question "Who is right?", rather than the question "What is the right answer?". As a result of this "polarization", people may fail to search for an integrative solution for the diverging pieces of information, and instead may focus on the individual preferences (both their own and that of the other group members) with the idea that either they or their group members must be right. In this way, group members thus would fail to derive the correct solution because they only see two options: yielding (if they think one of the others is right) or rigidly holding on to their initial opinion (if they think they are right themselves). The results of both studies presented in the article indicated, however, that the presence of relationship during a task conflict only made individuals more likely to rigidly hold on to their initial viewpoint and, thus, not to make participants' more (or less) likely to yield compared to deriving the correct solution. Hence, the results of the present research are not in keeping with such a "polarization" explanation.

Future research could also examine whether our findings can be generalized to relationship conflicts that involve other group members than the individuals themselves. On the one hand, one might argue that our findings may be restricted to relationship conflicts in which individuals are involved themselves. This because a relationship conflict

may only induce a competitive mindset, and cause a reduced motivation to systematically process the group members' information, when group members are involved themselves. Yet, one the other hand, one might argue that our findings could also apply to relationship conflicts that involve other group members than individuals themselves. This because in such cases relationship conflicts may cause individuals to become frustrated with their group members, which might reduce their willingness to consider what these group members have to say. Hence, future research should examine whether individuals need to be involved in a relationship conflict for individuals to become rigid in holding on to their task-related viewpoints and more biased in their information processing.

Another idea for future research is to more directly compare the impact of the two different forms of relationship conflict described in this article on group decision making (i.e., relationship conflicts that are triggered by a task conflict, and relationship conflicts that concern a topic unrelated to the topic of the task conflict). One possibility is to run a study in which first a task conflict is induced, and subsequently a relationship conflict is induced that either directly follows from the task conflict, or concerns a topic unrelated to the task at hand. In both these conditions individuals are likely to show more rigidity in holding on to initial task-related viewpoints compared to a situation free of relationship conflict. Yet, such a study could examine whether relationship conflicts that arise from a task conflict have a stronger negative impact on decision making and information processing than relationship conflict that arise independently from a task conflict. Moreover, such a study could be used to examine possible interventions to curb the negative effects of both forms of relationship conflict.

Bradley, Postlethwaite, Klotz, Hamdani, and Brown (2012), for example, found that task conflicts have a more positive impact on group performance when group members experience high levels of psychological safety (i.e., the shared belief held by members of a team that the team is safe for interpersonal risk taking; Edmondson, 1999). Presumably, this is because team members working in a psychologically safe environment "feel a sense of openness and avoid taking task disagreements personally" (Bradley et al., 2012, p. 152). To prevent group members to misinterpret task conflict as a relationship conflict, interventions should therefore be aimed at increasing feelings of

psychological safety. More specifically, teams could support training aimed at coaching group members to approach and manage other group members' diverging viewpoints in an open and considerate manner. Moreover, it should train leaders to foster an environment that is safe for interpersonal risk taking, for example, by stimulating leader inclusiveness (i.e., words and deeds exhibited by leaders that invite and appreciate others' contributions; Nembhard & Edmondson, 2006). Together these interventions may not only make group members feel more at ease when they want to express a diverging viewpoint, but also make them approach others' viewpoints with a less competitive mindset which, in turn, makes them less likely to become defensive when someone disagrees. Importantly, interventions aimed at increasing feelings of psychological safety may also decrease the likelihood of an unrelated relationship conflict to spill-over to a task conflict; when people feel psychologically safe, they might be more like to also accept disagreements on a more personal level, thereby preventing such relationship to escalate and to trigger people to hold on to an initial viewpoint too rigidly during task conflict.

Chapter 4

Coping with intragroup conflict: Why a threat state during a task conflict may be detrimental for group decision-making[8]

A popular assumption holds that task-related disagreements during group decision-making may enhance decision quality because they guarantee that multiple decision alternatives are brought to bear. Ample research shows, however, that task conflict often causes inferior group decision-making. To reconcile this paradox of task conflict, in three studies we apply the biopsychosocial model of challenge and threat (BPSM; J. Blascovich, 2008) to examine how the impact of a task conflict on decision making varies when group members display a challenge or a threat motivational state. Across the three studies we find that threat (rather than challenge) is related to a greater rigidity among group members in holding on to initial viewpoints, as well as to a greater bias in information processing. The results were found using multiple methods, including a threat/challenge-prime (Study 1), self-reported threat/challenge challenge states (Studies 2 and 3), and cardiovascular markers of threat/challenge states (Study 3). The results highlight a consistent relationship between threat and rigidity and provide new insights that may help to solve the paradox regarding the impact of task conflict on group decision-making.

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During group decision-making, a conflict may arise when group members prefer different decision alternatives. Members of top management teams, for instance, may experience a conflict when they disagree about certain merger or acquisition decisions. Likewise, a group of doctors may experience a conflict when they disagree about the decision to operate on a patient, and jury members may experience a conflict when they disagree about whether or not the accused is guilty. A popular theoretical assumption holds that such task-related disagreements may facilitate superior group decision-making because they stimulate group members to think more critically about their initial viewpoints (e.g., Amason, 1996; Jehn, 1994). Research shows however that task-related conflicts pose a paradox for group decision-making: in addition to stimulating critical thinking, they also tend to reduce group member satisfaction and to complicate group functioning (De Dreu & Weingart, 2003b; De Wit, Greer, & Jehn, 2012).

Despite the large number of studies investigating the consequences of task-related conflict, surprisingly little is known about the circumstances that may determine when a task conflict will have a positive or negative impact on group decision-making. In this chapter, we aim to fill this void by examining an often-neglected aspect of intragroup conflict: group members' ability to cope with an intragroup conflict. The key question that is addressed in this chapter is whether the impact of a task conflict on group decision-making depends on whether individuals are in a threat or challenge motivational state during the conflict. According to the biopsychosocial model of arousal regulation (BPSM; Blascovich, 2008; Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996), threat and challenge states are the outcome of an evaluation of the demands of the situation (in terms of required effort, uncertainty, and danger) and the person's resources to deal with the situation (available skills, knowledge, and support, and personality). A threat state occurs when individuals evaluate situational demands as exceeding their personal resources, whereas a challenge state occurs when individuals evaluate resources as matching or exceeding situational demands (e.g., Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996; Tomaka, Blascovich, Kelsey, & Leitten, 1993). In this chapter, we intend to integrate the principles from the BPSM with recent developments in conflict research

(e.g., De Wit, Scheepers, & Jehn, 2012; Halevy, Chou, & Galinsky, 2012; Jehn, Rispens, & Thatcher, 2010). We propose that group members are more likely to hold on to their initially-preferred opinion, and therefore are more likely to make inferior decisions, when they exhibit a threat state during a task conflict rather than a challenge state.

We tested this hypothesis across three studies, and together these studies aim to make several contributions to the existing literature. First, by examining one of the circumstances that may moderate the link between task conflict and group decision-making, these studies address a frequently heard call of conflict researchers to move beyond a uniform conflict-performance relationship, and to identify individual and group characteristics that may shape the relation between task conflict and group decision-making (e.g., Behfar & Thompson, 2007; De Dreu, 2008; De Dreu & Weingart, 2003a; De Wit et al., 2012; Jehn & Bendersky, 2003). Secondly, by investigating the impact of stress and coping appraisals during intragroup conflict, the studies extend and contribute to recent research integrating the conflict literature with the stress literature (e.g., Dijkstra, Van Dierendonck, & Evers, 2005). Finally, earlier research on conflict and group decision-making (e.g., Amason, 1996; Jehn, 1994) implicitly assumed that all group members perceive a task conflict in the same way, neglecting the fact that parties often experience a conflict differently (cf. Jehn & Chatman, 2000; Jehn et al., 2010). In this chapter, we not only extend recent attempts to examine the differences among individuals in how they perceive and experience a task conflict (e.g., De Wit et al., 2012; Halevy et al., 2012; Jehn et al., 2010), we also examine how these individual differences may determine the impact of a task conflict on decision making.

Coping with Task Conflict

In line with past research, we define task conflict as any disagreement among group members arising from differences in opinions, ideas, and viewpoints about the content of the task (e.g., Jehn, 1995; Shaw, Zhu, Duffy, Scott, & Shih, 2011). To benefit from task conflict, it is important that group members dare to share and defend their own opinion, yet also that they are willing to consider other viewpoints and refrain from trying to "win" disagreements at all costs. The latter especially is often a stumbling block. Research shows that group members

often fail to adequately utilize each other's information. Indeed, group members often show a strong preference for their own information and their own initial viewpoints, even when the topic of the discussion is unimportant or when individuals do not have a vested interest in the outcome of the discussion (De Dreu & Van Knippenberg, 2005; Schulz-Hardt & Greitemeyer, 2003).

As a result of this preference for an initial viewpoint, group members are easily tempted to argue for their initial viewpoint as a goal in itself during a task conflict, rather than to try to develop a more accurate understanding of the decision at hand (e.g., Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007). This may especially be true for individuals who feel threatened when their own initial viewpoint is scrutinized by other group members during a task conflict. Research on ego-defensiveness (e.g., Bushman & Baumeister, 1998), for example, suggests that individuals who feel threatened by negative feedback tend to respond defensively and sometimes even aggressively to others (e.g., Fischer et al., 2011; Hart, Albarracín, Eagly, Lindberg, Merrill, & Brechan, 2009; Stucke & Spore, 2002). Hence, when group members exhibit a threat state during a task conflict, it is likely that they will demonstrate defensive and competitive cognitions and behaviors, such as retaliatory responses, disparagement of the viewpoints of others, and attitude polarization (De Dreu and Van Knippenberg, 2005).

Although these defensive and competitive cognitions and behaviors may serve as a protection in maintaining a positive self-concept (e.g., Bushman & Baumeister, 1998), they are likely to be dysfunctional when it comes to group decision-making. That is, it will be more complicated for group members to find a mutually agreeable solution when group members merely focus on defending their initial viewpoints, and only utilize information that supports initially preferred decision alternatives, while disregarding information that is inconsistent with their initial viewpoints (e.g., Fisher et al., 2011). Indeed, as a result of behaving so defensively to exigent viewpoints and information, and by focusing on more accommodating, but possibly low-quality information, individuals exhibiting a threat state during a task conflict may fail to notice possibilities for integrating different perspectives (e.g., Brodbeck et al., 2007). Likewise, they may neglect information that would make their own

preferred decision alternative obsolete, or another decision-alternative evidently superior.

Hence, we propose that when group members exhibit a threat state during a task conflict, they are likely to show a bias towards their initially preferred decision and will fail to adequately utilize the information central to their diverging viewpoints. This hypothesis is consistent with the biopsychosocial model (e.g., Blascovich, 2008) as well as with research on the threat-rigidity hypothesis (e.g., Staw, Sandelands, & Dutton, 1981), both of which build upon Lazarus's earlier work on coping and stress (e.g., Lazarus, 1966) to argue that threat may narrow individuals' field of attention and reduce the information channels used. Indeed, recent work on the biopsychosocial model has shown a negative relationship between physiological markers of threat and cognitive adjustment to initial anchors (e.g., Kassam, Koslov, & Mendes, 2009). Likewise, recent work on the threat-rigidity hypothesis (e.g. Staw, et al., 1981), which states that people limit their level of information processing when they feel threatened, has shown that in the face of financial or physical hazards, group members start to rely more on dominant and well-learned strategies or decisions, show less attention to peripheral information, and restrict their information processing (e.g., Kamphuis, Gaillard, & Vogelaar, 2011). In sum, during task conflict, a threat state may reduce the capacity for information processing, and cause a "closed-mindedness" towards other's opinions (e.g., Thorisdottir & Jost, 2011).

Although threat states thus seem to be related to inflexibility and defensive responses, a growing body of literature suggests that a challenge response enables more functional cognitive processing. For example, several studies have shown that individuals who exhibited a challenge (rather than a threat) state performed better during complex cognitive tasks, such as arithmetic tasks (Schneider, 2004; Tomaka et al., 1993) and problem-solving tasks (e.g., Chalabaev, Major, Cury, & Sarrazin, 2009). Likewise, a challenge-state has been related to increased cognitive flexibility, more openness towards other's opinions, and greater adjustments to initial anchoring points compared to threat states (e.g., De Wit et al., 2012; Kassam et al., 2009). Hence, individuals who exhibit a challenge state during a conflict are likely to reflect more adequately, and more thoroughly, on dissenting ideas and opinions than individuals exhibiting a threat state.

Overview of Studies

The above analysis suggests that during a task conflict, a threat-state is likely to be related to an unwillingness to modify initial viewpoints, and a greater focus on information that is related to an initial decision. A challenge state, on the other hand, is likely to be related to greater cognitive flexibility, and a greater willingness to process the information and perspectives of others. In general, a task conflict therefore is likely to have a more beneficial effect on group decision-making when individuals exhibit a challenge rather than a threat motivational state during the task conflict. Across the three studies, we expect that the tendency to hold on to initial decision alternatives will occur to a greater extent under threat compared to challenge (Hypothesis 1). We also expect that under threat (vs. challenge) group members will show a greater bias towards their own unique information (Hypothesis 2). To examine these hypotheses, in Study 1 we made use of an experimental manipulation of threat and challenge states, in combination with a task conflict scenario which participants are asked to read and respond to. In Studies 2 and 3, we experimentally induced a task conflict during a hidden profile task (see Stasser & Titus, 1985; Toma & Butera, 2009) and subsequently examined how conflict-related threat and challenge states are related to group members' information processing and decision making.

Study 1

We conducted the first study to examine the relationship between experimentally induced threat and challenge states, and subsequent reactions to a task conflict. We induced the threat and challenge states by means of a short writing task, after which participants were asked to read a task conflict scenario and to report how they would behave in the depicted conflict situation. We expected to find that participants in the threat condition would indicate being more rigid in trying to hold onto their initial viewpoint (Hypothesis 1), and being more biased in their information processing (Hypothesis 2) than the participants in the challenge condition.

Participants and Design

A total of 40 participants volunteered to participate in this study. The sample included 23 women and 17 men (M_{age} = 36.18 years) who

were recruited at Leiden University and the Leiden community. The participants were randomly assigned to either a threat or a challenge condition.

Procedures and Independent Variable

We told all participants that the purpose of the first part of the experiment was to examine how people remember stressful situations from their past (see Rutjens, Van Harreveld, & Van der Pligt, 2010). Therefore, in both the threat as well as the challenge condition, participants were asked to write about a stressful event they had recently experienced. In line with the BPSM, the difference between the threat and challenge condition was based on whether participants felt their resources for coping with the stressful event were outweighed by the demands of the event (or vice-versa). More specifically, in the threat condition, we asked the participants to recall a recent stressful incident or situation during which they lacked a feeling of control. In the challenge condition, we asked the participants to recall a recent stressful incident or situation during which they still felt in control. In both conditions, participants were asked to summarize and write down the event using approximately 100 words.

After inducing the threat and challenge states, we presented participants with the following task conflict scenario which was intended to overlap with the hidden profile task used in Studies 2 and 3: "Imagine a situation where you and two co-workers work together on an important project. Also imagine that you have to make a difficult decision. There are 4 possible decisions you can make: A, B, C, or D. It appears that you disagree on the subject matter. You think you should go for decision A, whereas your two teammates respectively prefer decision B and C."

Measures

Manipulation check. To check our manipulation of threat and challenge states, right after the writing task, and before reading the conflict scenario, participants were asked to indicate the stressfulness of the event they had described, and the amount of control they had over the situation using Likert scales ranging from 1 (not at all) to 7 (very much). In line with the BPSM, our expectation was that in both conditions participants would describe the event as stressful, but that those in the threat

condition would differ from those in the challenge condition in how much control the felt during the event.

Decision making and information processing. After reading the scenario, participants were asked to rate their agreement with seven questions aimed at measuring rigidity during group decision-making (e.g., "In this situation, to what extent would you try to hold on to your own opinion?," "In this situation, to what extent would you try to defend your own viewpoint as much as possible?," $\alpha = .82$). Likewise, participants were asked to rate their agreement with three items aimed at measuring biased information use. The items were: (1) "In this situation, to what extent would you weigh your own information more heavily than information from other group members when forming your final opinion?" (2) "In this situation, to what extent would you base your final opinion as much as possible on your own information?" and (3) "In this situation, to what extent would you ignore the information from the other group members when forming your final opinion?" ($\alpha = .72$). Participants rated their agreement with the items on Likert scales ranging from 1 (totally disagree) to 7 (totally agree).

Results

Checks

As expected, the manipulation checks showed that participants in both the threat and the challenge condition regarded the situation as stressful ($M = 6.10$, $SD = 1.07$; and $M = 5.80$, $SD = 1.01$ respectively), $F(1, 39) = .83$, $p = .37$. Yet, in line with the BPSM, those in the threat condition ($M = 2.85$, $SD = 1.73$) differed from those in the challenge condition ($M = 5.95$, $SD = .60$) with regard to the control they felt over the stressful situation, $F(1, 39) = 57.51$, $p < .001$.

Hypothesis Testing

In line with Hypothesis 1, participants in the threat condition indicated that they would react more rigidly ($M = 4.62$, $SD = .82$) than did those in the challenge condition ($M = 3.86$, $SD = .89$), $F(1, 39) = 8.07$, $p < .01$. Likewise, in line with Hypothesis 2, participants in the threat condition indicated that they were more likely to use their own (instead of other group members') information during decision making ($M = 3.97$,

SD = 1.11) than did those in the challenge condition (*M* = 3.17, *SD* = .87), $F(1, 39) = 6.46$, $p = .02$. We did not find any effect for gender.

Discussion

These results suggest that individuals are more inclined to hold onto their own opinion when they exhibit a threat state compared to a challenge state during a task conflict. That is, when they were primed with a threat-state, people responded with greater affirmation to statements that they were going to defend their own initial position during a task conflict than when they were primed with a challenge-state. Additionally, individuals expressed a greater tendency to use their own information over the information of others during a task conflict when they were primed with a threat state rather than a challenge state.

These results provide initial support for our hypotheses. Yet, this study has two important limitations. First, the participants responded to a hypothetical conflict-scenario. Hence, there was not an actual difference of opinion, nor was there any information exchange or actual decision-making. Secondly, the threat and challenge states that we induced in this study were not directly linked to the conflict itself. The question therefore remains whether threat/challenge states that arise from the conflict itself (rather than arising from an external source) show a similar pattern with respect to rigidity and selective use of information. In Studies 2 and 3 we address these two limitations by having participants face an actual task conflict during a decision-making task. This allows us to measure actual rigidity in decision making as well as actual biases in information use. Moreover, it allows us to measure threat/challenge states arising from the conflict itself, rather than by inducing them externally to the conflict.

Study 2

To examine actual information processing and decision making, in Study 2, we had participants work on a hidden-profile task (see Stasser & Titus, 1985; Toma & Butera, 2009). A hidden profile task offers a good possibility to examine both the extent to which individuals use other group members' information in their decision making as well as to examine individuals' rigidity in holding onto initial decision preferences. That is, in a hidden profile task, part of the information needed to solve the task is shared among group members whereas other pieces of

information are unshared. When all information available to the group is considered, group members should be able to derive the correct solution to the task. Yet, no group member can identify this best solution on the basis of only his or her own individual information. Instead, group members are directed to a suboptimal decision alternative by the subset of the information they receive. Therefore, the use of each other's information, as well as the disconfirmation of group members' initial preferences is required to derive the correct solution (Schulz-Hardt et al., 2006).

To create a task conflict during the hidden-profile task, we used experimentally controlled reactions by two confederates, who stated their disagreement with the participant's solution and their preference for another solution to the task. To enable participants to solve the hidden-profile task, the experimentally controlled reactions contained all the unshared information necessary to derive the correct solution (see Greitemeyer & Schulz-Hardt, 2003 for a similar procedure). The main aim of Study 2 was to examine how the extent to which individuals reported feeling threatened or challenged by this task conflict affected their decision making and their use of their group members' information. In line with Study 1, we expected that the more group members exhibited a threat state (compared to a challenge state) during the task conflict, the more likely they would be to rigidly hold onto their initial viewpoint (Hypothesis 1), and the more likely they would be to show a bias in their information processing (that is, that they would make relatively more use of their own information compared to that provided by other group members) (Hypothesis 2).

In addition to the impact of threat and challenge states, we also examined whether the task conflict, in general, had a beneficial effect during the hidden profile task. For that reason we included a control condition, in which there was no overt task conflict among the group members and where individuals' initial viewpoints were not being disputed by other group members. We expected that in this control condition, individuals would be less likely to reconsider, or think critically about, their initial solution. Therefore we expected that in this control condition individuals would show a relatively strong inclination to hold on their suboptimal initial viewpoint, and that compared to the task conflict condition, they would be less likely to derive the correct decision.

Participants and Design

A total of 117 undergraduates volunteered to take part in this study in return for a monetary award (6 euros) or partial course credit. The sample included 87 women and 30 men (M_{age} = 20.73). Participants were randomly assigned to the task conflict condition or the control condition.

Decision Task

Participants worked on the hidden profile task developed by Toma and Butera (2009), which concerns a road accident investigation. Ostensibly, the participants had to work together with two other participants with whom they formed a group. Four persons are potential suspects in this accident; based on a specific set of nine clues three of them can be exonerated (Mr. X, Mrs. Y, and Mr. Z) and the fourth (Mr. X's son) incriminated. The task contained 28 items of information: 19 of them were shared and 9 were unshared among the group members (see Toma & Butera, 2009). The 19 shared items describe the circumstances of the accident and some specific characteristics of the suspects. On the basis of the 9 unshared items, participants could identify Mr. X's son as the guilty person. A hidden profile was constructed by allocating three critical unshared items to each of the group members. Based on the three unshared items they received, each group member was oriented to a specific initial preference (Mr. X, Mrs. Y, or Mr. Z). To derive the correct solution, participants were required to use the unshared information of the other group members and to disconfirm their own initial preferences. To have experimental control over the level of task conflict, in our study all participants were directed to the same initial solution (Mr. X), whereas two confederates were asked to argue for Mrs. Y and Mr. Z respectively (for more details see below and appendix A).

Procedures and Independent Variable

When participants arrived in the lab, they were told that they were going to work on a decision-making task with two other participants who were yet to arrive. Participants were seated in separate cubicles and told that they would work on the task as a group via the computer system. The participants were instructed to first study the road accident case individually and to decide whom they identified as the guilty person. They were provided with the 19 shared items along with 3 unshared items that

oriented them towards a specific suspect (Mr. X). Participants were given 2.5 minutes to find a solution. Next, they were invited to present their decision in front of the webcam, and give a clear motivation why they made this decision (recording 1). They were told that (a) their statement would be recorded, (b) the other group members would watch their video-recording, (c) the other group members would give a reaction to their video-recording, and (d) they [the participants] would be able to read the reactions of the other group members to make a final decision. This set-up (as opposed to a real discussion) was used to control the task situation and to standardize it across participants (see Greitemeyer & Schulz-Hardt, 2003 for a similar procedure).

After providing their own decision, in the task conflict condition, we induced the task conflict by having participants read the reaction of the two confederates, who stated their disagreement with the participant's solution, and provided the participants each with three unshared items. In the control condition, the bogus group members also provided the participants each with three unshared items, but instead stated that they agreed with the participant's solution. After this, participants were asked to present their individual final decision by means of a webcam recording and to provide an explanation for why they came to this decision (recording 2). Finally, participants were asked to provide a final rank-order of the four persons in order of likelihood of being the culprit (Mr. X, Mrs. Y, Mr. Z, or the son of Mr. X), after which they were debriefed, paid, and thanked for their participation.

Manipulation of Task Conflict

The unshared items that participants received directed them to suspect Mr. X (see appendix A). We therefore expected participants to argue that Mr. X was the culprit in their video message to the other team members (recording 1). After they announced their decision, and after a short waiting period, participants then read the reaction of the first of the other two group members, who in the task conflict condition disagreed and instead opted for Mrs. Y, whereas in the control condition they agreed and opted for Mr. X (the specific reactions are shown in Appendix A). Thereafter, a reaction from the second of the other two group members followed. In the control condition, this person also agreed and opted for Mr. X. In the task conflict condition, the person disagreed and

opted for Mr. Z. In both conditions, all the previously unshared information was shared by the other two group members. Moreover, participants knew which of their own items were shared and which items were unshared, and were aware that the other two group members would receive different unshared items. This transparency was important because such explicit knowledge allowed participants to deliberately choose not to use the other group members' unshared information in their decision making (Toma & Butera, 2009).

Measures

Reported threat/challenge state. In line with the BPSM, for the participants in the task conflict condition we examined their threat/challenge state by calculating the difference between their perceived demands and their perceived resources to cope with the task conflict. More specifically, directly after they had read the reactions of the other group members, participants were asked to rate their agreement with four statements adapted from Tomaka et al., 1993). Two items concerned the perceived demands of the task conflict (e.g., "I think it is stressful that our solutions differ from each other"). The other two items concerned the perceived recourses to manage the task conflict (e.g., "I think I am able to resolve the difference between our solutions"). Participants gave their responses on 7-point Likert scales with "strongly disagree" (1) and "strongly agree" (7) as endpoints. We determined individuals' threat/challenge state by subtracting the average of the perceived resources from the perceived demands (and so higher values indicated relative threat, while lower values indicated relative challenge).

Decision making. The first dependent variable was the final decision that was made, a categorical measure expressing whether participants chose the decision reflecting rigidity (Mr. X), the correct decision (Son of Mr. X), or a decision reflecting yielding (Mrs. Y or Mr. Z). Mr. X is considered as the rigid decision, because participants who make this decision stick with their initial solution, despite the disagreements with the other group members and the unshared information items they received from them which should have directed them to the correct decision. Mrs. Y and Mr. Z are considered as the "yielding" decision, because participants who make this decision "yield" by agreeing with (one of) the other group members even though their

own unshared information and the information they receive from the other group members directs them to a different solution.

Information Processing. For each participant, two independent coders content-analyzed the video recordings to determine the number of shared and unshared items that participants used to support their final decision. A distinction was made between the three unshared items that participants had received themselves and the six unshared items that were provided to them through the confederates. To examine the bias in information processing, the coders determined the proportion of participants' own versus the other group members' unshared information that was used to support the final decision. Discrepancies between the codings were resolved by reaching consensus via discussion.

Manipulation check and control variable. To check whether the debate with the other group members was indeed perceived to be a task conflict (or not), participants were asked to rate their agreement with two items adapted from Jehn, Greer, Levine, and Szulanski (2008) on 7-point Likert scales (1 = strongly disagree to 7 = strongly agree, r = .85). The items were "The solutions of my team members differ from my own solution" and "The culprit that my team members have in mind differs from my the culprit I have in mind." The items were presented right after participants had received their group members' reactions. Finally, we controlled for gender because we anticipated that male and female participants might react differently to the reaction of the confederates (e.g., Carli, Lafleur, & Loeber, 1995).

Results

Checks

To facilitate our manipulation of the task conflict, participants initially received unshared information that directed them to one specific answer category (Mr. X). To check whether participants indeed initially opted for Mr. X, we content-analyzed the video-recordings to identify their initial solution. The results showed that except for three participants, all of the 117 participants initially thought that it was Mr. X who caused the accident. The three participants who did not choose Mr. X were excluded from further analyses as their answers made the manipulation of task conflict irrelevant.

For the remaining 114 participants, the manipulation of task conflict was successful. The average level of reported task conflict in the task conflict condition was significantly different from that in the control condition, $F(1,113) = 532.27$, $p < .001$. More specifically, in the task conflict condition, the average level of reported task conflict was high and significantly higher than the midpoint on the scale (i.e., 4)($M = 6.51$, $SD = .87$), $t(61) = 22.68$, $p < .001$, while in the control condition the average level of reported task conflict was low and significantly lower than the midpoint on the scale, ($M = 1.84$, $SD = 1.28$), $t(51) = -12.18$, $p < .001$.

Decision making

We first examined whether the participants in the task conflict condition differed from those in the control condition with respect to the decisions they made. We therefore estimated a logistic regression predicting the answer categories, with the presence of task conflict (vs. control) as a predictor variable. Results showed that the task conflict manipulation affected decision making, $\chi^2 = 4.74$, $p < .05$. In line with the expectation that in the face of task conflict individuals will more critically evaluate their initial solution, participants were more likely to change these initial decisions in the task conflict condition, compared to the control condition. This had two implications. First, the task conflict facilitated superior decision making: participants in the task conflict condition were 3.38 times more likely than participants in the control condition to derive the correct solution rather than sticking to their incorrect initial solution, $B = 1.22$, $p = .005$, $Wald = 7.773$. Secondly, participants in the task conflict condition were 3.26 times more likely than participants in the control condition to adopt one of the solutions of the other group members (Mrs. Y or Mr. Z; i.e., yielding) instead of holding on to their initial viewpoint, $B = 1.18$, $p = .031$, $Wald = 4.675$.

Concentrating only on the task conflict condition, we next examined our first hypothesis, that individuals' tendency to rigidly hold onto their initial viewpoint is positively related to the extent to which they exhibit a threat state during the task conflict. To that end, we estimated a logistic regression analysis predicting the answer categories, with the reported threat/challenge state as a predictor variable, and gender as a control variable.

Table 4.1. *Multinomial Logistic Regressions Examining The Decisions Made In Study 2.*

	Final Decision			
Predictor	*B*	*SE*	OR	*Wald*
Incorrect 'Rigidity' Solution (Mr.X) versus				
Intercept	-.45	.50		.80
Gender	1.61*	.81	5.02	3.96
Perceived threat of task conflict	.68***	.18	1.97	14.47
Incorrect 'Rigidity' Solution (Mr.X) versus Incorrect 'Yielding' Solution (Mrs.Y)				
Intercept	-.07	.52		.02
Gender	1.42	.87	4.16	2.68
Perceived threat of task conflict	.48**	.18	1.62	7.19
Incorrect 'Yielding' Solution (Mrs.Y or Mr.Z) versus Correct Solution (Son of Mr. X)				
Intercept	-.38	.47		.66
Gender	.19	.74	1.21	.07
Perceived threat of task conflict	.20	.15	1.22	1.71
Chi-square	24.75***			
df	4			
-2 log likelihood	72.90			
Cox and Snell pseudo R^2	.33			
Sample size	62			

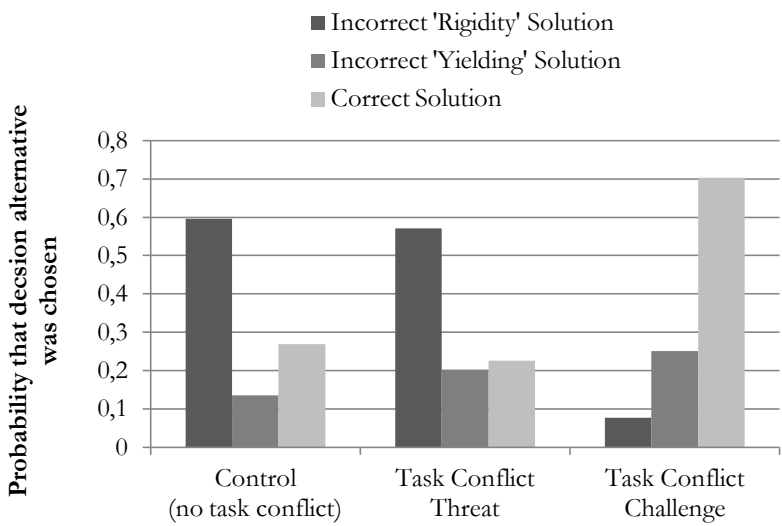
Note. OR = odds ratio, * p < .05, . ** p < .01, *** p < .001.

Table 4.1 shows that, in line with Hypothesis 1, the extent to which group members perceived the task conflict as a threat had a significant influence on their decision making, $\chi^2 = 24.75$, $df = 4$, $p < .001$. Specifically, in line with Hypothesis 1, participants were 1.97 times more likely to hold on to their incorrect initial solution (i.e., rigidity), instead of choosing the correct solution, with every one-point increase in the extent to which they reported a threat state during the task conflict. Similarly, with every one-point increase, participants were 1.62 times more likely to adopt one of the solutions of the other group members (Mrs. Y or Mr. Z; i.e., yielding) instead of holding on to their initial viewpoint.[10]

[10] The results also showed that male participants were 5 times more likely to stick to their incorrect initial solution instead of choosing the correct solution than female participants, $B = 1.61$, $p = .047$, $Wald = 3.96$.

To illustrate the impact of the reported threat during a task conflict on rigidity in decision making, we estimated the predicted probability of each answer category when participants reported relative threat (+1 *SD*) or relative challenge (−1 *SD*). As shown in Figure 4.1, the probability that participants would hold onto their initial incorrect viewpoint was roughly the same for participants in the control condition and for participants who exhibited a threat state during the task conflict. Similarly, the probability that participants would derive the correct solution was highest for those who exhibited a challenge state during the task conflict, and lowest for both the participants in the control condition and for participants who exhibited a threat state during the task conflict.

Figure 4.1. Probability of each decision-alternative when there was no task conflict or when there was task conflict and when the level of threat (vs. challenge) caused by a task conflict was perceived to be high (+1 SD, labeled as threat) or low (−1 SD, labeled as challenge) (Study 2).



Biased Information Processing

We first examined whether the participants in the task conflict condition differed from those in the control condition with respect to the information they used when presenting their final decision. We therefore estimated an ANOVA predicting the (relative) use of participants' own

and their group members' unique information, with the presence of task conflict (vs. control) as a predictor variable. Results showed that in the task conflict condition (M = 1.86, SD = 1.14), the use of the information provided by other group members was significantly higher than in the control condition (M = 1.08, SD = 1.11), $F(1,106) = 12.94$, $p < 0.001$. The same results were found when examining the use of the other group members' information, relative to participants' own unique information, (i.e., respectively M = .52, SD = .23; and M = .37 SD = .34), $F(1,106) = 6.412$, $p = .01$. These results show that in the face of task conflict, people are less biased towards their own information than when task conflict is absent.

To test our second hypothesis, that the extent to which individuals exhibit a threat state during a task conflict is negatively related to individuals' use of the unshared information provided by others, we regressed the (relative) use of participants' own and their group members' unique information on the reported threat/challenge state during the task conflict. In support of Hypothesis 2, the use of the information provided by other group members was negatively related to the threat exhibited during the task conflict; both in absolute terms, β = -.33, $t(55) = -2.603$, $p = .012$, R^2 =.11, as well as relative to their own unique information, β = -.35, $t(54) = -2.732$, $p = .008$, R^2 =.12. These results show that in the face of task conflict, individuals' bias towards their own information is higher, the more they exhibit threat during the task conflict.

Discussion

In line with Study 1, the results of Study 2 support the hypothesis that during a task conflict, people are more likely to hold onto their initial viewpoint the more they exhibit a threat rather than a challenge state. An important consequence of this rigidity was that the degree of threat (vs. challenge) was negatively related to the probability that subjects made the correct decision. More specifically, the more threat people reported during the task conflict, the more likely they were to hold on to their initial decision alternative, and the less likely they were to find the correct solution to the task. In addition to these performance-effects, the results also support the hypothesis that in a task conflict situation, people are more likely to become selective in their use of information the more they exhibit a threat rather than a challenge state. That is, individuals were less

likely to use their group members' information during decision making, and instead were more likely to rely on their own information, the more they exhibited a threat state during the task conflict. Finally, when comparing the task conflict condition with the control condition, the results show that the likelihood of individuals holding onto an initial suboptimal decision-alternative was roughly the same for those exhibiting a threat state during the task conflict and those in a conflict-free situation. Therefore, the results of Study 2 imply that a task conflict may be functional for decision making, but only when group members experience a challenge state during the task conflict.

According to the BPSM, it is possible to examine threat and challenge states not only by demands and resource appraisals, but also by specific patterns of cardiovascular reactivity (e.g., Blascovich & Tomaka, 1996). The use of cardiovascular measures presents several advantages over conventional methods. For example, due to the richness of stimuli and the dynamic nature of conflicts during group decision-making, people may often not be aware of the specific motivational state they are in. Moreover, the threat or challenge states might transform over time, making cardiovascular measures of challenge and threat (which can be measured continuously and unobtrusively) particularly useful during conflict situations (e.g., Blascovich, 2008). The goal of the third study, therefore, was to examine whether we could replicate the findings of this second study, using cardiovascular measurements in addition to self-reported demands and resource appraisals to examine threat and challenge states.

Study 3

The aim of Study 3 was to examine whether cardiovascular indicators of threat and challenge states are related to decision making and information processing in the same way as the self-reported measures we applied in Study 2. In line with Studies 1 and 2, we expected that cardiovascular indices of threat and challenge states during a task conflict would predict individuals' tendency to hold onto initial decision alternatives, and that the tendency to rigidly hold onto their initial viewpoint would occur to a lower extent under challenge compared to threat. We expected the same to be true for the biases in information processing. More specifically, we expected that the cardiovascular

reactivity to the task conflict would predict individuals' tendency to use the information provided by other group members, and that the relative use of their own unshared information vs. that provided by other group members would occur to a greater extent under threat compared to challenge.

Participants and Design

A total of 51 undergraduates (45 women, 6 men, M_{age} = 20.11, SD_{age} = 2.27) took part in this study in return for a monetary award (6 euros) or partial course credit. All participants were presented the same task conflict situation as in Study 2. As the independent variables, we measured both self-report as well as physiological markers of threat and challenge states in response to the task conflict.

Procedures and Independent Variable

The study employed the same hidden profile task and procedures as in Study 2. The exceptions were that we attached the sensors for the cardiovascular (CV) recordings to the participant, recorded baseline CV responses for five minutes at the start of the study, and used video- instead of text-messages during the task conflict manipulation, to increase task engagement, which is a prerequisite for using cardiovascular measurements of threat and challenge states (e.g., Blascovich, 2008). Gender was again entered as a control variable.

Physiological measurements

During motivated performance situations, threat and challenge can be distinguished through specific patterns of cardiac output (CO, the amount of blood pumped by the heart during one minute), and total peripheral resistance (TPR; a measure of the resistance of the arterioles). In absolute terms, challenge is related to an increase in CO and a decrease in TPR (compared to baseline), whereas threat is related to little or no change in CO and no change or an increase in TPR. In relative terms, higher CO and lower TPR are signs of relatively greater challenge or lesser threat (Blascovich et al. 2003, p. 235).

To determine CO and TPR, throughout the study, impedance-cardiographic signals (ICG), electrocardiographic signals (EKG), and blood pressure were continuously measured using a Biopac MP150 system

(Biopac Systems Inc., Goleta, CA). We used Acknowledge software (Biopac Systems, Goleta, CA) to record and store the physiological data and scored the data using Matlab and AMS-IMP software (Free University, Amsterdam, the Netherlands). Other than CO and TPR, we determined heart rate (HR) and pre-ejection period (PEP; a measure of ventricular contractility). A decreased PEP, and an increased HR (compared to baseline) indicate task engagement, which is a requirement to use CO and TPR as indicators of threat and challenge states (e.g., Seery, Weisbuch, Hetenyi, Blascovich, 2010).

In line with the BPSM we calculated average levels of HR, PEP, CO, and TPR for the last minute of the baseline, and the first minute of the individual decision-making speech. In line with standard practice (e.g., Tomaka et al., 1993), reactivity scores were created by subtracting baseline scores from the mean scores during the decision-making speech. Descriptive statistics for each of the reactivity scores can be found in Table 4.2. Finally, to simplify the analyses and because changes in CO and TPR can be seen as two related measures of the same underlying threat/challenge states, we also derived a single threat challenge index (TCI) (Blascovich, Seery, Mugridge, Norris, 2004). The TCI was calculated by converting individuals' TPR and CO values into z-scores, then allocating the CO scores a weight of +1 and TPR a weight of -1 and summing them so that larger values point towards a level of reactivity indicative of greater challenge (e.g., Seery et al., 2010).

Results

Checks

Induction of task conflict. To check whether participants initially opted for Mr. X, we content-analyzed the video-recordings to identify their initial solution. The results showed that 48 of the 51 participants initially thought that it was Mr. X who caused the accident. The three participants who did not choose Mr. X were excluded from further analyses as our induction of task conflict requires individuals to initially opt for Mr. X. For the remaining 48 participants the results showed that the induction of task conflict was successful; the average level of reported task conflict was high and significantly higher than the midpoint on the scale (i.e., 4; $M = 6.53$, $SD = .75$), $t(47) = 23.27$, $p < .001$.

Cardiovascular measures. Before calculating cardiovascular markers of challenge and threat, we established that the task conflict qualified as a motivated performance situation and individuals were indeed engaged in the task conflict (e.g., Blascovich & Mendes, 2010). T-tests show that the speech task indeed qualified as a motivated performance situation; both HR reactivity, $t(45) = 7.54$, $p < .001$, and PEP reactivity, $t(42) = -2.29$, $p = .027$, differed significantly from zero[11].

Analyses

Table 4.2 shows the correlations, means, and standard deviations of the variables included in this study.

Rigidity in decision making. To test our first hypothesis, that group members' tendency to rigidly hold onto their initial viewpoint is positively related to the extent to which they exhibit a threat state during a task conflict, we estimated two logistic regressions predicting the answer categories, with respectively the reported threat/challenge state (Table 4.3, model 1) or the threat challenge index as a predictor variable (Table 4.3, model 2).[12] In line with Hypothesis 1 and the results of Studies 2 and 3, participants were 1.61 times more likely to hold onto their incorrect initial solution (i.e., rigidity), instead of choosing one of the other decision alternatives, with every one-point increase in the extent to which they reported feeling threatened, $B = .22$, $SE = .11$, $p = .046$. Similarly, model 2 in Table 4.3 shows that participants were .61 times more likely to hold on to their incorrect initial solution (i.e., rigidity), instead of choosing one of the other decision alternatives, with every one-point increase in the extent to which they showed a cardiovascular pattern indicating challenge rather than threat in response to the task conflict, $B = -.49$, SE = .25, $p = .041$. The effects of appraisals and physiological reactions had independent effects on decision making; when they were entered together in a binary logistic regression analyses, the effect of physiological threat/challenge reactions remained significant, $B = -.62$, SE = .31, $p = .044$ and that of the threat/challenge appraisals, $B = .27$, $SE = .14$, $p = .055$ did as well, although marginally.

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[11] For technical reasons it was not possible to score the ICG recordings from 5 participants and for 2 of these 5 participants neither were the ECG recordings. For 3 additional participants it was not possible to score their BP recordings. As a result, the remaining sample size is 46 for the HR analyses, 43 for the PEP and CO analyses, and 40 for the TPR analyses.

[12] We only report the results for the analyses using the threat challenge index (TCI). Please note that similar results are obtained when using CO and TPR as the cardiovascular indicators of threat/challenge states.

Table 4.2 *Means, standard deviations, and correlation matrix, Study 3 (N = 48)*

	1	2	3	4	5	6	7	8	9	10	11
Adjustment of initial viewpoint (Non-Rigid=0, Rigid=1)	–										
Use of other's unique information	-.31*	–									
Use of own unique information	-.00	.14	–								
Relative use of own versus other's unique information	-.36*	.91***	-.42**	–							
Gender (male = 0, female = 1)	-.11	.16	.19	.08	–						
Perceived threat of task conflict	.29*	-.11	.14	-.19	.09	–					
Heart rate reactivity	-.28†	.15	.11	.15	.09	-.07	–				
Pre-ejection period reactivity	.12	.09	.01	.05	-.11	.18	-.52***	–			
Cardiac output reactivity	-.29†	.09	-.07	.17	-.12	-.22	.55***	-.57***	–		
Total peripheral resistance reactivity	.32*	-.27†	-.09	-.31†	.09	-.01	-.32*	.26	-.67***	–	
Threat Challenge Index	-.33*	.18	.03	.25	-.12	-.11	.47**	-.42**	.91***	-.92***	–
Mean	.52	1.15	1.56	35.63	0.87	-0.70	10.56	-3.99	0.14	352.92	-.02
SD	.50	1.17	0.80	26.09	0.33	2.96	9.51	11.41	0.48	566.76	1.82
N	48	48	48	42	48	48	46	43	43	40	40

† $p \leq .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4.3. *Binary Logistic Regressions Examining The Decisions Made In Study 3*

	Model 1				Model 2				Model 3			
Predictor	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*	*B*	*SE*	OR	*Wald*
Intercept	1.82	1.85		0.96	2.57	2.24		1.32	3.87	2.59		2.24
Gender (male = 0, female = 1)	-0.92	0.97	0.40	0.90	-1.32	1.17	0.27	1.27	-1.90	1.33	0.15	2.04
Perceived Threat of Conflict (PTC)	0.22*	0.11	1.25	4.00					0.47*	0.19	1.60	5.93
Threat Challenge Index (TCI)					-0.49*	.24	0.61	4.17	-0.91*	0.39	0.40	5.57
PTC x TCI									-0.19*	0.10	0.82	3.93
Chi-square	5.08				6.00				15.21			
Sig.	.079				.05				.004			
df	2				2				4			
-2 log likelihood	61.38				49.35				40.23			
Cox and Snell pseudo R^2	.10				.14				.32			
Sample size	48				40				40			

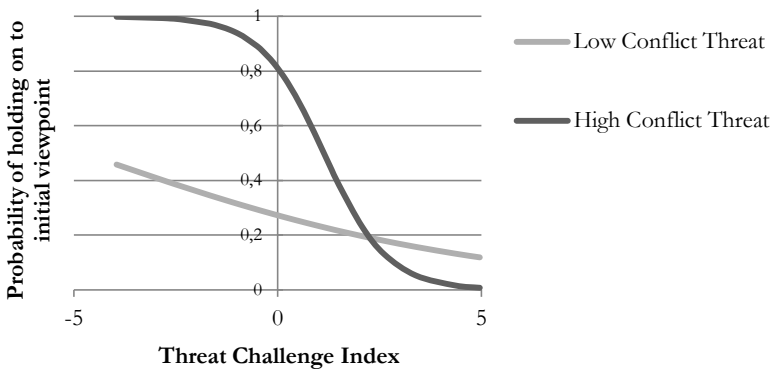
* = $p \leq .05$ *Note.* The level of perceived threat of conflict was mean centered.

Biased Information Processing. To test our second hypothesis, that the extent to which group members use the unshared information provided by others is negatively related to the level of threat exhibited during the task conflict, we regressed (the relative) use of participants' own and their group members' unique information on the extent to which people exhibited a threat or challenge state. The use of the information provided by other group members was not significantly related to the extent to which participants perceived the task conflict as a threat, either in absolute terms, β = -.12, $t(45)$ = -.84, p = .41 or relative to the participants' own unique information, β = -.19, $t(39)$ = -1.23, p = .23. Likewise, the use of the information provided by other group members was not related to the extent to which participants were physiologically challenged, either in absolute terms, β = .20, $t(37)$ = 1.27, p = .21 or relative to the participants' own unique information, β = .27, $t(33)$ = 1.57, p = .13.

Additional Analyses

We also examined whether the reported threat/challenge states and the cardiovascular markers of threat/challenge states interacted, by including an interaction effect of the reported threat/challenge states and the threat/challenge index, as shown in Table 4.3, model 3. The interaction between the threat/challenge appraisals and the threat/challenge reactions had a significant effect on decision making, B = −.19, SE = .10, p = .047. As shown in Figure 4.2, simple slope analyses following the procedure suggested by Aiken and West (1991) revealed that those who reported a threat state (1 SD above the mean) were more likely to hold on to their opinion when they exhibited a cardiovascular pattern indicating threat rather than challenge, B = -2.34, SE = 1.04, $Wald$ = 5.03, OR = .10, p = .025. This was not the case for those who reported a challenge state during the task conflict (1 SD below the mean), B = -.37, SE = .44, $Wald$ = .68, OR= .69, p =.41. These results imply that in addition to the main effects of the reported and the physiologically exhibited threat/challenge states, there is an additive effect, such that individuals become particularly likely to hold on their initial decision alternative when they both report a threat state during the conflict *and* exhibit a physiological pattern of threat.

Figure 4.2. Probability of holding on to an incorrect initial viewpoint for low (−1 SD) and high (+1 SD) perceived threat of conflict and levels of threat vs. challenge reactivity (Study 3).

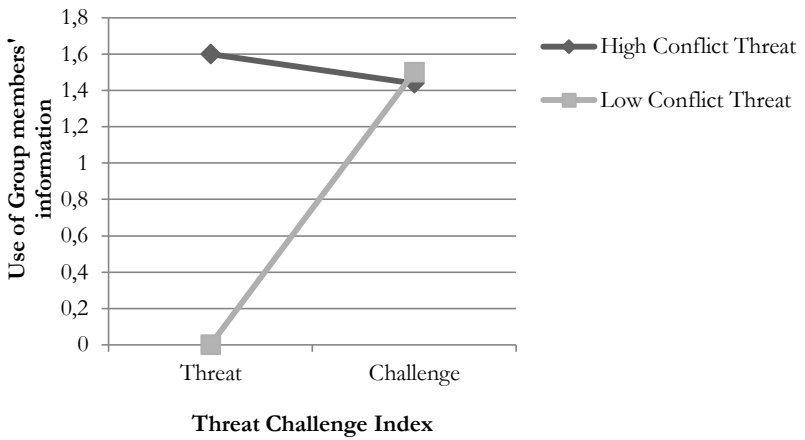


We performed the same analysis for the use of the information provided by other group members, both in absolute terms, as well as relative to the participants' own unique information. The interaction between the threat/challenge appraisals and the threat/challenge reactions had a significant effect on the absolute use of the other group members' information, $B = .08$, $SE = .03$, $p = .015$. As shown in Figure 4.3, simple slope analyses revealed that those who reported a threat state (1 *SD* above the mean) were less likely to use the information provided by the other group members when they reacted as physiologically threatened instead of challenged, $B = .72$, $SE = .27$, $t(39) = -2.69$, $p = 0.011$. Again this was not the case for those who perceived the conflict as a challenge (1 *SD* below the mean), $B = -.09$, $SE = .20$, $t(39) = -.46$, $p = 0.65$. These results imply that individuals were least likely to use the information provided by others when they reported a threat state during the conflict *and* exhibited a physiological pattern of threat.

Discussion

In line with Studies 1 and 2, the results support the hypothesis that people are more likely to hold on to their initially preferred decision-alternative the more they exhibit a threat rather than a challenge state during a conflict. That is, the likelihood that individuals held on to an

Figure 4.3 Use of the information provided by other group members for low (−1 SD) and high (+1 SD) perceived threat of conflict and low (−1 SD) and high (+1 SD) threat vs. challenge reactivity (Study 3).



initial decision-alternative was negatively related to self-reported as well as cardiovascular indicators of threat (rather than challenge). Additional to these main effects, the results also showed an interaction between the self-reported and cardiovascular indicators of threat/challenge states. More specifically, the results showed that individuals were most likely to hold onto their initial viewpoint when both their cardiovascular as well as self-reported indicators of a threat or challenge state indicated a threat state. This suggests that rigidity during a task conflict is most likely to occur when a person experiences a threat state psychologically as well as physically.

With respect to the relationship between threat and challenge states and biases in information processing, the results were less straightforward than those reported in Studies 1 and 2. In contrast to the expected main effects, the results showed an interaction effect of the self-reported and cardiovascular indicators of threat/challenge states on information processing. A possible explanation for the lack of main effects could be that compared to Study 2, in the current study participants were generally much less prone to use their group members' information. The reason for this is likely to be that the interaction took place via video messages instead of text messages. Individuals may,

therefore, have experienced greater difficulties with processing the information they received from their group members. This because the video messages were much more stimuli-rich than the text messages. Yet, although we did not replicate the main effect of self-reported or cardiovascular threat states on information use, the significant interaction between the two is in line with the idea that threat is linked with a greater use of one's own information. That is, individuals were most likely to show a bias towards their own information when there were both cardiovascular and self-reported indications of a threat state. In line with the above results for decision making, this suggests that biases in information use during a task conflict are most likely to occur when a person experiences a threat state physically as well as psychologically.

General Discussion

Across three studies we examined how threat and challenge states during a task conflict relate to individuals' tendency to change their initial viewpoint. We used multiple methods, including a threat/challenge-prime (Study 1), self-reported threat/challenge states (Studies 2 and 3), and cardiovascular markers of threat/challenge states (Study 3). The results showed a consistent pattern: group members who exhibited a threat state during a task conflict were more likely to hold onto their incorrect initial viewpoint than group members who exhibited a challenge state. Moreover, compared to challenged individuals, threatened individuals tended to make less use of the information provided by the other group members in their decision making. Together these results indicate that psychological as well as physiological threat and challenge states play an important role in the link between task conflict and decision making.

Implications

One of the implications of this study is that distinguishing threat from challenge states contributes to solving the paradox of task conflict. In contrast with the commonly held belief that task conflict can enhance group decision quality through the debate and exchange of divergent viewpoints, two meta-analyses suggested that a consistent and generalizable positive relationship between task conflict and decision-making quality does not exist (De Dreu & Weingart, 2003b; De Wit et al., 2012). More specifically, whereas some studies did indeed find that

intragroup disagreement enhances group functioning (Jehn, 1994; Li & Hambrick, 2005; Pelled, Eisenhardt, & Xin, 1999), several others found conflict to be a liability for group performance (e.g., Jehn, Northcraft, & Neale, 1999) or found neither a positive nor a negative relationship (e.g., Barsade, Ward, Turner, & Sonnenfeld, 2000). The current results shed more light on the controversial relationship between task conflict and group decision-making. The findings show that when a task conflict is perceived as a threat rather than a challenge, group members show more biased information-processing and are more likely to hold on to suboptimal solution alternatives. Considering the fact that to benefit from a task conflict, group members need to be willing to process all available viewpoints, the findings imply that the potential positive impact on group decision-making may be limited to task conflicts that are perceived and physiologically experienced as a challenge, rather than a threat. Identifying the conditions under which people perceive a conflict as a challenge or a threat can, therefore, help groups to make better use of diverging task-related viewpoints and, in the end, to make superior group decisions.

The current chapter also addresses important limitations of past conflict research. Many conflict researchers, for example, have implicitly assumed that all conflict parties perceive similar amounts and types of conflict (e.g., Amason, 1996; Jehn, 1994). These researchers, however, have neglected the fact that parties often experience a conflict differently and have dissimilar perceptions of both the amount and the type of conflict (cf. Jehn & Chatman, 2000). Likewise, conflict researchers have often assumed a uniform relation between conflict and performance, neglecting that the way people *perceive* and *experience* a conflict can be an important determinant of how conflicts affect team performance (e.g., Jehn, Rispens, & Thatcher, 2010). In line with previous studies that indicated that individuals differ in the way they perceive disagreements (e.g., Jehn & Chatman, 2000; Pinkley, 1990), the current study shows that people differ in their reactions to a task conflict and that these reactions (i.e., a "challenge" or a "threat" state) may affect the impact a task conflict has on group outcomes.

This chapter also contributes to the literature on hidden profile tasks. The majority of the research on hidden profile situations has focused on the dominance of shared information during group discussions and the failure of groups to exchange and discuss important

information possessed by only one or only a few group members. More recently, attention has shifted to the difficulties of group members to derive the correct solution even when all information is shared and known (e.g., Greitemeyer & Schulz-Hardt, 2003). Research, for example, shows that group members may fail to derive the correct decision when they are not accountable for the decision-making process (Scholten et al., 2007). These findings imply that when group members lack the motivation to process information systemically, they will fail to combine all the pieces of information. Instead, they are inclined to hold on to their initial viewpoint, which causes them to make inferior decisions, and to fail to derive the correct solution to the task (e.g., Greitemeyer & Schulz-Hardt, 2003). The results of the current research extend these studies, showing that threat-states augment this preference for the initial viewpoint, and make group members more reluctant to use the information they receive from the other group members.

Fourthly, and finally, the current studies provide one of the first attempts to integrate the vast literature on intragroup conflict with literature on stress and coping appraisals (see Dijkstra et al., 2005 for an exception). Despite the fact that conflicts are often considered stressful, thus far, research on intragroup conflict has failed to examine group members' appraisals of their ability to cope with conflict. The three studies presented in this chapter emphasize the importance of coping appraisals during task conflict, by showing a strong relationship between group members' ability to cope with the conflict and their tendency to hold on to an initial viewpoint. The current studies thereby extend earlier studies investigating the relationship between threat and rigidity during decision making (e.g., Kamphuis, 2010; Kassam et al, 2009), as well as recent work on threat and confirmatory information search (Fischer et al., 2011), by showing that threat is positively related to confirmatory information-processing as well as rigidity during decision making.

Limitations and Future Research

To induce a task conflict, the discussion between the group members was experimentally controlled. Future research should investigate whether in real group discussions the same processes take place and can account for the negative effects a threat state may have on decision-making quality. We want to stress that the controlled, as opposed

to a real, interaction had three important advantages. First, it enabled us to make sure that all participants were confronted with exactly the same task conflict. In this way, we could cancel out inter-group and inter-conflict differences such as the emotionality of the conflict, acquaintanceship, or duration of the debate. Secondly, the controlled interaction allowed us to make sure that all the unshared information necessary to derive the correct solution would be available to the participant. This allowed us to exclude an alternative explanation of the effects on decision making, namely whether the information was actually shared or not. Thirdly, as all the unshared information necessary to derive the correct solution was available to the participants, we could directly assess the extent to which individuals processed the information provided by other group members in their decision making.

A limitation of the chosen design was that during the task-related disagreement, participants' initial opinion was always incorrect. Therefore, "rigidity" was always dysfunctional for decision-making quality. What we do not yet know, and what future research could address, is what happens if participants' initial opinion is actually correct. When an initial opinion is correct, then rigidity (and threat for that matter) might become beneficial for decision-making quality. Finally, in addition to effects on decision making, differences in physiological reactions might also have important implications for group members' well-being. Negative health outcomes are often the result of chronically elevated cardiovascular responses (Blascovich & Katkin, 1993; Contrada, Cather, & O'Leary, 1999; Dembroski, Schmidt, & Blümchen, 1983). Repeated episodes of threat, for instance, are expected to lead to a greater susceptibility to anxiety, depression, and physical illnesses such as headaches, sleep problems, ischemic heart disease, and hypertension (Blascovich, 2008). To prevent group members' physical and mental well-being from being negatively affected by the way they react to a negotiation, organizational workgroups need to consider the antecedents of threat reactions, and develop possible interventions to overcome them.

To prevent group members from reacting as threatened, interventions can be directed at reducing the demands of intragroup conflict or at increasing group members' resources to cope with conflicts. One possible way to reduce the demands of an intragroup conflict, and thereby prevent group members from reacting as threatened, is to use

collaborative communication styles in which group members communicate their disagreement in a helpful, problem-solving, and non-punitive manner (e.g., De Dreu & West, 2001; Lovelace, Shapiro, & Weingart, 2001). Likewise, groups could ensure that there are high levels of behavioral integration. Research has shown that behavioral integration, the degree to which mutual and collective interaction exists within the group (Hambrick, 1994), increases trust among group members (e.g. Polzer, Crisp, Jarvenpaa, & Kim, 2006) as well as affording a greater understanding of each other's emotions during conflict (Yang & Mossholder, 2004). Collaborative communication styles, as well as behavioral integration, thereby reduce the demands of intragroup negotiations and enable group members to benefit from task-related disagreements (e.g., Gamero, González-Romá, & Peiró, 2008; Mooney, Holahan, & Amason, 2007).

Another possible way of ensuring group members react as challenged, instead of as threatened, to a group negotiation is through conflict management training. Additional training could help to enlarge group members "resources" by increasing their confidence in their own ability to manage a task-related disagreement. As threat and challenge responses are elicited by the relationship between perceived demands and resources, when group members' perception of their capabilities start to exceed their demands, a threat response, and thereby rigidity and avoidance, are less likely to occur. Indeed, research on work-family conflicts shows that following conflict management training, individuals and couples tend to perform and communicate better, are better able to cope with disagreements, and are less likely to suffer from burnouts (e.g. Markman, Renick, Floyd, Stanley, & Clements, 1993; Schaer, Bodenmann, & Klink, 2008).

Conclusion

In this chapter we moved beyond the view that people perceive and experience task conflict in a similar way, or that task conflicts have a uniform effect on group decision-making. Instead of the usually proposed uniform positive or negative relationship between disagreement and group decision-making, we propose a more complex picture. We recognize that people differ in their reactions to task conflict and that these different reactions may affect the impact of a task conflict on group outcomes. Our

findings show that task conflicts have a more positive impact on decision-making quality when the task conflict is perceived, and physiologically experienced, as a challenge. More research is now needed to increase our understanding of the factors that trigger and shape threat and challenge states during task conflict. Only when groups know when and how to make group members exhibit a challenge, rather than a threat, state during a task conflict, may they protect themselves against the possible detrimental effects of a task conflict, and actually reap the potential benefits of it.

Chapter 5
Cardiovascular reactivity and resistance to opposing viewpoints during intragroup conflict

This study examined how the outcomes of joint decision-making relate to cardiovascular reactions when group members disagree about the decision to be taken. A conflict was experimentally induced during a joint decision-making task, while cardiovascular markers of challenge/threat motivational states were assessed following the biopsychosocial model of challenge and threat (BPSM; J. Blascovich, 2008). Results show that individuals were less likely to adjust their initially preferred decision alternative the more they exhibited a cardiovascular pattern indicative of threat (i.e., relatively high Total Peripheral Resistance and low Cardiac Output) compared to challenge. This finding extends the BPSM by showing a link between threat and rigidity, and emphasizes the importance of psychophysiological processes for studying intragroup conflict and decision making.

This chapter is based on De Wit, F. R. C., Scheepers, D. T. & Jehn, K. A. (2012). Cardiovascular reactivity and resistance to opposing viewpoints during intragroup conflict. *Psychophysiology*, *49*, 1691–1699.

In situations of joint decision-making, people often experience disagreements in which they need to choose between their own standpoint and the standpoint of another group member (e.g., Amason, 1996; Jehn, 1995). Jury members, for example, may disagree about whether the accused is guilty or innocent, cabinet members may disagree about the best decision to tackle a crisis, and members of top management teams may disagree about investments that sometimes affect thousands of employees. These disagreements often become fierce, thereby eliciting physiological reactions such as an elevated heart rate or blood pressure (e.g., Newton & Sanford, 2003). Although it is likely that the *type* of cardiovascular response is intimately related to how people manage and cope with disagreements, so far psychophysiological processes have received little attention in research on intragroup conflict. To fill this void, in this chapter we examine how the outcomes of joint decision-making are affected by physiological reactions during group conflict. Integrating principles from the conflict literature and the biopsychosocial model of challenge and threat (BPSM; Blascovich, 2008), we propose that the more group members respond to the conflict with a cardiovascular pattern indicative of threat, the more they are likely to act rigidly, and stick to their initially preferred opinion.

In general, for joint decision-making to be effective, it is important that group members dare to defend their own preferred decision alternative and do not adopt one of the opinions of the other group members too easily (e.g., Janis, 1972). At the same time, group members should be willing to consider other standpoints and, in case of a conflict, refrain from trying to "win" the conflict at all costs (e.g., Fisher & Ury, 1981). Especially the latter seems sometimes difficult: People quickly develop a strong feeling of ownership over their initial standpoint and often in turn perceive criticism on this standpoint as a personal attack (e.g., De Dreu & Van Knippenberg, 2005; Swann, Polzer, Seyle, & Ko, 2004). Group members therefore tend to respond defensively to criticism; they rigidly hold on to their initial decision alternative and argue for it as a goal in itself, rather than trying to develop an accurate and deeper understanding of the decision at hand (e.g., Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007; Greitemeyer & Schulz-Hardt, 2003).This rigidity in holding on to initially preferred decision alternatives is likely to be closely related to a state of threat during the conflict. That is, when

individuals are threatened, they tend to become more biased towards information that supports their dominant viewpoint and become more reluctant to make adjustments to initial anchors (e.g., Fischer et al., 2011; Kamphuis, Gaillard, & Vogelaar, 2011; Kassam, Koslov, & Mendes, 2009; Staw, Sandelands, & Dutton, 1981). Individuals who are relatively threatened by a disagreement may therefore show a relatively strong resistance to opposing standpoints, as well as a tendency to rigidly hold on to initially preferred decision alternatives.

To examine whether rigidity and resistance to opposing standpoints during a conflict is indeed linked to threat, in this chapter we apply the biopsychosocial model of challenge and threat (BPSM; e.g., Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996) to intragroup conflict and joint decision-making. The BPSM applies to situations that are goal relevant and require individuals to actively cope with stressors. According to the BPSM, threat and challenge are the outcome of an evaluation of the demands of the situation (i.e., required effort, uncertainty, and danger) and the person's resources to deal with these demands (i.e., the available skills, knowledge, support, and dispositions). The BPSM predicts that individuals are *threatened* when they evaluate the demands of a situation as exceeding their personal resources while individuals are *challenged* when they evaluate resources as matching or exceeding demands (e.g., Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996; Tomaka, Blascovich, Kelsey, & Leitten, 1993). Within the BPSM, threat and challenge are conceptualized as always relative to each other and can be seen as the end points of a continuum. That is, the BPSM does not see challenge and threat as discrete motivational states, but as motivational states along a continuum. Importantly, the BPSM also describes how threat and challenge are associated with distinct patterns of cardiovascular reactivity.

According to the BPSM, the differentiation between threat and challenge relies on a combination of four cardiovascular measures: heart rate (HR); pre-ejection period (PEP; an index of left ventricular contractile force); cardiac output (CO; the amount of blood pumped by the heart, in liters per minute); and total peripheral resistance (TPR; an index of net constriction vs. dilation in the arterial system). Task engagement, a prerequisite for both challenge and threat, is indicated by increased HR and decreased PEP. Challenge is marked by increased activation of the

sympathetic-adrenomedullary (SAM) axis, which—through the release of epinephrine—leads to vasodilatation in the large skeletal muscle beds and bronchi resulting in an overall decline in systemic vascular resistance (i.e., a decrease in TPR) and, in turn, to an increase in CO. Threat is marked by activation of both the SAM axis and the hypothalamic pituitary adrenal (HPA) cortical axis; the latter leading to reduced vasodilatation, or even vasoconstriction (i.e., increase in TPR), and relatively small increases in CO. In the context of motivated performance, changes in TPR and CO apply to both threat and challenge motivational states; that is, challenge is marked by relatively higher CO and lower TPR compared to threat (e.g., Seery, Weisbuch, Hetenyi, & Blascovich, 2010). In the past 15 years, dozens of studies validated the BPSM in a variety of contexts (from athletic performance to intergroup interactions) as an indirect measure of psychological threat and challenge states by showing relationships with demand/resource appraisals as well as with performance outcomes (see Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996).

In the current study, we apply the BPSM to conflict and joint decision-making and examine whether cardiovascular markers of threat/challenge are associated with individuals' tendency to hold on to initially preferred decision alternatives. Although the level of threat or challenge during a conflict can be measured using self-report measures of demands and resources appraisals (e.g., Blascovich & Tomaka, 1996; Lazarus & Folkman, 1991), the use of cardiovascular measures presents several advantages over such conventional methods. For example, when it comes to task conflicts, self-report measures of threat may lead to defensive responding (leading those who are the most threatened to indicate this to the least extent; e.g., Blascovich, 2000). Likewise, because of the richness of stimuli and the dynamic nature of conflicts during group decision-making, people may often not be aware of the specific motivational state they are in, while at the same time these states might change and develop, making cardiovascular measures of challenge and threat (which can be measured continuously and unobtrusively), particularly useful in this context (e.g., Blascovich, 2008).

To examine threat and challenge during intragroup conflict, we experimentally induced a task conflict between two individuals working on a joint decision-making task. We developed and extensively piloted (see below) a paradigm in which two group members (a participant and a

confederate) had diverging task-related opinions leading to disagreement about the decision to be taken. The interaction took place via a computer and webcam interface, and the confederate's reaction was held constant, to cancel out differences in, for example, the level of acquaintanceship between the two persons and differences in the emotionality and duration of the conflict. Before the interaction took place, participants were asked to present their initial personal decision in front of a webcam and to provide a clear motivation as to why they came to this decision.

We examined cardiovascular reactivity during the speech in which the participants presented their initial decision, as well as during the task conflict later on. In this way, we could verify that any relationship between participants' physiological reactivity to the conflict and their final decision was explained by the arousal elicited by the conflict rather than arousal elicited by task difficulty or communicating through a webcam per se. Furthermore, we examined whether CV profiles indicative of threat (vs. challenge) motivational states are predictive of rigidity in group decision-making beyond two key factors predicting rigidity in group decision-making that are often (and also currently) assessed using self-report questionnaires: The trustworthiness of a decision-making partner (e.g., Sniezek & Van Swol, 2001) and the confidence in one's ability to derive a correct decision (e.g., See, Morrison, Rothman, & Soll, 2011). That is, ample research shows that individuals' tendency to modify an opinion in deference of another individual depends on the specific characteristics of the other individual. For example, when the other individual is considered reliable (e.g., due to greater experience) or sincere, people are more likely to adjust their opinion and use the advice of others (e.g., Sniezek & Van Swol, 2001). Likewise, individuals are more likely to use advice when they think the task is difficult (Gino & Moore, 2007) and when they feel insecure about their own ability to perform well or to make a certain decision (see Bonaccio & Dalal, 2006, for a review). In the current research, we expected that the cardiovascular reactivity during the task conflict (and not the individual decision-making speech) would predict individuals' tendency to hold on to initial decision alternatives, and that adjustment would be negatively related to the extent to which individuals exhibit threat, compared to challenge, above and beyond the influence of

the perceived trustworthiness of the other decision maker and the perceived self-efficacy in making a decision[14].

Method

Participants and Design

Fifty-four participants (24 women, 30 men) took part in this study in return for a monetary award (6 Euros) or partial course requirement. For all participants, we induced a task conflict during a joint decision-making task, and as independent variable we measured cardiovascular reactions to the task conflict[15].

Physiological Measurements

Physiological recording equipment. Electrocardiographic (EKG) signals were recorded using an ECG100C amplifier (Biopac Systems Inc., Goleta, CA), and a Standard Lead I electrode configuration. Impedance-cardiographic (ICG) signals were recorded using a NICO100C amplifier (Biopac Systems Inc.), and a four-spot electrode array as described by Sherwood et al. (1990) in which the two outer electrodes injected a small (400μA) alternating current while the two inner electrodes measure the voltage developed through the thorax volume. As output, the NICO100C provides measures of baseline impedance (Z0) and the rate of change in impedance (dZ/dt). We applied a low-pass filter of 10 Hz to remove high-frequency noise. Participants' mean arterial blood pressure (MAP) was measured using a Nexfin HD system (Bmeye B.V., Amsterdam, The Netherlands). The Nexfin HD comprises an inflatable finger cuff that is attached around the middle phalanx of the ring finger of the participant's non dominant hand. Blood pressure is determined using a volume clamp method, in which the pulsating finger artery is clamped to a

[14] Note that given the conceptualization within the BPSM of challenge and threat as relative states, the current hypotheses (relative threat leads to rigidity) is identical to that stating that relative challenge leads to less rigidity.

[15] In addition to the 54 participants of which we report the data, six other individuals participated but were excluded from the analyses because of their physiological recordings: five because they yielded cardiovascular data that were impossible to score reliably due to poor ICG or BP signal quality, and one because her reactivity during the conflict presented an extreme outlier (i.e., her HR reactivity was greater than 3 SDs (and, in fact, greater than 4 SDs) above the mean). In addition, five participants were excluded because of technical problems with the computer and webcam interface, two participants because they failed to follow the instructions and two participants because there was no task conflict between them and their decision making partner.

constant volume by applying a fluctuating counter pressure comparable with the arterial pressure, and resulting in a beat-to-beat pressure waveform. Subjects were instructed to limit the movement of their non-dominant arm to minimize movement artifact in the blood pressure (BP) recordings. All physiological signals were recorded continuously and digitized at 250 Hz through a Biopac MP150 data system.

Quantification of physiological data. We used Acqknowledge software (Biopac Systems) to record and store the physiological data. Before scoring the data, we first "upsampled" the signals from 250 Hz to 1000 HZ. Upsampling is a method for increasing the sampling rate by means of a precise reconstruction of an original signal without introducing new frequency components. We performed the upsampling using Matlab software (MATLAB, Mathworks Inc., Natick, MA), following the procedures of the Digital Signal Processing Committee (1979). Next, the EKG and ensemble-averaged ICG recordings were scored with Matlab software using an interface comparable to the AMSIMP program, a component of the Vrije Universiteit-Ambulatory Monitoring System software suite (VU-AMS, Vrije Universiteit, Department of Psychophysiology, Amsterdam, The Netherlands). We first visually inspected the ICG recordings. ICG measurements that could not be scored due to movement artifacts were rejected in accordance with standard guidelines (Sherwood et al., 1990) and the VU-AMS scoring principles (http://www.vu-ams.nl/support/manuals/amsimp/impedance-scoring/). We next analyzed the ICG and EKG recordings to determine the upstroke (B-point), dZ/dtmin, and incisura (X-point). In accordance with standard guidelines (Sherwood et al., 1990), the first author scored the B-point as the first or second order zero-crossing in the dZ/dt signal, near to the dZ/dt isoelectric line, and the origin of the longest uphill slope before the dZ/dt_{min} point.[16] We scored the dZ/dtmin as the highest point of the ICG complex between the B- and the X-point. We scored the X-point or incisura as the local minimum after the dZ/dt_{min}. Scoring was conducted blind to other participant data. Finally, the BP recordings were visually inspected using Matlab and BP measurements that could not be

[16] We obtained virtually identical results to the currently-reported results, when we, instead of using the manually-scored upstroke (B-point) used upstroke-scores derived using the "Lozano formula" (Lozano et al., 2007; Psychophysiology) which identifies the upstroke based on the relationship between the R to B interval and the interval between the R-wave and the peak of the dZ/dt function.

scored due to movement artifacts were rejected. We determined beat-to-beat systolic (SBP) and diastolic blood pressure (DBP), and combined it to calculate beat-to-beat mean arterial blood pressure: (MAP = 1/3 * [SBP-DBP] + DBP).

We used the ECG recordings to determine HR (i.e., the number of heart beats per minute). We determined PEP, which represents the interval between the start of the electromechanical systole and the opening of the aorta valve, by calculating the time in milliseconds between the Q-point in the ECG and the B-point in the ICG. Left ventricular ejection time (LVET) was determined as the time in milliseconds between the B- and X-points in the ICG. We calculated stroke volume (SV: the amount of blood that is pumped by the heart at a given heartbeat) using the Kubicek formula (Kubicek et al., 1966)[17] and calculated CO by multiplying SV by HR, which we derived from the EKG. Finally, following the guidelines of Sherwood et al. (1990), we used CO in combination with the blood pressure recordings to determine TPR using the following formula: MAP × 80 / CO.

Joint Decision-making Task and Induction of Conflict

Participants worked on the NASA dilemma (see Cammalleri, Hendrick, Pittman, Blout, & Prather, 1973), a joint decision-making task in which participants are presented with a moon landing scenario and a set of 14 objects. It is the participant's task to order these items in terms of their usefulness to survive on the moon. The instructions, the complete set of 14 items, and their correct place in the hierarchical ordering can be found in Appendix C. There is good evidence that people readily develop ownership of their standpoint in this kind of experimental task, and in turn feel threatened when others disagree (De Dreu & Van Knippenberg, 2005).To induce a task conflict, we had to ensure that the group members had a different solution in mind and openly disagreed about their different solutions for the task (e.g., Jehn, 1995). We expected that most of the participants would place the "20 liters of water" (see Appendix C) among

[17] We used a value of 135 for blood resistance (ϱ), and for each participant we measured the distance between the inner two ICG electrodes. The Kubicek formula is:

$$SV = \rho \times \frac{L^2}{Z_0^2} \times \frac{\mathrm{dZ}}{\mathrm{dtmin}} \times \mathrm{LVET}$$

the top items of their hierarchical ordering. To induce a task conflict, the confederate therefore stated in response to the participants' initial solution that she did not agree with the solution regarding the water, and provided several reasons for why she believed the water should be ranked at place 13 in the hierarchy.

Pilot. A pilot test (N = 45) was conducted to confirm the effectiveness of this procedure to induce a task conflict, and in turn the potential to elicit threat. The results showed that, as expected, most of participants initially placed the conflict item (i.e., the 20 liters of water) at one of the top positions of their hierarchy (M = 2.87, SD = 1.65, Mdn = 2). Moreover, the manipulation of task conflict was also successful; the average level of reported task conflict was high (M = 5.33, SD = .82 on a 7-point scale, adapted from Jehn, 1995) and significantly higher than the midpoint on the scale (i.e., 4), $t(44) = 10.87$, $p < .001$. The pilot study also showed that after the conflict, thus when making their final decision, participants placed the conflict item significantly lower in their preferred ranking than before the conflict, M = 7.62, SD = 3.63, Mdn = 7, $F(1,44)$ = 88.44, $p < .001$, suggesting that the arguments of the confederate were convincing enough for participants to adjust their initial viewpoint.

In addition, the pilot test also confirmed that the conflict did indeed have the potential to elicit threat. More specifically, to examine whether some participants really felt they had too little resources to deal with the issue and hence could be classified as "threatened", in the pilot study we also examined the participants' demands (e.g., "It was stressful that we disagreed"; 3 items) and resources (e.g., "During the debate about our different solutions I felt in control"; 2 items) appraisals regarding the task conflict. A difference score between the mean resources and demands appraisals indicated that substantial individual variation (M = -1.15, SD = 1.86) existed in the extent to which the situation was appraised as a threat or a challenge, and that for roughly 27% (12 out of 45) of the participants, the height of the demands appraisals outweighed the height of the resources appraisals, and could therefore be labeled as threatened.

Thus, in summary, the pilot not only confirmed the successfulness of the current procedure in inducing intragroup conflict, but also showed that substantial variation existed across people in how they appraised their level of resources and demands regarding the conflict. This is important because it shows that the procedure has the potential to

elicit a threat state for some individuals (when their demands appraisals outweigh their resources appraisals) while eliciting a challenge state for others (when their resources appraisals outweigh their demands appraisals). Given that the current procedure has the potential to elicit responses throughout the threat/challenge continuum, it enables us to examine how the extent to which someone exhibits a threat or challenge state during a conflict relates to their decision making, which was the aim with the main study.

Procedure

Upon arrival in the lab, participants were seated in separate cubicles in front of a PC and were told that they would work on a decision-making task with another participant via the computer system. After we attached the sensors for the physiological recordings, we closed the door and all further instructions, tasks, and measures were provided to the participant by means of the computer. After some general information, participants were instructed to sit quietly for 5 min during which we took baseline recordings of the cardiovascular measures. Next, the participants were instructed to study the NASA dilemma individually, to decide on their personally preferred hierarchical ordering of the items, and to present it in front of the webcam by providing a clear motivation for the ranking of each of the 14 items.

After both decision makers had (ostensibly) provided their initial solution, we told the participants that the discussion would commence and that the computer had randomly decided that their decision-making partner (i.e., a female confederate) would start the discussion. This meant that their partner had a minute to study the participant's initial solution and another minute to give her opinion via the webcam. The participants were told that they would have in turn 1 min to respond to the reaction of their partner. This set-up (as opposed to a real discussion) was used to control the task situation and to standardize it across participants (see Greitemeyer & Schulz-Hardt, 2003, for a similar procedure). We induced the task conflict by means of pre-recorded videos. The video recording showed the decision-making partner who stated her disagreement with the participant's solution and provided the participant with an alternative solution. Directly after they had watched, and had reacted to, the reaction of their partner, we checked whether participants perceived the interaction

as a task conflict by asking participants to rate their agreement with two statements adapted from Jehn (1995): "The decision of the partner differed from my own decision" and "We disagree on the location of some objects in the hierarchy ordering." After this, participants were asked to provide their final decision and to fill in a short questionnaire including our control variables (see below for more details). Participants gave their responses to all questions on 7-point Likert scales with strongly disagree (1) and strongly agree (7) as end points. Finally, participants were debriefed, paid, and thanked for their participation.

Dependent measures

The dependent variable is the "adjustment of the initial viewpoint" (AIV), a continuous measure expressing the extent to which participants chose to stick to their initial decision or change it in the direction of the decision suggested by their decision-making partner (see Harvey & Fischer, 1997). The AIV ratio is equal to 0 when participants are rigid and do not adjust their initial decision regarding the conflict item and equal to 1 when they adjust their final decision such that it is identical to the decision suggested by their decision-making partner:

$$AIV = \frac{final\ decision - initial\ decision}{decision\ suggested\ by\ partner - initial\ decision}$$

Control variables

We measured perceived trustworthiness using six questions (e.g., "Do you think your decision-making partner is a reliable person?" and "Do you think your decision-making partner is a sincere person?"). The answers on the six items were averaged to create a perceived trustworthiness scale (α = .76). We measured task self-efficacy using 4 items (e.g., "I was able to solve the dilemma", and "I found it easy to solve the dilemma", α = .79). Finally, we controlled for gender because we anticipated that male and female participants might react differently to the reaction of the female confederate (e.g., Carli, Lafleur, & Loeber, 1995).

Results

Checks

Induction of task conflict. As expected, and in line with our pilot study, most participants initially placed the 20 liters of water at one

of the top positions of their hierarchy (M = 2.91, SD = 1.53, *Mode* = 2, *Mdn* = 2.5). Results also show that the manipulation of task conflict was successful; the average level of reported task conflict was high and significantly higher than the midpoint on the scale (i.e., 4; M = 5.55, SD = .93, $t(54) = 12.22$, $p < .001$).

Cardiovascular measures. Average levels of HR, PEP, CO, and TPR were calculated for the last 3 min of the baseline, the first 2 min of the individual decision-making speech, and the 2-min task-conflict period. In line with the general procedure regarding data analyses in research on the BPSM, for each person we focused on a similar time period regarding the physiological data during the tasks (i.e., the first 2 min), because the challenge motivational state typically habituates more quickly than the threat motivational state (Mendes, Reis, Seery, & Blascovich, 2003). Descriptive statistics for each of the indices can be found in Table 5.1[18]. In line with standard practice (e.g., Seery et al., 2010), reactivity scores were created by subtracting baseline scores from the mean scores during the decision-making speech and the task conflict.[19] Descriptive statistics for each of the reactivity scores can be found in Table 5.2. We then first confirmed task engagement (a prerequisite of motivated performance, the domain of the BPSM), by testing HR and PEP reactivity against zero (i.e., baseline levels). During the decision-making speech, HR increased significantly from baseline levels, $t(53) = 8.10$, $p < .001$, while PEP decreased significantly from baseline levels, $t(53) = -4.24$, $p < .001$). The same was true for the conflict period HR: $t(53) = 9.37$, $p < .001$, and PEP: $t(53) = -13.59$, $p < .001$. In concert, these results indicate task engagement during both the decision-making speech and the task conflict, which paved the way for a further examination of CO and TPR during these tasks in terms of challenge and threat motivational states (Seery et al., 2010).

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[18] As can be seen in the Table, the absolute levels of CO are lower than the levels typically found when band electrodes are used for impedance cardiography. While for reliably scoring PEP it does not matter whether one uses spot or band-electrodes, spot-electrodes are only acceptable when the primary interest is looking at relative, rather than absolute values of CO (Sherwood et al., 1990). In the current work the primary focus is on relative CO-differences with baseline values, justifying the use of spot-electrodes which have led, however, to relatively lower estimates of CO.

[19] Apart from the participant mentioned in Footnote 1, outlier analyses showed that for one participant, the TPR reactivity during the conflict presented an outlier (i.e., more than 3.3 standard deviations above the mean). Analyses using a transformed score of the raw score to a value one unit larger than the next most extreme score, provided virtually identical results to those currently reported, and therefore we left the raw score of the TPR reactivity unchanged.

Table 5.1. *Descriptive Statistics (N = 54)*

	Baseline		Decision-making speech		Task Conflict	
	Mean	SD	Mean	SD	Mean	SD
HR	79.44	10.92	87.47	14.16	91.37	14.78
PEP	119.59	14.75	112.59	18.74	103.19	16.25
CO	2.06	0.79	2.21	0.81	2.39	0.89
TPR	3821.37	1523.19	3973.22	1420.83	4031.20	1485.97
Threat Challenge Index	0.00	1.89	0.00	1.90	0.00	1.91

Main analyses

Table 5.2 shows the correlations and descriptive statistics for the variables that were included in the analyses. To simplify the analyses and because changes in CO and TPR can be seen as two related measures of the same underlying SAM versus PAC activation, we also derived a single threat challenge index (TCI), in addition to examining CO and TPR separately (Blascovich, Seery, Mugridge, Norris, & Weisbuch, 2004). The TCI was calculated by first converting each participant's TPR and CO values into z scores, then assigning the CO scores a weight of +1 and TPR a weight of -1, and finally summing them so that larger values indicate reactivity indicative of greater challenge (e.g., Seery et al., 2010). Larger values on the threat challenge index corresponded to reactivity consistent with relatively greater challenge (and lower threat), while lower values correspond to reactivity consistent with relatively greater threat (and lower challenge). Using this index increases the reliability of the cardiovascular measures and simplifies analyses by carrying out a single test of challenge/threat reactivity.

The cardiovascular markers of challenge/threat during the conflict were significantly related to the adjustment of the initial viewpoint (see Table 5.2). As expected, an increase in TPR during the task conflict—consistent with threat compared to challenge reactivity—was associated with relatively little adjustment of the initial viewpoint (r = -.32, p = .02). Likewise, decreases in CO and TCI during the task conflict—also consistent with threat compared to challenge reactivity—were associated with relatively little adjustment of the initial viewpoint (r = .29, p = .04; and r = .33, p = .01, respectively). Importantly, cardiovascular reactivity during the decision-making speech was not significantly related to AIV (TPR: r = -.10, p = .47; CO: r = .07, p = .62; TCI: r = .09, p = .50).

Table 5.2 *Means, standard deviations, and correlation matrix (N = 54)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Adjustment of initial viewpoint (AIV)	–													
2. Gender (male = 0, female = 1)	-.08	–												
3. Trustworthiness of partner	.32*	-.02	–											
4. Task self-efficacy	-.03	-.36**	-.10	–										
Reactivity to decision-making speech														
5. HR	.02	.12	.04	-.03	–									
6. PEP	-.26†	-.08	-.06	.12	-.31*	–								
7. CO	.07	.20	.14	-.05	.63***	-.59***	–							
8. TPR	-.10	-.06	-.23†	.20	-.33*	.43**	-.65***	–						
9. Threat Challenge Index	.09	.14	.21	-.13	.53***	-.56***	.91***	-.91***	–					
Reactivity to task-conflict														
10. HR	.20	-.18	.06	.15	.73***	-.19	.54***	-.31*	.47***	–				
11. PEP	-.25†	.31*	-.16	-.16	-.08	.40**	-.37**	.19	-.31*	-.41**	–			
12. CO	.29*	-.06	.14	-.02	.42**	-.27*	.65***	-.43***	.59***	.67***	-.51***	–		
13. TPR	-.32*	.05	-.13	.25†	-.28*	.37**	-.51***	.74***	-.69***	-.39**	.35*	-.65***	–	
14. Threat Challenge Index	.33*	-.06	.15	-.15	.38**	-.36**	.64***	-.64***	.71***	.58***	-47***	.91***	-.91***	–
Mean	0.40	1.44	5.10	4.60	8.02	-7.00	.16	151.85	0	11.93	-16.40	.34	209.83	0.00
SD	0.39	0.50	0.79	0.86	7.28	12.12	.23	477.24	1.82	9.36	8.87	.30	622.83	1.81

† $p < .10$ * $p < .05$, ** $p < .01$, *** $p < .001$

To determine the contribution of the cardiovascular markers of threat/challenge above and beyond the control variables, we entered them simultaneously in single regression analyses. In line with Seery et al. (2010) and Blascovich et al. (2004), we first examined the relationship between AIV, the control variables, and participants' reactivity during the task conflict. All predictor variables were centered to reduce possible problems due to multicollinearity. As can be seen in Model 1 in Table 5.3, the findings show that participants' TCI reactivity during the task conflict was positively related to AIV (TCI: ß = .29, *SE* = .07, *p* = . 033) even when controlling for the perceived trustworthiness of the other group member, gender, and task self-efficacy; of these control variables only the former was positively related to participants' AIV (ß = .28, *SE* = .13, *p* = .039). Together, the model accounted for 19% of the variance in AIV. In line with the bivariate correlations, Model 2 in Table 5.3 shows that, in contrast to cardiovascular reactivity during the task conflict, the cardiovascular reactivity during the individual decision-making speech was unrelated to AIV, also when controlling for the three control variables[20].

Table 5.3 *Regression results predicting adjustment of initial viewpoints using reactivity scores (N = 54)*

	Adjustment of initial viewpoint (AIV)					
	Model 1			Model 2		
	B	*SE*	*ß*	*B*	*SE*	*ß*
Constant	1.55*	.77		1.82*	.80	
Gender (male = 0, female = 1)	-.10	.28	-.05	-.19	.29	-.09
Trustworthiness of partner	.28	.13	.28*	.30	.14	.31*
Task self-efficacy	.03	.16	.02	-.03	.17	-.03
TCI - Task Conflict	.16	.07	.29*			
TCI - decision-making speech				.02	.08	.04
F	2.84*			1.52		
R^2	0.19			0.11		

* $p \leq .05$

[20] We also performed a regression analysis including both TCI-scores, as is common in analyses of cardiovascular markers of threat/challenge (e.g., Blascovich et al., 2004; Seery et al., 2010). The effect of task conflict-related reactivity remained significant (TCI - task conflict: $\beta = .54$, $SE = .10$, $p < .01$), while the decision speech-related reactivity approached significance in the opposite direction (TCI – decision speech: $\beta = -.35$, $SE = .10$, $p = .06$), suggesting that individuals whose cardiovascular reactivity indicated threat during the initial decision-making speech were more likely to adjust their opinion after the conflict. This is line with previous work on confidence and using advice from others (e.g., See et al., in press; Sniezek & Van Swol, 2001). Yet, due to potential problems with multicollinearity in our relative small sample size (TCI– decision speech: VIF = 2.205, Tolerance =.453), we decided to report as main analyses the analyses in which we analyzed the reactivity scores independently.

Table 5.4 *Regression results predicting adjustment of initial viewpoints using absolute scores (N = 54)*

	Adjustment of initial viewpoint (AIV)								
	Model 3			Model 4			Model 5		
	B	*S.E.*	*ß*	*B*	*S.E.*	*ß*	*B*	*S.E.*	*ß*
Gender (male = 0, female = 1)	-.01	.28	.00	-.02	.30	-.01	.03	.28	.01
Trustworthiness of partner	.32	.13	.32*	.28	.13	.28*	.30	.13	.30*
Task self-efficacy	.07	.17	.06	-.02	.17	-.02	.04	.16	.03
Total Peripheral Resistance									
TPR – Baseline [a]	.13	.28	.19						
TPR – Decision-making speech	.72	.42	1.02†						
TPR – Task Conflict	-.91	.31	-1.36**						
Cardiac Output				-.21	.60	-.17			
CO – Baseline				-.84	.78	-.69			
CO – Decision-making speech				1.18	.59	1.04*			
CO – Task Conflict									
Threat Challenge Index									
TCI – Baseline							-.10	.24	-.18
TCI – Decision-making speech							-.58	.34	-1.10†
TCI – Task Conflict							.77	.27	1.46**
F	2.74*			1.94†			2.65*		
R^2	.26			20			.25		

† $p \leq .10$, * $p \leq .05$, ** $p \leq .01$, [a] *Note.* TPR values are reported in 10^{-3} resistance units

Finally, in addition to analyses on reactivity scores, we also examined the relationship between AIV, the control variables, and participants' absolute levels of TPR, CO, and TCI during the baseline, the speech task, and the task conflict. In line with the prior analyses, as well as our hypothesis, Models 3 and 4 in Table 5.4 show that CO and the TCI during the task conflict are positively related to changes of initial viewpoints, while Model 5 shows that TPR levels during the task conflict are negatively related to changes of initial viewpoints, when controlling for baseline values and speech-task values (which are both not significantly related to the dependent variable). These results again support the conclusion that the adjustment of initial viewpoints is negatively related to the extent to which individuals exhibit cardiovascular patterns indicative of relative threat, as opposed to challenge, during the conflict (i.e., relatively high TPR values, and low CO and TCI values). Important to note is that the strength as well as the direction of these results were unaffected by the inclusion of the control variables.

Discussion

The results of this study support the prediction that the outcomes of joint decision-making are related to people's cardiovascular reactions when they and another group member disagree about the decision to be taken. More specifically, the more individuals' cardiovascular pattern during a task conflict was indicative of relative threat rather than relative challenge (lower levels of CO; higher levels of TPR), the less likely they were to change their initial opinion. Illustrative of the robustness and strength of this relationship, the cardiovascular markers of challenge/threat predicted the adjustment of the initial viewpoint, even when controlling for other well-known predictors of rigidity during group decision-making, such as the perceived trustworthiness of the opponent and task self-efficacy.

The current research addresses two important limitations of past conflict research. First, in the vast literature on intragroup conflict, relatively little attention has been paid to the influence of stress responses (see Dijkstra, Van Dierendonck, & Evers, 2005, for an exception). Secondly, conflict researchers have often assumed a uniform positive or negative relation between conflict and decision-making –neglecting that the way people respond physiologically to the conflict (i.e., as a challenge

or a threat) can be an important indication of how conflicts affect group performance (c.f., Jehn, Rispens, & Thatcher, 2010). The current research shows that there are important differences among individuals in cardiovascular reactivity to task conflict, and that this can be intimately related to the decisions that are made.

These findings also provide important insights into the behavioral correlates of threat and challenge states. In line with Kassam et al. (2009), the current findings show that the extent to which individuals exhibit a threat state, rather than a challenge state, is negatively associated with adjustments to initial anchors. Given that in the current study the initial anchor was correct, the extent to which individuals exhibited a threat state was therefore positively related to decision-making quality. Thus far, only a few studies have investigated the behavioral correlates of threat versus challenge patterns, and most of these studies reported a positive correlation between challenge states on cognitive and physical performance (e.g., Blascovich et al., 2004; Chalabaev, Major, Cury, & Sarrazin, 2009; Schneider, 2004; Seery et al., 2010; Tomaka et al., 1993). The current study, therefore, is one of the first studies to show a positive relationship between cognitive task performance and the extent to which individuals exhibited a threat, instead of a challenge state (cf. Hunter, 2001). Future research may examine whether a threat state is also related to superior performance on other tasks requiring cognitive *in*flexibility.

The current findings also extend research on the threat-rigidity hypothesis, which predicts that groups and individuals react to threat with rigidity, for example, in the form of restricted information processing and reliance on prior expectations (e.g., Staw et al., 1981). Support for the threat-rigidity hypothesis has mainly come from studies that focused on group level processes and responses to threat (e.g., Gladstein & Reilly, 1985; Kamphuis et al., 2011). Specifically, under threat, groups tend not only to utilize less information to make a decision, they also show more biased information processing, and more inflexibility in their manner of decision making (e.g., Harrington, Lemak, & Kendall, 2002). The current study extends these studies in two ways. First, it shows that in addition to threats external to the group, *internal* threats (i.e., conflict) are also related to group decision-making, restricted information processing and rigidity in particular. Secondly, the current study moves beyond group-level responses and processes and supports Staw et al.'s (1981) proposition that

also at the individual level, threat, compared to challenge, is linked with a reluctance to change prior and dominant viewpoints.

One of the limitations of the current study is that to induce a task conflict, the discussion between the group members was experimentally controlled. Future research should investigate whether in real group discussions the same processes take place and can account for the effects of threat/challenge on the decisions that are made. We want to emphasize that the controlled, as opposed to a real, interaction had the important advantages that all participants were confronted with exactly the same task conflict. In this way, we could cancel out intra- and interconflict differences such as the emotionality of the conflict, acquaintanceship, or duration of the debate.

Another limitation of the chosen design was that during the task-related disagreement, "rigidity" was always functional for decision-making quality. Hence, the design could not address what would have happened if the initial opinion was incorrect. It is likely that in many day-to-day situations, threat-rigidity will lead to inferior rather than superior decision-making. Specifically, when group members rigidly hold on to their initial decision and show a bias towards preference-consistent information, they may fail to develop an accurate and deeper understanding of the decision problem and, in the end, may make an uninformed and incorrect decision. Indeed, recent work by De Wit, Jehn, and Scheepers (2012) shows that when an initial opinion is incorrect, conflict-related threat (and rigidity, for that matter) tends to be negatively related to information processing and decision-making quality.

To conclude, the results of this study show that individuals are less likely to adjust their initially preferred decision alternative when they exhibit a cardiovascular pattern indicative of threat compared to challenge in response to a disagreement with a fellow decision maker. The present research underlines the importance of adopting a psychophysiological approach, and of taking into consideration individual-level characteristics such as cardiovascular reactivity, to better understand how people manage disagreements during joint decision-making.

Chapter 6
General Discussion

Every day in the media we read, see, and hear about conflicts between individuals. Also at work and among spouses and friends, we encounter conflicts on a regular basis. Some of these conflicts escalate and turn violent, and may have harmful consequences for those involved. In this dissertation, I have examined the consequences of conflicts that arise within groups, and focused especially on groups in which group members are pursuing a common group goal. Examples of such groups are top management teams, whose members are together trying to maximize an organization's revenues, or research and development teams developing a new product. In such groups, conflicts may arise for various reasons, such as different opinions about the content and outcomes of the task being performed (a task conflict), about the logistics of task accomplishment, such as the delegation of tasks and responsibilities (a process conflict), or about interpersonal issues, such as personality differences or differences in norms and values (a relationship conflict; Jehn & Bendersky, 2003).

Traditionally, scholars thought of such intragroup conflicts as impediments to successful group functioning (Argyris, 1962; Blake & Mouton, 1984; Pondy, 1967). Disagreements among group members were assumed to confiscate precious time and energy, and to reduce team effectiveness by making group members less committed to their group (Argyris, 1962; Blake & Mouton, 1984; Brown, 1983; Pondy, 1967). Soon, however, researchers started to embrace a more positive view of intragroup conflict. Theorizing, as well as empirical evidence, began to suggest that although relationship conflicts may be detrimental for group outcomes, task conflicts may actually lead to superior performance by preventing premature consensus and stimulating more critical thinking (e.g., Amason, 1996; Eisenhardt & Schoonhoven, 1990; Jehn, 1995, 1997; Pelled, Eisenhardt, & Xin, 1999; Tjosvold, 2008; Van de Vliert & De Dreu, 1994). Yet, in contrast to this popular belief that groups may benefit from conflict, a meta-analysis of the intragroup conflict literature by De Dreu and Weingart (2003b) revealed that intragroup conflict, including task conflict, generally tends to be negatively related to group outcomes. Since then, a variety of studies have been conducted to better understand the circumstances under which intragroup conflicts may promote or hold back group outcomes (e.g., Bayazit & Mannix, 2003; Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012; De Dreu, 2006; Farh, Lee, & Farh, 2011; Gamero, Gonzalez-Roma, & Peiro, 2008; Goncalo,

Polman, & Maslach, 2010; Mannes, 2009; Parayitam & Dooley, 2007; Shaw, Zhu, Duffy, Scott, & Shih, 2011; Tekleab, Quigley, & Tesluk, 2009; Wilkens & London, 2006).

The aim of this dissertation was twofold. The first aim was to utilize this new set of studies to provide an updated, expanded and yet more fine-grained meta-analysis of the intragroup conflict literature, investigating the associations between relationship-, task-, and process conflict and various group outcomes such as group member satisfaction, group member commitment, and group performance. In addition, the meta-analysis aimed to examine possible moderators of these associations, such as differences between studies in terms of context (e.g., task type) and methodology (e.g., the way in which conflict was measured). The findings of the meta-analysis were presented in Chapter 2, and acted as a springboard for the next chapters, which addressed the second aim of this dissertation, which was to improve our understanding of the contextual and individual factors that shape how people deal with task conflicts. More precisely, I examined how group members respond to task conflict when they also experience a relationship conflict (Chapter 3), and how they respond to task conflict when they exhibit an adaptive (i.e., "challenge") or a maladaptive ("threat") stress profile during a task conflict (Chapters 4 and 5). This final chapter provides an overview of the results of the research in this dissertation, and a discussion of its theoretical, practical, and methodological implications and contributions.

Summary of Main Findings

The meta-analysis described in Chapter 2 was conducted to better understand the relation between intragroup conflict and group outcomes, and to address the discrepancies in past research on this relation. As shown in Chapter 2, the meta-analysis examined 8880 groups across 116 studies (484 effect sizes) and suggested that despite the large variety in past research findings, some relatively stable associations exist. More specifically, relationship and process conflict were found to be negatively related to each of the group outcomes that I examined, including group performance, the quality of intragroup relations, and group members' satisfaction and willingness to work for the group. These negative associations were found to be generalizable to different groups, contexts, and outcome variables: Whether the study examined student teams or

professional teams, whether a team involved blue-collar workers or executives, or whether performance was measured objectively or subjectively, the meta-analysis showed a negative relation between relationship and process conflict on the one hand and group outcomes on the other across all the different studies investigating intragroup conflict.

The meta-analysis further showed that, compared to process and relationship conflict, the relationship between task conflict and group outcomes (including group performance) was less strong, yet also more complex. Analyses of main effects as well as moderator analyses revealed that, overall, task conflict was neither negatively nor positively related to group performance but that the direction and strength of this relationship depends on several moderating variables. For example, moderator analyses showed that task conflict was more positively related to group performance in studies where the association between task and relationship conflict was relatively weak. In addition, task conflict was more positively related to group performance in studies conducted among top management teams than non–top management teams, as well as in studies where performance was measured in terms of financial performance or decision quality rather than general performance.

The Damaging Effect of Relationship Conflict

In line with earlier reviews and theorizing, one of the main findings of the meta-analysis suggested that task conflict may either benefit or hurt group outcomes but that this is contingent on specific contextual characteristics (De Dreu, 2008; De Dreu & Weingart, 2003a; Jehn & Bendersky, 2003). In Chapters 3, 4, and 5, I built further on this finding, and investigated several factors that may influence the way individuals deal with task conflict. In Chapter 3, I presented two studies in which I investigated whether and how relationship conflict impairs the link between task conflict and group decision-making. As mentioned above, one of the main findings of the meta-analysis was that groups are more likely to benefit from a task conflict when at the same time there is no or little relationship conflict among the group members (see also De Dreu & Weingart, 2003b; Shaw et al., 2011). Yet, because meta-analyses can only make study-level inferences, the meta-analysis could not provide any direct evidence for this "damaging effect" of relationship conflict, nor investigate the different underlying processes. In Chapter 3, I therefore

examined whether relationship conflict indeed inhibits the potentially beneficial effect of task conflict.

We hypothesized that relationship conflicts may encourage hostile interpretations by group members of each other's task-related viewpoints, and that instead of approaching a task-related debate with an open mind, the presence of relationship conflict may reduce people's willingness to consider and use the viewpoints of their fellow group members (e.g., Shaw, et al., 2011). To examine these ideas, I developed an experimentally controlled situation in which all participants were confronted with exactly the same task conflict. A task conflict was created by means of two confederates who openly disagreed with the participants' preferred decision alternative, and who made it clear that they preferred another alternative. In both studies, the initially preferred decision alternative of the participants was always incorrect. Participants could only derive the correct decision when they used the information of their group members and let go of their initially preferred decision alternative. To measure the tendency of group members to use the viewpoints of their fellow group members, I made sure that participants were able to stick to their initial opinion, or change their initial opinion and adopt the viewpoints of their group members in their decision making.

The results presented in Chapter 3 indicated that the misinterpretation of task conflict as relationship conflict (Study 1), as well as the presence of a relationship conflict alongside the task conflict (Study 2), inhibits the potentially beneficial effect of task conflict. In both cases, a relationship conflict made it more likely that group members would rigidly hold onto their initially preferred decision alternative during a task conflict. In both studies I found a bias in information processing to mediate this effect: those who perceived relatively high levels of relationship conflict (Study 1) and those who had just encountered a relationship conflict (Study 2) were less likely to use the information provided by others which, in turn, explained why they were more likely to stick to their initial opinion. The reasons underlying this bias and rigidity appeared to be both motivational and emotional in nature. It was both a reduced motivation to use their group members' information and the anxiety caused by a relationship conflict that mediated the effect of relationship conflict on individuals' information processing and decision making. In sum, Chapter 3 showed that group members are less likely to

choose the correct decision alternative when a task conflict co-occurs with a relationship conflict. This happens because they are less motivated to systematically process information and feel less able to manage the task conflict. This, in turn, leads them to overlook other group members' information and to hold on to suboptimal initial viewpoints.

Coping with Task Conflict

In the studies discussed in Chapter 4, I applied the biopsychosocial model of arousal regulation (BPSM; e.g., Blascovich & Mendes, 2010; Blascovich & Tomaka, 1996) to examine whether, and if so how, stress and conflict-related coping appraisals shape individuals' behavior during a task conflict. The key question that was addressed in Chapter 4 was whether the impact of a task conflict on group decision-making depends on whether individuals are in a challenge state or a threat state during the conflict. A threat state arises when individuals appraise the demands of a situation as greater than their personal resources, while a challenge state occurs when individuals appraise resources as matching, or as greater than, demands (e.g., Blascovich & Tomaka, 1996). I conducted three studies to examine whether during a task conflict, group members who exhibit a threat- rather than a challenge-state, are more likely to inadequately utilize the information central to their diverging viewpoints, and show a bias towards their initially preferred decision alternative.

In the first study of Chapter 4 I induced threat and challenge states by means of a short writing task that required participants to think about a stressful event in which they did or did not feel in control. After the induction of the threat or challenge state, participants were presented with a conflict situation and were asked to indicate how they would behave in the described situation. In the second study I induced a task conflict in the same way as in Chapter 3, where two other group members openly disagreed with the participants' initial opinion and opted for a different decision alternative. Based on their conflict-related coping appraisals, I determined to what extent the participants were threatened or challenged by the conflict, and how this related to the final decisions they made. In the third study I replicated and extended this second study, but, additionally, also examined cardiovascular indices of threat and challenge states.

Together, the results indicated that the more individuals exhibit a threat rather than a challenge state during a task conflict, the more likely they are to become rigid in sticking to their own viewpoint *and* the less likely they are to use their group members' information instead of their own information. An important consequence of this rigidity and bias was that the higher the level of threat (vs. challenge), the lower the probability that individuals correctly solved the dilemma. These findings, therefore, suggest that task conflict may be functional for decision making, but only when group members do not experience a threat state during the task conflict. More precisely, the likelihood of participants making the correct decision was highest when there was task conflict among the group members (compared to no conflict) and individuals exhibited a challenge rather than a threat state during the conflict.

The results of Chapter 4 point to a strong link between psychophysiological markers of threat and behavioral manifestations of rigidity during task conflict. In Chapter 5 my aim was to replicate this finding in a more complex decision-making task. Moreover, I examined whether a threat state during a task conflict could have a beneficial effect on decision quality when individuals' initial opinion is, in fact, correct. I developed a new experimental set-up in which a task conflict was induced, but where the initially preferred decision alternative of the participants was actually correct. Besides a new task, I also advanced the physiological measurements. Instead of measuring threat and challenge states during final decision-making, I examined threat and challenge states during the conflict itself, enabling us to more directly assess individuals' reactions to the conflict.

The findings presented in Chapter 5 replicate the findings of Chapter 4, showing that cardiovascular reactions during a task conflict are closely related to an individual's behavioral response to the conflict and, thus, to the outcomes of joint decision-making. I found that individuals who exhibited a cardiovascular threat state were less likely to alter their initial opinion than individuals who exhibited a cardiovascular challenge state. Additional analyses illustrated the robustness of this effect, as the cardiovascular markers of challenge or threat predicted the adjustment of the initial viewpoint, even when controlling for other important other factors in intra-group conflict such as the perceived trustworthiness of the opponent and task self-efficacy. Together, the findings of Chapters 4 and

5 underline the usefulness of adopting a psychophysiological approach to intragroup conflict. Likewise, the findings indicate the importance of taking into consideration individual-level characteristics such as cardiovascular reactivity to conflicts, to better understand how people manage conflicts during joint decision-making.

Implications and Contributions

Theoretical Implications and Contributions

One of the most prominent questions in conflict research is whether conflicts between members of a group can have a positive effect on group performance. It has long been assumed that conflicts can indeed have a positive impact, provided that they are task-related and not about more personal or relationship issues (e.g., Amason, 1996; Jehn, 1995). The belief underlying this assumption was that task-related conflicts will lead to more innovative and more informed decisions because they challenge group members to think more critically about their divergent viewpoints. The results of De Dreu and Weingart's (2003b) meta-analysis of the intragroup literature offered little support for this idea, however. Their results suggested that task-related conflicts, like relationship conflicts, are also negatively related to group outcomes. In recent years, many new studies have been conducted, re-examining the consequences of conflict for group performance. The results of these studies were sometimes in line with the conclusions of De Dreu and Weingart's meta-analysis, but sometimes they were not. One of the most important contributions of this dissertation is that in Chapter 2 this large body of new studies on intragroup conflict is reviewed by means of a meta-analysis, and an overview is given of how different types of conflicts, considered in different types of studies, are related to group outcomes. Moreover, in Chapters 3, 4, and 5, this dissertation provides several new insights regarding contextual (e.g., presence of relationship conflict) and individual characteristics (threat/challenge states) that influence the link between task conflict and group decision-making.

Starting with the consequences of relationship and process conflict, the meta-analysis suggested that it is safe to conclude that in addition to relationship conflict, process conflict is also consistently negatively related to group outcomes. With regard to relationship conflict, these findings are

perfectly in line with prior work, which over and over has shown a negative association between relationship conflict and group outcomes (e.g., Amason, 1996; Jehn, 1995). For process conflict, the results of the meta-analysis were somewhat unexpected, because prior theorizing suggested that process conflict may sometimes lead to superior group performance by facilitating a re-evaluation of group members' roles and tasks within the team (e.g., Jehn & Bendersky, 2003; Jehn & Mannix, 2001). The meta-analysis, however, does not support this more positive view of process conflict. One explanation for the negative association between process conflict and group outcomes is that the issues central to process conflicts, such as task delegation or role assignment, are delicate and may carry personal connotations, such as, implied capabilities or respect within the group (cf. Jehn & Bendersky, 2003). For instance, group members who disagree with their task assignments may feel that being assigned the task is a personal insult. In this way, process conflicts may become exceedingly personal and have short-term, as well as long-term, harmful effects on group functioning (Greer & Jehn, 2007; Greer, Jehn, & Mannix, 2008; Jehn, Northcraft, & Neale, 1999; Thatcher, Jehn, & Zanutto, 2003; Vodosek, 2007).

With regard to task conflict, the findings support a more complex picture. Although earlier research on intragroup conflict often assumed a uniform relation between task conflict and performance, neglecting potential moderators of the conflict-outcome relationship, conflict-researchers have long urged taking on a contingency approach to studying the effects of task conflict. In support of this contingency approach, the meta-analysis in Chapter 2, revealed the importance of taking into account "macro-level" characteristics, which are characteristics that operate at the study level of analyses, such as the type of teams that are being examined in a particular study, or how a study operationalizes group performance. Likewise, Chapters 3, 4, and 5 revealed the importance of taking into account more "micro-level" characteristics, which operate at the group or individual level of analyses. Chapter 3, for example, illustrated the crucial role of relationship conflict, which can prevent a task conflict from having the desired positive impact on decision-making quality because it causes group members to become more rigid in sticking to their own opinion during the task conflict. Furthermore, Chapters 4 and 5 highlighted the importance of taking into account the stress that people exhibit during a

conflict, showing that people who are involved in a task conflict and exhibiting a threat state are much more likely to hold to an initial opinion than individuals exhibiting a challenge state.

This dissertation therefore makes an important contribution to conflict theory by providing a more specific answer to the question when conflicts between group members may be positively related to group performance. In line with theory on the distinction between task, process, and relationship conflict, this dissertation shows that only task conflict is likely to be positively related to group outcomes. Yet, in contrast to popular theorizing, the relationship between task conflict and group performance is not uniformly positive, and groups will only benefit from task conflict when specific conditions are met. In line with the information-processing perspective (e.g., Carnevale & Probst, 1998), this dissertation shows that important factors determining whether a conflict will have a positive effect, are factors that interfere with cognitive flexibility and creative thinking. That is, in line with this information perspective, Chapters 3 and 4 show that task conflict may stimulate information processing, but as soon as a task conflict is misinterpreted as a relationship conflict, or when individuals exhibit a threat state, information processing may be obstructed, and decision quality is likely to drop again.

Stress and intragroup conflict. Another contribution of this dissertation is that it integrates the management literature with the biological psychology literature, and thereby brings together two different research disciplines. Although conflicts are often considered to be stressful and have been linked to physical and mental illnesses (Spector & Jex, 1998), to date very little research attention has been paid to the question whether, and if so how, stress affects the outcome of conflicts. In this dissertation I have tried to fill this gap in the literature. I investigated how cardiovascular stress profiles that people exhibit during a conflict relate to how they react behaviorally to the conflict. I found there was a strong and generalizable relation between the extent to which people showed a maladaptive stress response ("threat") and their tendency to stick to their own opinion. In most real-life situations, this would imply that a task conflict will have more negative consequences when individuals react threatened to it. That is, when individuals exhibit a threat state and,

therefore, are less receptive to diverging opinions, this increases the likelihood that a conflict will become intractable or that it will escalate.

The fact that psychophysiological markers of threat and challenge states are related to rigidity and biased information use during intragroup conflict also has implications for the biopsychosocial model. So far, most of the research that follows the BPSM has focused on possible antecedents of threat and challenge states, such as when someone exhibits a threat state during a social interaction (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001) or intergroup competition (Scheepers 2009). There are only a handful of studies which have investigated the association between threat/challenge states and behavioral or performance outcomes (e.g., Blascovich, Seery, Mugridge, Norris, & Weisbuch, 2004; Seery et al., 2011). This dissertation therefore provides an important contribution to the BPSM by illustrating the potential consequences that threat and challenge states can have for the use of conflicting information and opinions. It also reinforces the findings of previous research that psychophysiological markers of a threat state are linked to rigidity and inflexibility (Kassam, Koslov, & Mendes, 2009).

Methodological Implications and Contributions

This dissertation addresses important limitations of previous conflict research. First, in research on group processes such as conflict, it is customary to ask individual group members to report how much conflict they experience in their group. Based on these individual perceptions, an average score for that group is determined, and this average is then used to examine, for example, the relationship between conflict and group outcomes. The implicit assumption in this type of research is that group members perceive more or less similar amounts and types of conflict (e.g., Amason, 1996; Jehn, 1994). This dissertation shows, however, that one and the same conflict is often experienced very differently, and more importantly, that these differences play an important role in how people react and deal with conflict. These findings, therefore, are an important extension of recent work on "conflict asymmetries," which refers to the differences that exist among conflict parties in the level and type of conflict that are experienced and perceived (cf. Jehn, Rispens, & Thatcher, 2010). This dissertation extends this research by illustrating differences among people in their psychophysiological stress

patterns in response to conflict (i.e., threat or challenge states) and by demonstrating how differences in psychophysiological stress patterns may shape the outcomes of conflicts. Together these findings urge researchers to consider the fact that the group members who are involved in a conflict may not perceive and experience the conflict in the same way.

Another contribution of this dissertation is that it introduces two experimental inductions of task conflict. Despite the vast literature on task conflict, as far as I know there have not been any attempts to create a task conflict experimentally. There have been studies on devil's advocacy and dialectical inquiry in which one person creates a task conflict by challenging the other group members' opinions. Yet, these conflicts were not held constant across the groups and individuals involved, and therefore it is difficult to cancel out alternative explanations for the results that were found. The experimental inductions of task conflict presented in this dissertation were held constant across individuals and therefore enabled us to cancel out possible alternative explanations, such as the level of acquaintanceships among group members, the intensity of the conflicts, or differences in the length of a discussion.

The first of the two inductions of task conflict featured a task-related disagreement during a hidden-profile task. The strength of this induction of task conflict is that it enables researchers to examine three different responses to conflict. That is, participants can respond to the conflict by sticking to their initial solution, by adopting the solution of another group member, or by combining the different viewpoints to derive the correct solution. An additional strength is that it allows researchers to examine biases in information use by considering the extent to which individuals use their own information relative to the information they receive from the other group members during the conflict. The second induction of task conflict is imbedded in a more complex decision-making task, and its strength lies in the fact that it offers a continuous measurement of individuals' tendency to change an initial opinion in deference of another group member. It thus allows researchers to examine the relative extent to which individuals change their opinion in response to a conflict, instead of the categorical outcome measure in the first induction of task conflict (which measures behavior in terms of "change vs. no change of an initial opinion").

These two inductions of task conflict may provide other conflict-researchers with a useful tool to examine individual and contextual characteristics that affect individuals' management of task conflicts. The first of the two inductions also provides a useful tool for researchers using hidden profile situations to study group decision-making. The majority of the research on hidden profile situations has concentrated on the failure of groups to share and discuss important information possessed by only one or only a few group members. That is, research shows that because groups fail to share some privately held, but important, information they often are unable to derive the correct solution to a task (e.g., Stasser, 1992; Wittenbaum & Stasser, 1996). This dissertation shows that even when all information is shared and known, groups often find it hard to derive the correct solution (see also Greitemeyer & Schulz-Hardt, 2003). One reason for this is the so-called "individual preference effect" which refers to group members' tendency to hold onto their initial suboptimal viewpoints even though all information is shared (Brodbeck, Kerschreiter, Mojzisch, & Schulz-Hardt, 2007). This dissertation shows that the co-occurrence of a task and relationship conflict augments this initial preference effect because it undermines group members' motivation to process information systematically and causes group members to focus too much on their own information. Additionally, this dissertation shows that the individual preference effect is augmented when individuals exhibit a threat state, rather than a challenge state, during the discussion of diverging information and viewpoints. These findings therefore provide important insights that help us to understand why groups may still make incorrect decisions, even when all the information is shared and available to all group members.

Practical Implications and Contributions

Intragroup conflicts are ubiquitous in organizational life, and often may have detrimental consequences. Organizations therefore need to understand how the different types of intragroup conflict may affect group members' morale and also how they may affect group performance. In this dissertation, some clear patterns have emerged. It is clear, for example, that, in general, intragroup conflict is negatively related to group members' satisfaction and commitment to working for the group. This is especially true for process conflict and relationship conflict. Hence, when

organizations want to assure themselves that group members are committed and satisfied, it is important to keep disagreement about the logistics of task accomplishment, such as the delegation of tasks and responsibilities, to a minimum, and prevent disagreements about interpersonal issues, such as personality differences or differences in norms and values.

Importantly, the meta-analysis showed that task conflict is also negatively related to group members' morale, yet to a lesser extent than process conflict and relationship conflict. Moreover, the meta-analysis showed that, on the study level of analyses, the association between task conflict and group member satisfaction strongly depends on the correlation between task and relationship conflict. More specifically, task conflict was (more) positively related to group member satisfaction in studies where the correlation between task and relationship conflict was relatively weak. This suggests that group members' satisfaction with their group may not suffer from the presence of task conflicts as long as task conflicts do not co-occur with relationship conflicts. Hence, when groups are able to keep a task-related disagreement from becoming personal, it will enable group members to voice their own perspectives *and* increase their task commitment and satisfaction with the group (Behfar, Mannix, Peterson, & Trochim, 2011).

Similarly, this dissertation shows that people who wish to improve group performance by stimulating a conflict among group members should first of all ensure that the conflict is task-related (rather than process- or relationship-related). However, making sure that the conflict is task-related is not enough. In Chapters 3 and 4, I showed that for groups to benefit from a task conflict, it is crucial that group members be willing to consider viewpoints that oppose their initial viewpoint, and that group members do not try to "win" the disagreement at all costs. During debates and conflict, however, most people show a strong preference for their initial viewpoint, and often have difficulty letting go of it (e.g., Brodbeck, et al., 2007; Greitemeyer & Schulz-Hardt, 2003). When individuals hang onto their initial viewpoint, and argue for it as a goal in itself, regardless of any underlying interests, then on most occasions it is unlikely that a group will be able to benefit from the task conflict because group members will fail to adequately utilize the different information and perspectives.

Hence, for groups to benefit from a task conflict, the challenge is to suppress this preference for initial opinions.

This dissertation offers several insights on how to do so. For example, groups should make sure there is no relationship conflict among the group members. In the presence of a relationship conflict, or when people misinterpret a task conflict as a relationship conflict, group members tend to become defensive and are more likely to hang onto their initial viewpoint. Likewise, the preference for an initial opinion is greater when people feel that they are unable to cope with the demands of a conflict and, for that reason, manifest a "threat" state. For groups to benefit from a task conflict it is, therefore, important that the conflict be purely task-related, and that a situation be created in which people do not take criticism of their viewpoint personally, and feel they can handle the difference of opinion (see also Bradley et al., 2012).

Finally, in addition to individual and group level circumstances that may determine whether task conflict will be found to help group performance, Chapter 2 provided several more "macro-level" factors. The meta-analysis showed that task conflicts were more likely to be positively related to performance among top management teams, compared to teams lower in the organizational hierarchy. Likewise, the relationship between task conflict and group performance was found to be more positive among studies in which group performance was measured in terms of decision quality, or financial performance, rather than more general performance. Managers, therefore, should consider what type of performance improvement they are after, and be aware that when performance can be quantified in a relatively objectively manner (for instance, in terms of decision quality or financial performance), it is more likely that task conflict will make a positive contribution to group performance, compared to when there are only subjective performance measurements.

Limitations and Future Research

The studies that I have presented in this dissertation have numerous strengths, but also some limitations which call for further research. For example, one of the limitations is the experimental nature of the empirical studies presented in this dissertation. The task conflicts in these studies were created by using confederates who openly disagreed

with the initial opinion of the participant and clearly stated that they preferred a different decision alternative. The participants could respond only once, however, and there was no possibility for further discussion. Hence, the conflict over the decision to be taken consisted of only one round of discussion, in which everyone could speak only once. This setup provided many advantages. For example, I would have lost considerable experimental control if I had tried to induce a task conflict consisting of several rounds of discussion. More specifically, given the information that I provided the participants, I could predict their initial opinions, and experimentally control the response of the confederates to the participants' initial opinions. It was, however, impossible to predict the participants' subsequent reaction to the confederates' response, as these reactions could vary from a simple "I agree" to an overt disagreement in which participants would elaborate on all the information they were given. Therefore, it was difficult to come up with an experimentally controlled second response of the confederate that would apply to *all* participants. Given this limitation, an important question for future research is whether the findings can be generalized, and the same results will be found outside the lab, within organizational teams, for example, where task conflicts are often more complex, with a greater variety of opinions, more people involved, and more lengthy discussions. I expect, however, that threat states and the presence of relationship conflict are likely to obstruct decision making in such situations as well, and may even cause conflicts to escalate because not one, but multiple group members, may rigidly hold onto an initial viewpoint, and to fail to consider other group members' viewpoints.

In line with the above, future research should apply a more dynamic approach to understanding the conflict-performance relationship. In terms of task conflict, future research could examine whether rigidity during a task conflict may be more dysfunctional when the task conflict occurs in the relatively early stages of a group task. That is, research has shown that during the early stages of a group task, it is important to approach different viewpoints with an open-mind (Paulus & Dzindolet, 1993), while in later stages of a group task, commitment to a certain decision-alternative may be more helpful. This implies that the damaging effect of relationship conflict, as well as that of threat states, during a task conflict may be more significant during the early stages of a group task.

Such a dynamic approach to understanding the consequences of conflict might also be useful for better understanding the effects of process conflict. Although the meta-analysis reported a clear and stable negative relationship between process conflict and group outcomes, research by Jehn and Mannix (2001) suggests that high performing groups may experience increasing levels of process conflict over time. A possible explanation of this finding is that during the final stages of the group task, when group members need to formalize and implement who will manage and organize certain duties, a process conflict might help to optimize the division of tasks and responsibilities, which, in turn, may help groups to finish in time for a deadline. Thus far, an experimentally controlled examination of process conflict and its relation with group performance is lacking, however, as is a direct examination of the relationship between process conflict and group performance at different points in time. To better understand whether and when process conflict may be positively related to group performance, future research should, therefore, examine the impact of process conflict on group performance more directly, and do so at different moments of a group's life cycle.

Future research could also try to discover the possible antecedents of threat and challenge states during conflicts. This dissertation has focused mainly on the relationship between threat and challenge states and the decisions people take when faced with a task conflict. I have not really dealt with the question of what factors play a role in triggering threat and challenge states (although Chapter 3 does show that the misinterpretation of a task conflict as relationship conflict tends to induce a threat state). As group members' threat and challenge states are determined by their appraisals of the demands of the conflict and their own resources for coping with it, further research needs to identify the situational or individual characteristics that make group members feel they have enough (or not enough) resources to cope with the demands of an intragroup conflict. Recent research has already started to identify some of these factors, such as levels of psychological safety (Bradley, et al., 2012), the intensity of the conflict (Farh, et al., 2011), and whether the conflict endangers the specific goals that people are pursuing (Halevy, Chou, & Galinsky, 2011). More research is needed, however, to better understand what exactly makes people exhibit a threat or a challenge state during a task conflict.

Finally, as in any research, this dissertation raises some new questions that further research should try to address. For example, the meta-analysis suggested that the association between task conflict and group performance strongly depends on how performance is operationalized. Future research could examine the underlying processes that explain why more general group performance measures tend to be more negatively related to task conflict than performance measures directed at decision quality or financial performance. Likewise, the meta-analysis showed that the relationship between task conflict and group performance was more positive among top management teams than among teams lower in the hierarchy. A possible explanation of why teams higher up in the organizational hierarchy show less negative effects of task conflict is that members of such teams are likely to be more politically savvy and better able to handle complex interpersonal situations, such as conflicts (Lazear & Rosen, 1981). Future research should examine the validity of this explanation as well as conduct a direct comparison of top management teams and teams lower in the hierarchy.

Similar questions could be answered regarding the impact of threat and challenge states on decision making. Although my studies suggest a strong link between psychophysiological reactions and individual's tendencies to change their initial solutions, several questions remain. For example, one question is whether there is a specific neurobiological pathway that underlies the relationship between cardiovascular threat/challenge states and (in)flexibility of thought. Moreover, my findings are based on correlational data instead of manipulations of threat and challenge states. Future research could therefore try to experimentally induce threat and challenge states, and examine whether a threat state is indeed related to more rigidity than a challenge state, but then also focus on the specific neurobiological processes that facilitate this link between threat and tendencies to hold onto initial thoughts and preferences.

Conclusion

Based on the findings of this dissertation, it seems safe to conclude that distinguishing different types of conflict only solves part of the paradox of intragroup conflict. That is, distinguishing among different types of conflict has helped to identify conflicts that have a tendency to hurt group outcomes (i.e., relationship and process conflict) and those

that have the potential to help group outcomes (i.e., task conflict). Yet, this dissertation reemphasizes the need for conflict research to adopt a contingency approach to better understand the relationships between conflict and group outcomes, especially when it comes to task conflict. In Chapters 2, 3, 4, and 5, I made a start with this, by examining how contextual characteristics (e.g., relationship conflict) and individual characteristics (that is, psychophysiological appraisals and reactions to conflict) affect the association between task conflict and group performance. Together, the findings presented in these chapters provide many new insights that organizations and groups can use to guard against the potential dangers of intragroup conflict, as well as reap the benefits from it.

Appendix A:

Information and feedback that participants received during the hidden profile task used in Chapters 3 and 4 (adapted from Toma & Butera, 2009).

Shared Information

The collision takes place at the St. Georges intersection, on Monday at 7 p.m. The road is narrow and poorly lit. Two cars and one motorcycle are involved. In the first car, Mr. X—who is 53 years old and has held a driving license for 30 years—and his 17-year-old son return home. The father had just drunk several glasses of spirits during a dinner with his friends. In the second car, Mrs. Y, 27 years old and having held a driving license for only 1 year, is going shopping. Her car's lights are damaged. On the motorcycle, Mr. Z, 28 years old, who has held a driving license for 5 years, is going to meet his sick father who asked him to come rapidly. He is speeding on the N13 road.

Unshared Information that was provided to the participant by the experimenter (suggesting that the culprit is Mr. X)

'The guilty person is driving a car. During police inspection, the guilty car owner was discovered to have a 1.5 level of alcohol. The guilty person admits that he was inattentive at the time of the collision.'

Feedback of group members in the task conflict condition (applicable to Chapters 3 and 4):

The reaction of the first group member: "*Hi all, I don't agree, I don't think Mister X did it. My information said that the guilty person is less than 30 years old and that due to inexperience, the guilty person wasn't able to avoid the collision. Also it said that the guilty person claimed that he or she did not see others approaching the intersection. Therefore I thought it was Mrs. Y..*".

The reaction of the second group member in the task conflict condition was: "*Mhmm.. I don't agree either, I don't think it's X.. But I had Mr. Z because my info said that the guilty person was a man and that a family member was indirectly responsible for the accident and it said that the guilty person was driving at 110km/h...* ".

Feedback of group members in the control condition (only applicable to Chapter 4, Study 2):

The reaction of the first group member: "*Hi all, I agree and also think it is Mister X. Yet, my information did say that the guilty person is less than 30 years old and that due to inexperience, the guilty person wasn't able to avoid the collision. Also it said that the guilty person claimed that he or she did not see others approaching the intersection..*".

The reaction of the second group member in the task conflict condition was: "*I also think it is Mister X because my info said that the guilty person was a man and that a family member was indirectly responsible for the accident and it said that the guilty person was driving at 110km/h...*".

Appendix B
Responses used in Chapter 3 to induce relationship conflict.

Non Relationship Conflict Condition*

Group member 1: "I absolutely adored the work of artist 1. The textures and tones were so effortlessly advanced and elegant. I'm glad to find that someone else sees what I see. I feel like we share a relevant and meaningful connection. Art is the great leveler isn't it? Glad to know there are other's intellectual enough to appreciate true art!"

Group member 2: "Some of that work was pretty nice but I'd have to say it's pretty close between 1 and the third artist. I think 1 is the best though because it really just makes me think. I believe that artist 1 appeals because their work requires a higher level of artistic literacy. It feels so great that we're all in agreeance!"

Relationship Conflict Condition*

Group member 1: "The second artist was my favorite because their work is way better than those other guys, including that of the first artist. Technically, aesthetically, everything . . . I know this is subjective but seriously, I could probably produce stuff like those other artists. It's ridiculous how much worse those others were, I think our tastes clash and that's not really good? Maybe reconsider your interpretation?

Group member 2: "I'm not sure about that first artist either. Their work just seemed simplistic and way too entry-level. They were obviously trying to appeal to anyone and everyone, pretty much any poser or try-hard would "appreciate" artist 1, but to be able to see and interpret the understatement and effortless beauty of the third – that's something I can say I do."

*Note that for all participants, their preferred artist was always labeled and referred to as Artist 1, or the first artist.

Appendix C

Task instructions (adapted from Cammalleri et al., 1973):

Please imagine that you and the other participant are a member of a space crew originally scheduled to rendezvous with a mother ship on the lighted surface of the moon. Due to mechanical difficulties, however, your ship was forced to land at a spot some 200 miles from the rendezvous point. During reentry and landing, much of the equipment aboard was damaged; and because survival depends on reaching the mother ship, the most critical items available must be chosen for the 200-mile trip. Below are listed the 14 items left intact and undamaged after landing. Your task is to rank order them in terms of their importance in allowing your crew to reach the rendezvous point. Place the number 1 by the most important item, the number 2 by the second most important item, and so on, through number 14, the least important. Please remember that after you have derived your own decision, you and the other crew-member are going to discuss the 14 items, after which you are both asked to provide a final decision.

The 14 items and their correct rank in the hierarchical ordering were:

1.	Box of matches	14
2.	Food concentrate	4
3.	50 feet of nylon rope	6
4.	Parachute silk	8
5.	Portable heating unit	12
6.	One case of dehydrated pet milk	11
7.	Two 100 Ib. tanks oxygen	1
8.	Stellar map	3
9.	Life raft	9
10.	Magnetic compass	13
11.	20 liters of water	2
12.	Signal flares	10
13.	First aid kit with injection needles	7
14.	Solar-powered radio	5

References

References marked with an asterisk indicate studies included in the meta-analysis.

*Acuña, S. T., Gómez, M., & Juristo, N. (2009). How do personality, team processes and task characteristics relate to job satisfaction and software quality? *Information and Software Technology*, *51*, 627-639.

Adair, W., Brett, J., Lempereur, A., Okumura, T., Shikhirev, P., Tinsley, C., & Lytle, A. (2004). Culture and negotiation strategy. *Negotiation Journal*, *20*, 87-111.

Adair, W. L., Okumura, T., & Brett, J. M. (2001). Negotiation behavior when cultures collide: The United States and Japan. *Journal of Applied Psychology*, *86*, 371-385.

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpretation interactions*. Thousand Oaks: Sage.

*Amason, A. C. (1996). Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: Resolving a paradox for top management teams. *Academy of Management Journal*, *39*, 123-148.

*Amason, A. C., & Mooney, A. C. (1999). The effects of past performance on top management team conflict in strategic decision making. *International Journal of Conflict Management*, *10*, 340-359.

Amason, A. C., & Sapienza, H. J. (1997). The effects of top management team size and interaction norms on cognitive and affective conflict. *Journal of Management*, *23*, 495-516.

Amason, A. C., Thompson, K. R., Hochwater, W. A., & Harrison, A. W. (1995). Conflict: An important dimension in successful management teams. *Organizational Dynamics*, *24*, 20-35.

Ancona, D. G., & Caldwell, D. F. (1992). Demography and design: Predictors of new product team performance. *Organization Science*, *3*, 321-341.

Argyris, C. (1962). *Interpersonal competence and organizational effectiveness*. Homewood, IL: Dorsey.

Arvey, R. D., & Murphy, K. R. (1998). Performance evaluation in work settings. *Annual Review of Psychology*, *49*, 141-168.

Ashby, W. R. (1956). *An introduction to cybernetics*. London, England: Methuen.

*Ayoko, O. B., Callen, V. J., & Härtel, C. E. J. (2008). The influence of emotional climate on conflict and team members' reactions to climate. *Small Group Research*, *39*, 121-149.

Balkundi, P., & Harrison, D. A. (2006). Ties, leaders, and time in teams: Strong inference about network structure's effects on team viability and performance. *Academy of Management Journal*, *49*, 49-68.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research. Conceptual, strategic, and

statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

*Barrick, M., Stewart, G., Neubert, M., & Mount, M. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology*, *83*, 377-391.

*Barsade, S. G., Ward, A. J., Turner, J. D. F., & Sonnenfeld, J. A. (2000). To your heart's content: A model of affective diversity in top management teams. *Administrative Science Quarterly*, *45*, 802-836.

Baumeister, R. (1998). The self. In D. T.Gilbert, S. T.Fiske, & G.Lindzey (Eds.), *The handbook of social psychology* (4th ed., *Vol. 1*, pp. 680-740). Boston, MA: McGraw-Hill.

Baumeister, R. F., Smart, L., & Boden, J. M. (1996). Relation of threatened egotism to violence and aggression: The dark side of self-esteem. *Psychological Review, 103,* 5-33.

*Bayazit, M., & Mannix, E. A. (2003). Should I stay or should I go? Predicting team members' intent to remain in the team. *Small Group Research*, *34*, 290-321.

Becker, B. J. (1992). Using results from replicated studies to estimate linear models. *Journal of Educational Statistics*, *17*, 341-362

*Beersma, B., Hollenbeck, J. R., Conlon, D. E., Humphrey, S. E., Moon, H., & Ilgen, D. R. (2009). Cutthroat cooperation: The effects of team role decisions on adaptation to alternative reward structures. *Organizational Behavior and Human Decision Process, 108*, 131-142.

Behfar, K. J., Mannix, E. A., Peterson, R. S., & Trochim, W. M. K. (2002, June). *A multi-faceted approach to intragroup conflict issues of theory and measurement*. Paper presented at the 15th Annual Conference of the International Association for Conflict Management, Salt Lake City, UT.

Behfar, K. J., Mannix, E. A., Peterson, R. S., & Trochim, W. M. K. (2011). Conflict in small groups: The meaning and consequences of process conflict. *Small Group Research*, *42*, 127-146.

Behfar, K., & Thompson, L. (2007). Conflict within and between organizational groups: Functional dysfunctional and quasi-functional perspectives. In L. Thompson & K. Behfar (Eds.), *Conflict in teams* (pp. 3-35). Evanston, IL: Northwestern University Press.

*Bendersky, C., & Hays, N. (2012). Status conflict in groups. *Organization Science*, *23*, 323-340.

*Bierly, P. E., III, Stark, E. M., & Kessler, E. H. (2009). The moderating effects of virtuality on the antecedents and outcome of NPD team trust. *Journal of Product Innovation Management*, *26*, 551-565.

Blake, R. R., & Mouton, J. S. (1984). *Solving costly organizational conflicts*. San Francisco, CA: Jossey-Bass.

Blascovich, J. (2000). Psychophysiological methods. In H.T. Reis, H., & C.M. Judd (Eds.). *Handbook of research methods in social psychology* (pp. 117-137). Cambridge UK: Cambridge University Press.

Blascovich, J. (2008). Challenge and threat. In A. J. Elliott (Ed.), *Handbook of approach and avoidance motivation* (pp. 431-445). New York: Psychology Press.

Blascovich, J., & Katkin, E. S. (1993). Cardiovascular reactivity to psychological stress and disease: Conclusions. In: J. Blascovich & E. S. Katkin (Eds.), *Cardiovascular reactivity to psychological stress and disease* (pp. 225-238). Washington, DC: American Psychological Association.

Blascovich, J., & Mendes, W. B. (2000). Challenge and threat appraisals: The role of affective cues. In J. Forgas, (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 59-82). Cambridge, England: Cambridge University Press.

Blascovich, J. & Mendes, W. B. (2010). Social psychophysiology and embodiment. In: S. T. Fiske, Gilbert, D. T., Lindzey, G. (Eds.). *The handbook of social psychology*, 5th Edition (pp. 194-227). New York, NY: John Wiley & Sons Inc.

Blascovich, J., Mendes, W. B., Hunter, S. B., Lickel, B., & Kowai-Bell, N. (2001). Perceiver threat in social interactions with stigmatized others. *Journal of Personality and Social Psychology, 80, 253-267*.

Blascovich, J., & Tomaka, J. (1996). The biopsychosocial model of arousal regulation. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 29, pp. 1-51). New York: Academic Press.

Blascovich, J., Seery, M. D., Mugridge, C. A., Norris, R. K., & Weisbuch, M. (2004). Predicting athletic performance from cardiovascular indexes of challenge and threat. *Journal of Experimental Social Psychology*, *40*, 683-688.

Bonaccio, S., & Dalal, R. S. (2006). Advice taking and advice giving in decision making: An integrative review of the literature. *Organizational Behavior and Human Decision Processes, 101, 127-151*.

Bradford, K. (1999). *Conflict management in buyer-seller relationships* (Unpublished doctoral dissertation). University of Florida, Gainesville, FL.

*Bradford, K. D., Stringfellow, A., & Weitz, B. (2007). *The effect of conflict and knowledge distribution on knowledge work team performance*. Unpublished manuscript, Department of Marketing, University of Notre Dame, Notre Dame, IN.

*Bradford, K. D., Stringfellow, A., & Weitz, B. A. (2004). Managing conflict to improve the effectiveness of retail networks. *Journal of Retailing, 80*, 181-195.

Bradley, B. H., Postlethwaite, B. E., Klotz, A. C., Hamdani, M. R., & Brown,. K. G. (2012). Reaping the benefits of task conflict in teams: The critical role of team psychological safety climate. *Journal of Applied Psychology*, 97, 151-158.

*Brauckmann, C. M. B. (2007). *Some kind of monster: A multilevel analysis of the moderating effect of commitment, on the relationship between conflict and individual outcomes* (Unpublished master's thesis). Leiden University, Leiden, the Netherlands.

Brehmer, B. (1976). Social judgment theory and the analysis of interpersonal conflict. *Psychological Bulletin*, *83*, 985-1003.

Brett, J. M., Adair, W., Lempereur, A., Okumura, T., Shikhiru, P., Tinsley, C., & Lytle, A. (1998). Culture and joint gains in negotiation. *Negotiation Journal*, *14*, 61-86.

Brief, A. P., & Weiss, H. M. (2002). Organizational behavior: Affect in the workplace. *Annual Review of Psychology*, *53*, 279-307.

Brodbeck, F. C., Kerschreiter, R., Mojzisch, A., & Schulz-Hardt, S. (2007). Group decision-making under conditions of distributed knowledge: The information asymmetries model. *Academy of Management Review, 32*, 459-479.

Brown, L. R. (1983). *Managing conflict at organizational interfaces*. Reading, MA: Addison-Wesley.

Bushman, B. J., & Baumeister, R. F. (1998). Threatened egotism, narcissism, self-esteem, and direct and displaced aggression: Does self-love or self-hate lead to violence? *Journal of Personality and Social Psychology, 75,* 219-229.

Cai, D. A., & Fink, E. L. (2002). Conflict style differences between individualists and collectivists. *Communication Monographs*, *69*, 67-87.

Cammalleri, J. A., Hendrick, H. W., Pittman, W. C., Blout, H. D., & Prather, D. C. (1973). Effects of different leadership styles on group accuracy. *Journal of Applied Psychology*, *57*, 32-37.

Carli, L. L., Lafleur, S. J. & Loeber, C. C. (1995). Nonverbal behavior, gender, and influence. *Journal of Personality and Social Psychology, 68*, 1030-1041.

Carnevale, P. J., & Probst, T. M. (1998). Social values and social conflict in creative problem solving and categorization. *Journal of Personality and Social Psychology*, *74*, 1300-1309.

Chalabaev, A., Major, B., Cury, F., & Sarrazin, P. (2009). Physiological markers of challenge and threat mediate the effects of performance-based goals on performance. *Journal of Experimental Social Psychology*, *45*, 991-994.

*Chatman, J. A., Polzer, J. T., Barsade, S. G., & Neale, M. A. (1998). Being different yet feeling similar: The influence of demographic composition and organizational culture on work processes and outcomes. *Administrative Science Quarterly*, *43*, 749-780

Cheung, M. W. L. (2010). metaSEM: Meta-analysis—A structural equation modeling approach, R package Version 0.5-1 [Computer software]. Retrieved from http://courses.nus.edu.sg/course/psycwlm/Internet/

Cheung, M. W. L., & Chan, W. (2005). Meta-analytic structural equation modeling: A two-stage approach. *Psychological Methods*, *10*, 40-64.

*Choi, J. N., & Sy, T. (2010). Group-level organizational citizenship behavior: Effects of demographic faultlines and conflict in small groups. *Journal of Organizational Behavior*, *31*, 1032-1054.

*Conlon, D. E., & Jehn, K. A. (2007). *Behind the music: Conflict, performance effectiveness, and behavioral outcomes in punk and new wave rock bands*. Unpublished manuscript.

Contrada, R. J., Cather, C., & O'Leary, A. (1999). Personality and health: Dispositions and processes in disease susceptibility and adaptation to illness. In: L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 576-604). New York: Guilford.

Cooper, H. M. (1998). *Synthesizing research: A guide for literature reviews* (3rd ed.). Thousand Oaks, CA: Sage.

Cosier, R. A., & Rose, G. L. (1977). Cognitive performance and goal conflict effects on task performance. *Organizational Behavior and Human Performance, 19*, 378-391.

Cosier, R. A.. & Schwenk. C. R. (1990). Agreement and thinking alike: Ingredients for poor decisions. *Academy of Management Executive, 4*, 69-74.

CPP Inc. (2008). *Workplace conflict and how businesses can harness it to thrive: CPP Global Human Capital Report*. Consulting Psychologists Press, Mountainview, CA.

*Cunningham, G. B., & Waltemyer, D. S. (2007). *The moderating effect of outcome interdependence on the relationship between task conflict and group performance*. Unpublished manuscript, Department of Health and Kinesiology, Texas A&M University, College Station, TX.

*Curşue, P. L., & Schruijer, S. G. L. (2010). Does conflict shatter trust or does trust obliterate conflict? Revisiting the relationships between team diversity, conflict, and trust. *Group Dynamics: Theory, Research, and Practice*, *14*, 66-79.

*DeChurch, L. A., & Marks, M. A. (2001). Maximizing the benefits of task conflict: The role of conflict management. *International Journal of Conflict Management*, *12*, 4-22.

*De Dreu, C. K. W. (2006). When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams. *Journal of Management*, *32*, 83-107.

De Dreu, C. K. W. (2008). The virtue and vice of workplace conflict: Food for (pessimistic) thought. *Journal of Organizational Behavior*, *29*, 5-18.

De Dreu, C. K. W., & Gelfand, M. J. (2008). Conflict in the workplace: Sources, functions, and dynamics across multiple levels of analysis. In C. K. W.De Dreu & M. J.Gelfand (Eds.) , *The psychology of conflict and conflict management in organizations* (pp. 3-54). New York, NY: Erlbaum.

De Dreu, C. K. W., Koole, S., & Oldersma, F. L. (1999). On the seizing and freezing of negotiator inferences: need for cognitive closure moderates the use of heuristics in negotiation. *Personality and Social Psychology Bulletin*, *25*, 348-362.

De Dreu, C. K. W., Nijstad, B. A., & van Knippenberg, D. (2008). Motivated information processing in group judgment and decision making. *Personality and Social Psychology Review*, *12*, 22-49.

De Dreu, C. K. W., & Van Knippenberg, D. (2005). The possessive self as a barrier to conflict resolution: Effects of mere ownership, process accountability, and self-concept clarity on competitive cognitions and behavior. *Journal of Personality and Social Psychology*, *89*, 345-357.

*De Dreu, C. K. W., & Van Vianen, A. E. M. (2001). Managing relationship conflict and the effectiveness of organizational teams. *Journal of Organizational Behavior*, *22*, 309-328.

De Dreu, C. K. W., & Weingart, L. R. (2003a). A contingency theory of task conflict and performance in groups and organizational teams. In M.West, D.Tjosvold, & K. G.Smith (Eds.) , *International handbook of organizational teamwork and cooperative working* (pp. 151-166). Chichester, England: Wiley.

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

De Dreu, C. K. W., Weingart, L. R., & Kwon, S. (2000). Influence of social motives on integrative negotiation: A meta-analytic review and test of two theories. *Journal of Personality and Social Psychology, 78*, 889-905.

*De Dreu, C. K. W., & West, M. A. (2001). Minority dissent and team innovation: The importance of participation in decision making. *Journal of Applied Psychology*, *86*, 1191-1201.

Dembroski, T. M., Schmidt, T. H., & Blumchen, G. (1983). *Biobehavioral bases of behavior*. New York: Karger.

*Desivilya, H. S., & Yagil, D. (2005). The role of emotions in conflict management: The case of work teams. *International Journal of Conflict Management*, *16*, 55-69. doi: 10.1108/eb022923

*De Vries, B. (1998). *Interdependentie en conflict: Het belang voor interne commuicatie en teamproductiviteit* [Interdependence and conflict: The relevance for internal communication and team productivity] (Unpublished master's thesis). University of Amsterdam, Amsterdam, the Netherlands.

De Wit, F. R. C., Greer, L. L., & Jehn, K. A. (2012). The Paradox of Intragroup Conflict: A Meta-Analysis. *Journal of Applied Psychology, 97*, 360-390.

De Wit, F. R. C., Jehn, K. A., & Scheepers, D. (2012). *Coping with intragroup conflict: Why a threat state during a task conflict may be detrimental for group decision-making.* Unpublished manuscript, Institute for Psychological Research, Leiden University, Leiden, the Netherlands.

De Wit, F. R. C., Scheepers, D. T., & Jehn, K. A. (2012). Cardiovascular reactivity and resistance to opposing viewpoints during intragroup conflict. *Psychophysiology*, *49*, 1691-1699.

Deutsch, M. (1973). *The resolution of conflict: Constructive and destructive processes*. Yale University Press, New Haven, CT.

Digital Signal Processing Committee (1979). *Programs for digitial signal processing*. New York: IEEE Press.

Dijkstra, M. T. M., Van Dierendonck, D., & Evers, A. (2005). Responding to conflict at work and individual well-being: The mediating role of flight behaviour and feelings of helplessness. *European Journal of Work and Organizational Psychology*, *14*, 119-135.

Drake, L. (1995). Negotiation styles in intercultural communication. *International Journal of Conflict Management*, *6*, 72-90.

Duffy, M. K., Shaw, J. D., & Stark, E. M. (2000). Performance and satisfaction in conflicted interdependent groups: When and how does self-esteem make a difference? *Academy of Management Journal*, *43*, 772-782.

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, *44*, 350 –383.

Eisenhardt, K. M., Kahwajy, J. L., & Bourgeois, L. J. (1997). How management teams can have a good fight. *Harvard Business Review*, *75*, 77-85.

Eisenhardt, K. M., & Schoonhoven, C. B. (1990). Organizational growth: Linking founding team, strategy, environment, and growth among US semiconductor ventures, 1978-1988. *Administrative Science Quarterly*, *35*, 504-529.

*Elron, E. (1997). Top management teams within multinational corporations: Effects of cultural heterogeneity. *Leadership Quarterly*, *8*, 393-412.

*Ensley, M. (2006). Family businesses can out-compete: As long as they are willing to question the chosen path. *Entrepreneurship Theory and Practice*, *30*, 747-754.

*Ensley, M. D., & Hmieleski, K. A. (2005). A comparative study of new venture top management team composition, dynamics and performance between university-based and independent start-ups. *Research Policy*, *34*, 1091-1105.

*Ensley, M. D., Pearson, A. W., & Amason, A. C. (2002). Understanding the dynamics of new venture top management teams: Cohesion, conflict and new venture performance. *Journal of Business Venturing*, *17*, 365-386.

*Ensley, M. D., Pearson, A. W., & Sardeshmukh, S. R. (2007). The negative consequences of pay dispersion in family and non-family top management teams: An exploratory analysis of new venture, high-growth firms. *Journal of Business Research*, *60*, 1039-104

Evan, W. (1965). Conflict and performance in R&D organizations. *Industrial Management Review*, *7*, 37-46.

*Farh, J. L., Lee, C., & Farh, C. I. C. (2010). Task conflict and team creativity: A question of how much and when. *Journal of Applied Psychology*, *95*, 1173-1180.

Ferris, G. R., Judge, T. A., Rowland, K. M., & Fitzgibbons, D. E. (1994). Subordinate influence and the performance evaluation process: Test of a model. *Organizational Behavior and Human Decision Processes*, *58*, 101-135.

Fischer, P., Kastenmüller, A., Greitemeyer, T., Fischer, J., Frey, D., & Crelley, D. (2011). Threat and Selective Exposure: The Moderating Role of Threat

and Decision Context on Confirmatory Information Search after Decisions. *Journal of Experimental Psychology: General*, *140*, 1, 51-62.

Fisher, R., & Ury, W. (1981). *Getting to yes: Negotiating agreement without giving in*. Boston: Houghton Mifflin.

Frijda, N. H. (1993). The place of appraisal in emotion. *Cognition and Emotion*, *7*, 357-387.

Fu, J. H. Y., Morris, M. W., Lee, S. L., Chao, M., Chiu, C. Y., & Hong, Y. Y. (2007). Epistemic motives and cultural conformity: Need for closure, culture, and context as determinants of conflict judgments. *Journal of Personality and Social Psychology*, *92,* 191-207.

Gabrielidis, C., Stephan, W. G., Ybarra, O., Pearson, V. M. D., & Villareal, L. (1997). Preferred styles of conflict resolution: Mexico and the United States. *Journal of Cross-Cultural Psychology*, *28*, 661-677.

Galbraith, J. R. (1973). *Designing complex organizations*. Reading, MA: Addison-Wesley.

*Gamero, N., González-Romá, V., & Peiró, J. M. (2008). The influence of intra-team conflict on work teams' affective climate: A longitudinal study. *Journal of Occupational and Organizational Psychology*, *81*, 47-69.

Gardner, D. B. (1998). *Effects of conflict types and power style use among health professionals in interdisciplinary team collaboration* (Unpublished doctoral dissertation). George Mason University, Fairfax, VA.

Gelfand, M. J., Nishii, L. H., Holcombe, K., Dyer, N., Ohbuchi, K., & Fukumo, M. (2001). Cultural influences on cognitive representations of conflict: Interpretations of conflict episodes in the United States and Japan. *Journal of Applied Psychology*, *86*, 1059-1074.

Gersick, C. J. G. (1988). Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*, *31*, 9-41.

Gladstein, D. L. (1984). A model of task group effectiveness. *Administrative Science Quarterly*, *29*, 499-517.

Gladstein, D. B., & Reilly, N. P. (1985). Group decision-making under threat: The tycoon game. *Academy of Management Journal*, *28,* 613-627.

Gino, F., & Moore, D. A. (2007). Effects of task difficulty on use of advice. *Journal of Behavioral Decision Making*, *20*, 21-35.

*Goncalo, J. A., Polman, E., & Maslach, C. (2010). Can confidence come too soon? Collective efficacy, conflict and group performance over time. *Organizational Behavior and Human Decision Processes*, *113*, 13-24.

Greer, L. L., Caruso, H. M., & Jehn, K. A. (2011). The bigger they are, the harder they fall: Linking team power, conflict, congruence, and team performance. *Organizational Behavior and Human Decision Processes*, *116*, 116-128

Greer, L. L., & Jehn, K. A. (2007). The pivotal role of emotion in intragroup process conflict: An examination of the nature, causes, and effects of process conflict. *Research on Managing Groups and Teams*, *10*, 23-45.

*Greer, L. L., Jehn, K. A., & Lytle, A. (2009, August). *Who's fighting? The effects of intragroup conflict involvement on team outcomes*. Paper presented at the conference of the Academy of Management, Chicago, IL.

Greer, L. L., Jehn, K. A., & Mannix, E. A. (2008). Conflict transformation: An exploration of the inter-relationships between task, relationship, and process conflict. *Small Group Research*, *39*, 278-302.

*Greer, L. L., Jehn, K. A., & Thatcher, S. M. B. (2011). *Faultline token-splits: Effects on conflict and performance*. Unpublished manuscript, Work and Organizational Psychology, University of Amsterdam, Amsterdam, the Netherlands.

*Greer, L. L., Jehn, K. A., Thatcher, S. M. B., & Mannix, E. A. (2011). *The effect of trust on conflict and performance in groups split by demographic faultlines*. Unpublished manuscript, Work and Organizational Psychology, University of Amsterdam, Amsterdam, The Netherlands.

Greer, L. L., & van Kleef, G. A. (2010). Equality versus differentiation: The effects of power dispersion on social interaction. *Journal of Applied Psychology*, *95*, 1032-1044.

Greitemeyer, T., & Schulz-Hardt, S. (2003). Preference-consistent evaluation of information in the hidden profile paradigm: Beyond group-level explanations for the dominance of shared information in group decisions. *Journal of Personality and Social Psychology, 84,* 322-339.

Guetzkow, H., & Gyr, J. (1954). An analysis of conflict in decision-making groups. *Human Relations*, *7*, 367-381.

Hackman, J. R., & Wageman, R. (2005). A theory of team coaching. *Academy of Management Review*, *30*, 269-287.

Halevy, N., Chou, E., Galinsky, A.D. (2012). Exhausting or exhilarating? Conflict as threat to interests, relationships and identities. *Journal of Experimental Social Psychology*, *48*, 530-537.

Hambrick, D. C. (1994). Top management groups: A conceptual integration and reconsideration of the "team" label. In L. L.Cummings & B. M.Staw (Eds.) , *Research in organizational behavior* (*Vol. 16*, pp. 171-213). Greenwich, CT: JAI Press.

Harrington, R., Lemak, D., & Kendall, K. W. (2002). The threat-rigidity thesis in newly formed teams: An empirical test. *Journal of Business and Management*, *8*, 127-145.

Hart, W., Albarracín, D., Eagly, A. H., Lindberg, M. J., Merrill, L., & Brechan, I. (2009). Feeling validated versus being correct: A meta-analysis of selective exposure to information. *Psychological Bulletin, 135,* 555-588.

Harvey, N., & Fischer, I. (1997). Taking advice: Accepting help, improving judgment, and sharing responsibility. *Organizational Behavior and Human Decision Processes*, *70*, 117- 133.

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. San Diego, CA: Academic Press.

Herbert, T. T., & Estes, R. W. (1977). Improving executive decisions by formalizing dissent: the corporate devil's advocate. *Academy of Management Review*, *2*, 662-667.

Heugens, P. P. M. A. R., & Lander, M. W. (2009). Structure! Agency! (and other quarrels): A meta-analysis of institutional theories of organization. *Academy of Management Journal*, *52*, 61-85.

*Hinds, P. J., & Mortensen, M. (2005). Understanding conflict in geographically distributed teams: The moderating effects of shared identity, shared context, and spontaneous communication. *Organization Science*, *16*, 290-307.

Hofstede, G. (2001). *Culture's consequences: Comparing, values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks, CA: Sage.

*Homan, A. C., Van Knippenberg, D., Van Kleef, G. A., & De Dreu, C. K. W. (2007). Interacting dimensions of diversity: Cross-categorization and the functioning of diverse work groups. *Group Dynamics: Theory, Research, and Practice*, *11*, 79-94.

*Hsu, J.-L., Chou, H.-W., Hwang, W.-Y., & Chou, S.-B. (2008). A two-dimension process in explaining learners' collaborative behaviors in CSCL. *Educational Technology & Society*, *11*, 66-80.

Hunter, S. B. (2001). *Performance under pressure: The impact of challenge and threat states on information processing* (Doctoral dissertation, University of California, Santa Barbara, 2001). Dissertation Abstracts International, 61, 6187.

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Beverly Hills, CA: Sage.

Hunter, J. E., & Schmidt, F. L. (2000). Fixed effects vs. random effects meta-analysis models: Implications for cumulative knowledge in psychology. *International Journal of Selection Assessment*, *8*, 275-292.

Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). Thousand Oaks, CA: Sage.

Isen, A. M., Shalker, T. E., Clark, M. S., & Karp, L. (1978). Affect, accessibility of material in memory, and behavior: A cognitive loop? *Journal of Personality and Social Psychology*, *36*, 1-12.

Janis, I. L. (1972). *Victims of groupthink*. Boston, MA: Houghton-Miffin.

*Janssen, O., Van de Vliert, E., & Veenstra, C. (1999). How task and person conflict shape the role of positive interdependence in management groups. *Journal of Management*, *25*, 117-141.

*Jehn, K. A. (1994). Enhancing effectiveness: An investigation of advantages and disadvantages of value-based intragroup conflict. *International Journal of Conflict Management*, *5*, 223-238.

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

Jehn, K. A. (1997). Qualitative analysis of conflict types and dimensions in organizational groups. *Administrative Science Quarterly*, *42*, 530-557.

Jehn, K. A., & Bendersky, C. (2003). Intragroup conflict in organizations: A contingency perspective. *Research in Organizational Behavior*, *25*, 189-244.

*Jehn, K. A., & Bezrukova, K. (2007). *The effects of faultline activation on coalition formation, conflict, and group outcomes*. Unpublished manuscript, Institute for Psychological Research, Leiden University, Leiden, the Netherlands.

*Jehn, K. A., Chadwick, C., & Thatcher, S. M. B. (1997). To agree or not agree: The effects of value congruence, member diversity, and conflict on workgroup outcomes. *International Journal of Conflict Management*, *8*, 287-305.

Jehn, K. A., & Chatman, J. A. (2000). The influence of proportional and perceptual conflict composition on team performance. *The International Journal of Conflict Management*, *11*, 56-73.

*Jehn, K. A., Greer, L. L., Levine, S., & Szulanski, G. (2008). The effects of conflict types, dimensions, and emergent states on group outcomes. *Group Decision and Negotiation*, *17*, 465-495.

*Jehn, K. A., & Mannix, E. A. (2001). The dynamic nature of conflict: A longitudinal study of intragroup conflict and group performance. *Academy of Management Journal*, *44*, 238-251.

*Jehn, K. A., Northcraft, G., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly*, *44*, 741-763.

Jehn, K. A., Rispens, S., & Thatcher, S. (2010). The effects of conflict asymmetry on workgroup and individual outcomes. *Academy of Management Journal*, *53*, 596-616.

*Jordan, P. J., & Troth, A. C. (2004). Managing emotions during team problem solving: Emotional intelligence and conflict resolution. *Human Performance*, *17*, 195-218.

*Jules, C. (2007). *Diversity of member composition and team learning in organizations* (Unpublished doctoral dissertation). Case Western Reserve University, Cleveland, OH.

Kamphuis, W. (2010). *Teams under threat: Uncovering and overcoming rigidity effects* (Unpublished dissertation), Tilburg University, Tilburg, The Netherlands.

Kamphuis, W., Gaillard, A. W. K., & Vogelaar, A. L. W. (2011). The effects of physical threat on team processes during complex task performance. *Small Group Research*, *42*, 700-729.

Kassam, K. S., Koslov, K., & Mendes, W. B. (2009). Decisions under distress: Stress profiles influence anchoring and adjustment. *Psychological Science*, *20*, 1394-1399.

Klein, J. (2008, June 18). Obama's Team of Rivals. *Time Magazine*. Retrieved from http://www.time.com/time/politics/article/0,8599,1815849,00.html.

*Konradt, U., Andreßen, P., & Ellwart, T. (2009). Self leadership in organizational teams: A multilevel analysis of moderators and mediators. *European Journal of Work and Organizational Psychology*, *18*, 322-346.

Korsgaard, A. M., Jeong, S. S., Mahony, D. M., & Pitariu, A. H. (2008). A multilevel view of intragroup conflict. *Journal of Management*, *34*, 1222-1252.

Kramer, R.M. (1998). Revisiting the Bay of Pigs and Vietnam decisions 25 years later: How well has the Groupthink hypothesis stood the test of time? *Organizational Behavior and Human Decision Processes*, *73*, 236-271.

Kubicek, W. G., Karnegis, J. N., Patterson, R. P., Witsoe, D. A., & Mattson, R. H. (1966). Development and evaluation of an impedance cardiograph system. *Aerospace Medicine*, *37*, 1208-1212.

*Kurtzberg, T. R. (2000). *Creative styles and teamwork: Effects of coordination and conflict on group outcomes* (Unpublished doctoral dissertation). Northwestern University, Evanston, IL.

*Langfred, C. W. (2007). The downside of self-management: A longitudinal study of the effects of conflict on trust, autonomy, and task interdependence. *Academy of Management Journal*, *50*, 1217-1234.

Lau, R. S., & Cobb, A. T. (2010). Understanding the connections between relationship conflict and performance: The intervening roles of trust and exchange. *Journal of Organizational Behavior*, *31*, 898-917.

*Lau, D., & Murnighan, J. K. (2005). Interaction within teams and subgroups: The effects of demographic faultlines. *Academy of Management Journal*, *48*, 645-659.

Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McGraw-Hill.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York, NY: Springer.

Lazear, E. P., & Rosen, S. (1981). Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, *89*, 841-864.

*Leslie, L. M. (2007). *Putting differences in context: Incorporating the role of status and cooperation into work unit ethnic composition research* (Unpublished doctoral dissertation). University of Maryland, College Park, MD.

Leung, K., Bond, M. H., Carment, D. W., Krishnan, L., & Liebrand, W. B. G. (1990). Effects of cultural femininity on preference for methods of conflict processing: A cross-cultural study. *Journal of Experimental Social Psychology*, *26*, 373-388.

*Li, J. T., & Hambrick, D. C. (2005). Factional groups: A new vantage on demographic faultlines, conflict, and disintegration in work teams. *Academy of Management Journal*, *485*, 794-813.

*Liang, T. P., Liu, C. C., Lin, T. M., & Lin, B. (2007). Effect of team diversity on software project performance. *Industrial Management & Data Systems*, *107*, 636-653.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

*Lira, E. M., Ripoll, P., Peiró, J. M., & González, P. (2007). The roles of group potency and information and communication technologies in the relationship between task conflict and team effectiveness: A longitudinal study. *Computers in Human Behavior*, *23*, 2888-2903.

*Liu, J., Fu, P., & Liu, S. (2009). Conflict in top management teams and team/firm outcomes: The moderating effect of conflict-handling approaches. *International Journal of Conflict Management*, *20*, 228-250.

*Lovelace, K., Shapiro, D. L., & Weingart, L. R. (2001). Maximizing cross-functional new product teams' innovativeness and constraint adherence: A conflict communications perspective. *Academy of Management Journal*, *44*, 779-783.

Lozano, D. L., Norman, G., Knox, D., Wood, B. L., Miller, B. D., Emery, C. F., et al. (2007). Where to b in dz/dt. *Psychophysiology*, *44*, 113−117.

Lücken, M, & Simon, B. (2005). Cognitive and affective experiences of minority and majority members: The role of group size, status, and power. *Journal of Experimental Social Psychology, 41*, 396-413.

*Mannes, A. E. (2009). *An integrative solution to the conflict over conflict* (Unpublished doctoral dissertation). Duke University, Durham, NC.

Markman, H. J., Renick, M. J., Floyd, F. J., Stanley, S. M., & Clements, M. (1993). Preventing marital distress through communication and conflict management training: A 4- and 5-year follow-up. *Journal of Consulting and Clinical Psychology*, *61*, 70-77.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, *26*, 356-376.

Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotions and motivation. *Psychological Review*, *98*, 224-253.

*Martínez-Moreno, E., González-Navarro, P., Zornoza, A., & Ripoll, P. (2009). Relationship, task and process conflicts on team performance: The moderating role of communication media. *International Journal of Conflict Management*, *20*, 251-268.

Matsuo, M. (2006). Customer orientation, conflict, and innovativeness in Japanese sales departments. *Journal of Business Research*, *59*, 242-250.

Mayer, J. D., Gaschke, Y. N., Braverman, D. L., & Evans, T. W. (1992). Mood-congruent judgment is a general effect. *Journal of Personality and Social Psychology*, *63*, 119-132.

McGrath, J. E. (1984). *Groups: Interaction and performance*. Englewood Cliffs, NJ: Prentice-Hall.

Mendes, W. B., Blascovich, J., Hunter, S., Lickel, B., & Jost, J. T. (2007). Threatened by the unexpected: Physiological responses during social interactions with expectancy-violating partners. *Journal of Personality and Social Psychology*, *92*, 698-716.

Mendes, W. B., Reis, H.T., Seery, M., & Blascovich, J. (2003). Cardiovascular correlates of emotional disclosure and suppression: Do content and gender context matter. *Journal of Personality and Social Psychology, 84,* 771-792.

*Menon, A., Bharadwaj, S. G., & Howell, R. (1996). The quality and effectiveness of marketing strategy: Effects of functional and dysfunctional conflict in intraorganizational relationships. *Journal of the Academy of Marketing Science*, *244*, 299-313.

*Minichilli, A., Zattoni, A., & Zona, F. (2008). Making boards effective: An empirical examination of board task performance. *British Journal of Management*, *20*, 55-74.

Mintzherg, H., Raisinghani, D., & Theoret, A. (1976). The structure of "unstructured" decision processes. *Administrative Science Quarterly, 21*, 246-275.

*Mohammed, S., & Angell, L. C. (2004). Surface- and deep-level diversity in workgroups: Examining the moderating effects of team orientation and team process on relationship conflict. *Journal of Organizational Behavior*, *25*, 1015-1039.

Mooney, A. C., Holahan, P. J., & Amason, A. C. (2007). Don't take it personally: Exploring cognitive conflict as a mediator of affective conflict. *Journal of Management Studies*, *44*, 733-758.

*Mortensen, M. (2004). *Antecedents and consequences of team boundary disagreement*. Unpublished manuscript, Faculty of Management, McGill University, Montreal, Quebec, Canada.

*Mortensen, M., & Hinds, P. J. (2001). Conflict and shared identity in geographically distributed teams. *International Journal of Conflict Management*, *123*, 212-238.

*Moye, N. A., & Langfred, C. W. (2004). Information sharing and group conflict: Going beyond decision making to understand the effects of information sharing on group performance. *International Journal of Conflict Management*, *154*, 381-410.

Mullen, B., Anthony, T., Salas, E. & Driskell, J.E. (1994). Group cohesivness and quality of decision making: An integration of tests of the groupthink hypothesis. *Small Group Research*, *25*, 189-204.

Murnighan, J. K., & Conlon, D. J. (1991). The dynamics of intense work groups: A study of British string quartets. *Administrative Science Quarterly*, *36*, 165-186.

Nauta, A., & Molleman, E. (2001). *Team conflict and team performance*. Unpublished raw data.

Narayanan, L., Menon, S., & Spector, P. E. (1999b). Stress in the workplace: A comparison of gender and occupations. *Journal of Organizational Behavior*, *20*, 63-73.

Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior*, *27*, 941–966.

Nemeth, C. (1995). Dissent as driving cognition, attitudes and judgments. *Social Cognition*, *13*, 273-291.

Newton, T. L., & Sanford, J. M. (2003). Conflict structure moderates associations between cardiovascular reactivity and negative marital interaction. *Health Psychology*, *22*, 270-278.

*Nguyen, R. V. (2007). *Conflict in functionally diverse teams* (Unpublished doctoral dissertation). Claremont Graduate University, Claremont, CA.

*Nibler, R., & Harris, K. L. (2003). The effects of culture and cohesiveness on intragroup conflict and effectiveness. *Journal of Social Psychology*, *143*, 613-631.

Nijdam, N. E. (1998). *The functioning of work teams* (Unpublished master's thesis). University of Amsterdam, Amsterdam, the Netherlands.

*Okhuysen, G. A., & Jehn, K. (2000, August). *The interplay of conflict types, group process, and group task: An examination of the temporal effects of intra-group conflict*. Paper presented at the conference of the Academy of Management, Washington, DC.

*Oliver, J., Poling, T. L., & Woehr, D. J. (2008, August). *A multilevel examination of the relationship of intra-team conflict with team viability*. Paper presented at the conference of the Academy of Management, Anaheim, CA.

Olson, B. J., Parayitam, S., & Bao, Y. (2007). Strategic decision making: The effects of cognitive diversity, conflict, and trust on decision outcomes. *Journal of Management*, *33*, 196-222.

*Papenhausen, C. (2006). Half full or half empty: The effects of top managers' dispositional optimism on strategic decision-making and firm performance. *Journal of Behavioral and Applied Management*, *7*, 103-115.

*Parayitam, S., & Dooley, R. S. (2007). The relationship between conflict and decision outcomes: Moderating effects of cognitive- and affect-based trust in strategic decision-making teams. *International Journal of Conflict Management*, *18*, 42-73.

*Parayitam, S., Olson, B. J., & Bao, Y. (2010). Task conflict, relationship conflict and agreement seeking behavior in Chinese top management teams. *International Journal of Conflict Management*, *21*, 94-116.

Park, W. W. (1990). A review of research on groupthink. *Journal of Behavioral Decision Making, 3*, 229–245.

*Parry, M. E., Song, M., & Spekman, R. E. (2008). Task conflict, integrative potential, and conflict management strategies in joint ventures. *IEEE Transactions on Engineering Management*, *55*, 201-218.

*Passos, A., & Caetano, A. (2005). Exploring the effects of intragroup conflict and past performance feedback on team effectiveness. *Journal of Managerial Psychology*, *20*, 231-244.

*Patrick, R. R. (1997). *Teams and conflict management style: The moderating effect of conflict management style on the relationship between the type of conflict and team effectiveness in continuous work teams* (Unpublished doctoral dissertation). University of Nebraska, Lincoln, NE.

Paulus, P. B., & Dzindolet, M. T. (1993). Social Influence Processes in Group Brainstorming, *Journal of Personality and Social Psychology, 64*, 575-586.

Pelled, L. H. (1996). Demographic diversity, conflict, and work team outcomes: An intervening process theory. *Organization Science*, *7*, 615-631.

*Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work team diversity, conflict, and performance. *Administrative Science Quarterly*, *44*, 1-28.

*Peterson, R. S., & Behfar, K. J. (2003). The dynamic relationship between performance feedback, trust, and conflict in groups: A longitudinal study. *Organizational Behavior and Human Decision Processes*, *92*, 102-112.

Pinkley R. L. (1990). Dimensions of conflict frame: disputant interpretations of conflict. *Journal of Applied Psychology, 75*, 117-26.

*Polzer, J. T., Crisp, C. B., Jarvenpaa, S. L., & Kim, J. W. (2006). Extending the faultline model to geographically dispersed teams: How co-located subgroups can impair group functioning. *Academy of Management Journal*, *49*, 679-692.

*Polzer, J. T., Milton, L. P., & Swann, W. B. (2002). Capitalizing on diversity: Interpersonal congruence in small work groups. *Administrative Science Quarterly*, *47*, 296-324.

Pondy, L. R. (1967). Organizational conflict: Concepts and models. *Administrative Science Quarterly*, *12*, 296-320.

*Porter, T. W., & Lilly, B. S. (1996). The effects of conflict, trust, and task commitment on project team performance. *International Journal of Conflict Management*, *7*, 361-376.

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers*, *36*, 717-731.

Priem, R., & Price, K. (1991). Process and outcome expectations for the dialectical inquiry, devil's advocacy, and consensus techniques of strategic decision making. *Group and Organization Studies*, *16*, 206-225.

*Quigley, N. R., Tekleab, A. G., & Tesluk, P. E. (2007). Comparing consensus- and aggregation-based methods of measuring team-level variables: The role of relationship conflict and conflict management processes. *Organizational Research Methods*, *10*, 589-608.

Rahim, M. A. (1983). A measure of styles of handling interpersonal conflict. *Academy of Management Journal, 26,* 368-376.

*Raver, J. L., & Gelfand, M. J. (2005). Beyond the individual victim: Linking sexual harassment, team processes, and team performance. *Academy of Management Journal*, *48*, 387-400.

*Raver, J. L., & van Knippenberg, D. (2007, April). Openness to diversity and the informational benefits of gender diversity. In J. L.Raver & D.van Knippenberg (Chairs), *Work group diversity: Sophisticated conceptualizations, task-relevant characteristics, and multilevel perspectives.* Symposium conducted at the annual conference of the Society for Industrial and Organizational Psychology, New York, NY.

Riketta, M. (2008). The causal relation between job attitudes and performance: A meta-analysis of panel studies. *Journal of Applied Psychology*, *93*, 472-481.

*Rispens, S., Greer, L. L., & Jehn, K. A. (2007). It could be worse: A study on the alleviating roles of trust and connectedness in intragroup conflicts. *International Journal of Conflict Management*, *18*, 325-344.

*Rispens, S., Greer, L. L., Jehn, K. A., & Thatcher, S. M. B. (2007). *Bring it on! The positive influence of liking and understanding in relationship conflicts*. Unpublished manuscript, Institute for Psychological Research, Leiden University, Leiden, the Netherlands.

Rispens, S., Greer, L., Jehn, K. A. and Thatcher, S. M. B. (2011). Not so bad after all: How relational closeness buffers the association between relationship conflict and helpful and deviant group behaviors. *Negotiation and Conflict Management Research*, *4*, 277-296.

Robinson, W. (1950). Ecological correlations and the behavior of individuals. *American Sociological Review*, *15*, 351-357.

Rothstein, H. R., Sutton, A. J., & Borenstein, M. (2005). *Publication bias in meta-analysis: Prevention, assessment and adjustments*. Sussex, England: Wiley.

Rubin, J. Z., Pruitt, D. G., & Kim, S. H. (1994). *Social conflict; Escalation, stalemate, and settlement* (2nd ed.). New York: McGraw-Hill, Inc..

*Rupert, J., & Jehn, K. A. (2009a, August). *Subgroup perceptions, conflict, and team learning*. Paper presented at the conference of the International Association of Conflict Management, Chicago, IL.

*Rupert, J., & Jehn, K. A. (2009b). *When subgroups fuse and divide: Effects of faultlines on team learning and performance*. Unpublished manuscript, Institute for Psychological Research, Leiden University, Leiden, the Netherlands.

*Rupert, J., & Meurs, B. (2007). *Is het geheel meer dan de som der delen? De invloed van sociaal categorische en informationele breuklijnen op de prestatie van professionele voetbalteams* [Is the whole more than the sum of the parts? The influence of social category and informational faultlines on the performance of professional soccer teams] (Unpublished master's thesis). Leiden University, Leiden, the Netherlands.

Rutjens, B. T., Van Harreveld, F., & Van der Pligt, J. (2010). Yes we can: belief in progress as compensatory control. *Social Psychological and Personality Science*, *1*, 246-252.

Sanchez-Burks, J., Neuman, E. J., Ybarra, O., Kopelman, S., Park, H., & Goh, K. (2008). Folk wisdom about the effects of relationship conflict. *Negotiation and Conflict Management Research*, *1*, 53-76.

Schaer, M., Bodenmann, G., & Klink, T. (2008). Balancing work and relationship: Couples coping enhancement training (CCET) in the workplace. *Applied Psychology: An International Review*, *57*, 71-89.

Schmidt, F. L., & Le, H. (2004). *Software for the Hunter-Schmidt meta-analysis methods*. Iowa City: Department of Management and Organization, University of Iowa.

Schneider, T. R. (2004). The role of neuroticism on psychological and physiological stress responses. *Journal of Experimental Social Psychology*, *40*, 795-804.

Scholten, L., Van Knippenberg, D., Nijstad, B. A., & De Dreu, C. K.W. (2007). Motivated information processing and group decision-making: Effects of process accountability and information dissemination. *Journal of Experimental Social Psychology*, *43*, 539-552.

Schulz-Hardt, S., Brodbeck, F. C., Mojzisch, A., Kerschreiter, R., & Frey, D. (2006). Group decision-making in hidden profile situations: Dissent as a facilitator for decision quality. *Journal of Personality and Social Psychology*, *91*, 1080-1093.

Schwarz, N., & Bohner, G. (1996). Feelings and their motivational implications: Moods and the action sequence. In P. M.Gollwitzer & J. A.Bargh (Eds.) , *The psychology of action: Linking cognition and motivation to behavior* (pp. 119-145). New York, NY:

Schweiger, D., Sandberg, W., & Ragan, J. (1986). Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy, and consensus approaches to strategic decision making. *Academy of Management Journal*, *29*, 51-71.

Schweiger, D. M., Sandberg, W. R., & Rechner, P. L. (1989). Experiential effects of dialectical inquiry, devil's advocacy, and consensus approaches to strategic decision making. *Academy of Management Journal*, *32*, 745-772.

Schwenk, C. R. (1984). Devil's advocacy in managerial decision making. *Journal of Management Studies*, *21*, 153-168.

Schwenk, C. R. (1990). Effects of devil's advocacy and dialectical inquiry on decision making: A meta-analysis. *Organizational Behavior and Human Decision Processes*, *47*, 161-176.

Schwenk, C. R., & Cosier, R. A. (1993). The effects of consensus and devil's advocacy on strategic decision-making. *Journal of Applied Social Psychology*, *23*, 126-139.

Schwenk, C. R., & Valacich, J. S. (1994). Effects of devil's advocacy and dialectical inquiry on individuals versus groups. *Organizational Behavior and Human Decision Processes*, *59*, 210-222.

See, K. E., Morrison, E. W., Rothman, N. B. & Soll, J. B. (in press). The detrimental effects of power on confidence, advice taking, and accuracy. *Organizational Behavior and Human Decision Processes*, *116*, 272-285

Seery, M. D., Weisbuch, M., Hetenyi, M. A., & Blascovich, J. (2010). Cardiovascular measures independently predict performance in a university course. *Psychophysiology*, *47*, 535-539.

*Sempere, J., González-Romá, V., & Peiró, J. M. (2007, May). *Diversity and performance in work teams: Testing some hypotheses from the categorization-elaboration*. Poster session presented at the 13th European Congress of Work and Organizational Psycholog

*Sessa, V. I. (1993). *Conflict within small decision-making and problem solving teams: A process model* (Unpublished doctoral dissertation). New York University, New York, NY.

Shaw, J. D., Zhu, J., Duffy, M. K., Scott, K. L., Shih, H. A., & Susanto, E. (2011). A contingency model of conflict and team effectiveness. *Journal of Applied Psychology*, *96*, 391-400.

Sherwood, A., Allen, M. T., Fahrenberg, J., Kelsey, R. M., Lovallo, W. R., & van Dooren, L. J. P. (1990). Methodological guidelines for impedance cardiography. *Psychophysiology*, *27*, 1-23.

Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, *7*, 422-445.

*Simons, T., Pelled, L. H., & Smith, K. A. (1999). Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal*, *42*, 662-673.

*Simons, T. L., & Peterson, R. S. (2000). Task conflict and relationship conflict in top management teams: The pivotal role of intragroup trust. *Journal of Applied Psychology*, *85*, 102-111.

Sniezek, J. A., & Van Swol, L. M. (2001). Trust, confidence, and expertise in a judge-advisor system. *Organizational Behavior and Human Decision Processes*, *84*, 288-307.

Spector, P. E., & Jex, S. M. (1998). Development of four self-report measures of job stressors and strain: Interpersonal Conflict at Work Scale, Organizational Constraints Scale, Quantitative Workload Inventory, and Physical Symptoms Inventory. *Journal of Occupational Health Psychology, 3,* 356-367.

*Stalmeijer, R. E., Gijselaers, W. H., Wolfhagen, I. H. A. P., Harendza, S., & Scherpbier, A. J. J. A. (2007). How interdisciplinary teams can create multi-disciplinary education: The interplay between team processes and educational quality. *Medical Education*, *41*, 1059-1066.

*Stark, E. M., & Bierly, P. E., III. (2009). An analysis of predictors of team satisfaction in product development teams with differing levels of virtualness. *R&D Management*, *39*, 461-472.

Stasser, G. (1992). Pooling of unshared information during group discussion. In S. Worchel, W. Wood, & A. Simpson (Eds.), *Group process and productivity* (pp. 48-67). Newbury Park, CA: Sage.

Stasser, G., & Titus, W. (1985). Pooling of unshared information in group decision-making: Biased information sampling during discussion. *Journal of Personality and Social Psychology*, *48*, 1467-1478.

Staw, B. M., Sandelands, L. E., & Dutton, J. E. (1981). Threat-rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, *26*, 501-524.

Steel, P. D., & Kammeyer-Mueller, J. D. (2002). Comparing meta analytic moderator estimation techniques under realistic conditions. *Journal of Applied Psychology*, *87*, 96-111.

Stucke, T. S., & Spore, S. L. (2002). When a grandiose self-image is threatened: Narcissism and self-concept clarity as predictors of negative

emotions and aggression following ego-threat. *Journal of Personality, 70,* 509-532.

Suedfeld, P., Tetlock, P. E., & Streufert, S. (1992). Conceptual/integrative complexity. In C. P. Smith, J. W. Atkinson, D. C. McClelland, & J. Veroff (Eds.), *Motivation and personality: Handbook of thematic content analysis* (pp. 393–400). New York: Cambridge University Press.

Swann, W. B., Jr., Polzer, J. T., Seyle, D. C., & Ko, S. J. (2004). Finding value in diversity: Verification of personal and social self-views in diverse groups. *Academy of Management Review*, *29*, 9-27.

*Talaulicar, T., Grundei, J., & van Werder, A. (2005). Strategic decision making in start-ups: The effect of top management team organization and processes on speed and comprehensiveness. *Journal of Business Venturing*, *20*, 519-541.

Tekleab, A. G., Quigley, N. R., & Tesluk, P. E. (2009). A longitudinal study of team conflict, conflict management, cohesion, and team effectiveness. *Group & Organizational Management*, *34*, 170-205.

*Thatcher, S. M. B., Jehn, K. A., & Chadwick, C. (2007). *What makes a difference? The impact of individual demographic differences, group diversity, and conflict on individual performance*. Unpublished manuscript, Management Information Systems Department

*Thatcher, S. M. B., Jehn, K. A., & Zanutto, E. (2003). Cracks in diversity research: The effects of diversity faultlines on conflict and performance. *Group Decision and Negotiation*, *12*, 217-241.

Thórisdóttir, H., & Jost, J. T. (2011). Motivated Closed-Mindedness Mediates the Effect of Threat on Political Conservatism. *Political Psychology*, *32*, 785-811.

Tjosvold, D. (1998). Cooperative and competitive goal approach to conflict: Accomplishments and challenges. *Applied Psychology: An International Review, 46*, 285-342.

Tjosvold, D. (2008). The conflict-positive organization: It depends upon us. *Journal of Organizational Behavior*, *29*, 19-28.

*Tjosvold, D., Law, K. S., & Sun, H. (2006). Conflict in Chinese teams: Conflict types and conflict management approaches. *Management and Organization Review*, *2*, 231-252.

Toma, C., & Butera, F. (2009). Hidden profiles and concealed information: Strategic information sharing and use in group decision-making. *Personality and Social Psychology Bulletin, 35*, 793-806.

Tomaka, J., Blascovich, J., Kelsey, R. M., & Leitten, C. L. (1993). Subjective, physiological, and behavioral effects of threat and challenge appraisal. *Journal of Personality and Social Psychology*, *18*, 616-624.

Torrance, E. P. (1957). Group decision-making and disagreement. *Social Forces*, *35*, 314-318.

Turner, M.E. & Pratkanis, A.R. (1998). Theoretical perspectives on Groupthink: A twenty-fifth anniversary appraisal. *Organizational Behavior and Human Decision Processes*, *73*, 103-104.

Tushman, M. L., & Nadler, D. A. (1978). Information processing as an integrating concept in organizational design. *Academy of Management Review*, *3*, 613-624.

Uchino, B. N. (2006). Social Support and Health: A Review of Physiological Processes Potentially Underlying Links to Disease Outcomes. *Journal of Behavioral Medicine*, *29*, 377-387.

Van Kleef, G. A., & De Dreu, C. K. W. (2002). Social value orientation and impression formation: A test of two competing hypotheses about information search in negotiation. *International Journal of Conflict Management*, *13*, 59-77.

Van der Vegt, G. S., & Bunderson, J. S. (2005). Learning and performance in multidisciplinary teams: The importance of collective team identification. *Academy of Management Journal*, *48*, 532-547.

Van de Vliert, E., & De Dreu, C. K. W. (1994). Optimizing performance by conflict simulation. *International Journal of Conflict Management*, *5*, 211-222.

*Van Woerkom, M., & Van Engen, M. L. (2009). Learning from conflicts? The relations between task and relationship conflicts, team learning, and team performance. *European Journal of Work and Organizational Psychology*, *18*, 381-404.

*Vermeul, L. (1996). *Het functioneren van werkteams in organisaties: Een onderzoek naar de relatie tussen groepscohesie, conflict, prestatie en satisfactie* [The functioning of workteams in organizations: A study into the relations between group cohesion conflict, performance, and satisfaction] (Unpublished master's thesis). University of Amsterdam, Amsterdam, the Netherlands.

Viechtbauer, W. (2007). Accounting for heterogeneity via random-effects models and moderator analyses in meta-analysis. *Journal of Psychology*, *215*, 104-121.

Viechtbauer, W. (2010a). Conducting meta-analyses in R with the metafor package. *Journal of Statistical Software*, *36*, 1-48.

Viechtbauer, W. (2010b). Metafor meta-analysis package for R, Version 1.4-0 [Computer software]. Retrieved from http://CRAN.R-project.org/package=metafor.

Viechtbauer, W., & Cheung, M. (2010). Outlier and influence diagnostics for meta-analysis. *Research Synthesis Methods*, *1*, 112-125.

Viswesvaran, C., & Ones, D. S. (1995). Theory testing: Combining psychometric meta-analysis and structural equations modeling. *Personnel Psychology*, *48*, 865-885.

Viswesvaran, C., & Sanchez, J. I. (1998). Moderator search in meta-analysis: A review and cautionary note on existing approaches. *Educational and Psychological Measurement*, *58*, 77-87.

*Vodosek, M. (2007). Intragroup conflict as a mediator between cultural diversity and work group outcomes. *International Journal of Conflict Management*, *18*, 345-375.

*Wakefield, R. L., Leidner, D. E., & Garrison, G. (2008). A model of conflict, leadership, and performance in virtual teams. *Information Systems Research*, *19*, 434-455.

Wall, V. & Nolan, L. (1986). Perceptions of inequity, satisfaction, and conflict in task-oriented groups. *Human Relations*, *39*, 1033-1052.

*Wan, D., & Ong, C. H. (2005). Board structure, process and performance: Evidence from public-listed companies in Singapore. *Corporate Governance: An International Review*, *13*, 277-290.

*Watson, W., Cooper, D., Torres, M. A. J. L. N., & Boyd, N. G. (2008). Team processes, team conflict, team outcomes, and gender: An examination of U.S. and Mexican learning teams. *International Journal of Intercultural Relations*, *32*, 524-537.

*Weingart, L. R., Todorova, G., & Cronin, M. A. (2008, August). *Representational gaps, team integration, and team creativity*. Paper presented at the conference of the Academy of Management, Anaheim, CA.

Whitener, E. M. (1990). Confusion of confidence intervals and credibility intervals in meta-analysis. *Journal of Applied Psychology*, *75*, 315-321.

*Wilkens, R., & London, M. (2006). Relationships between climate, process, and performance in continuous quality improvement groups. *Journal of Vocational Behavior*, *69*, 510-523.

Wilson, D. B. (2005). Meta-analysis macros for SAS, SPSS, and Stata[Computer software]. Retrieved from http://mason.gmu.edu/dwilsonb/ma.html

Winters, N. (1997). *Conflict, information sharing, and goal-setting in teams* (Unpublished master's thesis). University of Amsterdam, Amsterdam, the Netherlands.

Wittenbaum, G. M., & Stasser, G. (1996). Management of information in small groups. In J. L. Nye, & A. M. Brower (Eds.), *What's social about social cognition: Research on socially shared cognition in small groups* (pp. 3-28). Thousand Oaks, CA: Sage.

*Wolfe, C. J., & Murthy, U. S. (2005). Negotiation support systems in budget negotiations: An experimental analysis. *Journal of Management Information Systems*, *22*, 351-381.

Yang, J., & Mossholder, K. W. (2004). Decoupling task and relationship conflict: The role of intragroup emotional processing. *Journal of Organizational Behavior*, *25*, 589-605.

*Yeh, Y. J., & Chou, H. W. (2005). Team composition and learning behaviors in cross-functional teams. *Social Behavior and Personality*, *33*, 391-402.

*Zhang, Z. X., Hempel, P. S., & Han, Y. L. (2008). *Can innovation strategy and decentralization guarantee team performance? Type of conflict matters*. Paper

presented at the conference of the Academy of Management, Anaheim, CA.

*Zhu, J., Shaw, J. D., & Scott, K. L. (2008, August). *A contingency model of conflict and team effectiveness*. Paper presented at the conference of the Academy of Management, Anaheim, CA.

*Zona, F., & Zattoni, A. (2007). Beyond the black box of demography: Board processes and task effectiveness within Italian firms. *Corporate Governance*, *15*, 852-864.

Samenvatting

Mensen zijn sociale wezens. Of het nu op het werk, thuis, of tijdens hun vrijetijdsbesteding is, de meeste mensen brengen het grootste deel van hun tijd door met andere mensen. Samenwerken met andere mensen is echter niet altijd even gemakkelijk. Wereldwijd besteden werknemers gemiddeld meer dan twee uur per week – dus ongeveer een dag per maand – aan conflicten op de werkplek (CPP, 2008). Deze conflicten kunnen variëren van eenvoudige meningsverschillen, tot geschillen die opgelost moeten worden in de rechtbank, en naast individuen kunnen bij sommige van deze conflicten hele groepen, of zelfs hele afdelingen betrokken zijn.

In dit proefschrift richt ik mij op de gevolgen van conflicten die zich voordoen binnen groepen. Om precies te zijn, in dit proefschrift onderzoek ik de gevolgen van conflicten die zich voordoen binnen een groep van individuen met een gezamenlijk doel en een wederzijds belang bij het behalen van dit doel. Voorbeelden van dergelijke groepen zijn top management teams die proberen om de winst van hun onderneming te vergroten, of groepen van rechters die moeten beslissen of verdachten inderdaad schuldig zijn. Andere voorbeelden zijn sportteams die proberen om een ander team te verslaan, of politieke partijen die streven naar het vergroten van het aantal zetels in het parlement.

Binnen dit soort groepen kan er om verschillende redenen een conflict ontstaan. Zo kunnen er conflicten ontstaan doordat groepsleden verschillen in hun mening over de inhoud van het werk zelf (een 'taakconflict'), bijvoorbeeld wanneer leden van een raad van bestuur het oneens zijn in welk bedrijfsonderdeel geïnvesteerd moet worden. Conflicten kunnen echter ook ontstaan over het proces, zoals de verdeling van de uiteindelijke verantwoordelijkheden (een 'procesconflict'). Of over meer persoonlijke zaken, bijvoorbeeld door meningsverschillen over normen, waarden, of politieke voorkeuren van de groepsleden (een 'relatieconflict').

Binnen groepen kunnen mensen een conflict als een paradox ervaren, omdat conflicten een tegenstrijdig effecten kunnen hebben op de uiteindelijke prestaties van groepen (Amason, 1996). Enerzijds nemen conflicten namelijk veel tijd in beslag, roepen ze frustratie op, en maken ze groepsleden minder gemotiveerd om voor de groep te werken (Jehn &

Mannix, 2001). Anderzijds kunnen conflicten groepsleden juist uitdagen om kritischer naar hun eigen standpunten te kijken, waardoor de groep uiteindelijk een meer weloverwogen besluit kan nemen (Schulz-Hardt, Brodbeck, Mojzisch, Kerschreiter, & Frey, 2006). Gedurende de afgelopen decennia hebben vele wetenschappers en managers deze zogenoemde 'intragroep conflict paradox' onderzocht en gepoogd hiervoor een oplossing te vinden. Deze onderzoeken hebben echter een aantal tegenstrijdige resultaten opgeleverd. Het is daarom nog steeds de vraag of en wanneer groepen van conflicten kunnen profiteren.

In **Hoofdstuk 2** probeer ik het eerdere onderzoek naar de effecten van taak-, relatie, en procesconflict beter inzichtelijk te maken door meer dan honderd onderzoeken samen te voegen en te analyseren door middel van een meta-analyse. De resultaten van deze meta-analyse laten zien dat er, ondanks de grote verscheidenheid in eerdere onderzoeksresultaten, toch een aantal relatief stabiele relaties bestaan. Zo blijken relatieconflicten, maar ook procesconflicten, negatief gerelateerd te zijn aan alle uitkomsten die we hebben onderzocht. Relatieconflicten en procesconflicten zijn bijvoorbeeld negatief verbonden met allerlei prestatie-indicatoren (zoals omzet, innovativiteit, kwaliteit van beslissingen, en effectiviteit) maar ook met het onderlinge vertrouwen tussen groepsleden, de tevredenheid van de groepsleden, en de bereidheid van groepsleden om zich in te zetten voor de groep. Deze negatieve associaties blijken generaliseerbaar naar verschillende groepen en contexten. Of het nu een team studenten of professionals is, een team arbeiders of leidinggevenden betreft, of de prestaties nu objectief of subjectief gemeten worden, relatie- en procesconflict blijken altijd een negatief effect te hebben.

De meta-analyse toont echter ook aan dat, in vergelijking met relatie- en procesconflict, de relatie tussen groepsuitkomsten en taakconflict veel complexer is. Over het algemeen blijkt taakconflict noch negatief, noch positief gerelateerd te zijn aan de prestaties van groepen. Diepgaandere analyses laten verder zien dat de richting en de kracht van het verband tussen taakconflict en groepprestaties sterk blijkt af te hangen van andere "modererende" variabelen. Deze analyses laten bijvoorbeeld zien dat taakconflicten positiever gerelateerd waren aan groepsprestaties in onderzoeken die onder top management teams gedaan zijn dan in studies onder niet-top management teams. Verder waren taakconflicten positiever

gerelateerd aan groepsprestaties in onderzoeken die prestaties hebben gemeten in termen van de financiële prestaties in plaats van meer algemene prestaties. Ook bleek bijvoorbeeld dat in onderzoeken, waarbij de gemeten hoeveelheid taakconflict binnen een groep sterk samenhing met de hoeveelheid relatieconflict, de taakconflicten (veel) negatiever gerelateerd waren aan groepsprestaties dan in onderzoeken waar de samenhang tussen taak- en relatieconflicten juist vrij zwak was.

Eén van de belangrijkste conclusies van de meta-analyse is dus dat groepen inderdaad kunnen profiteren van taakconflicten maar dat dit afhankelijk is van specifieke contextuele kenmerken (zie ook De Dreu, 2008; De Dreu & Weingart, 2003a, b; Jehn & Bendersky, 2003). In Hoofdstukken 3, 4, en 5, bouw ik verder op deze bevinding, en onderzoek ik verschillende contextuele kenmerken die een rol zouden kunnen spelen bij hoe groepsleden omgaan met taakconflict.

In **Hoofdstuk 3** laat ik bijvoorbeeld zien dat de gewenste positieve effecten van een taakconflict, zoals op de kwaliteit van een beslissing, verdwijnen als er tussen de groepsleden ook sprake is van een relatieconflict. Door de aanwezigheid van een relatieconflict worden mensen namelijk tijdens een taakconflict veel meer rigide in het vasthouden aan hun eigen mening. Verder blijken groepsleden in dat geval aanzienlijk minder gebruik te maken van de informatie die ze krijgen van andere groepsleden. Dit gebeurt voornamelijk, omdat ze door de aanwezigheid van relatieconflict minder gemotiveerd zijn om informatie systematisch te verwerken maar ook doordat ze zich dan minder goed in staat voelen om met het taakconflict om te gaan. Het zorgt er voor dat mensen de informatie die ze van hun teamleden krijgen niet goed weten te verwerken en daardoor een veel grotere kans maken om een foute beslissing te nemen.

In **Hoofdstuk 4** laat ik vervolgens zien dat de uitkomst van een taakconflict ook kan samenhangen met de stress die mensen tijdens het conflict ervaren. Een belangrijk onderscheid wat ik hierbij maak is het onderscheid tussen "positieve stress" en "negatieve stress". Positieve stress wordt ervaren als mensen zich betrokken voelen bij een taak *en* het gevoel hebben dat zij de eisen die aan hen gesteld worden tijdens de taak aankunnen; mensen vertonen dan psychologisch maar ook fysiologisch een "uitgedaagde staat". Negatieve stress wordt ervaren als mensen zich betrokken voelen bij een taak maar het gevoel hebben dat ze *niet* kunnen

voldoen aan de eisen die aan hen gesteld worden tijdens de taak en geen controle hebben over de situatie; mensen vertonen dan psychologisch maar ook fysiologisch een "bedreigde staat" (Blascovich & Tomaka, 1996). In drie verschillende studies vinden we dat mensen die zich tijdens een conflict in een bedreigde (in plaats van uitgedaagde) staat bevinden, veel meer geneigd zijn om vast te houden aan hun eigen eerste mening (of dit nu goed was of niet). Daarnaast zijn deze mensen ook veel minder geneigd om informatie van andere groepsleden te gebruiken tijdens de uiteindelijke besluitvorming. We vinden deze resultaten voor experimenteel geïnduceerde staten van dreiging en uitdaging (Studie 4.1) maar ook voor zelfgerapporteerde (Studie 4.2 en 4.3) en cardiovasculaire indicatoren van dreiging en uitdaging (Studie 4.3). Bij elkaar laten deze bevindingen zien dat een taakconflict over het algemeen een veel positiever effect zal hebben op groepsbeslissingen als mensen zich uitgedaagd in plaats van bedreigd voelen tijdens een conflict.

Mijn doel in **Hoofdstuk 5** was om in een complexere besluitvormingstaak de bevindingen van Hoofdstuk 4 te repliceren. Bovendien onderzoek ik in dit hoofdstuk of een bedreigde staat tijdens een taakconflict ook een gunstig effect kan hebben op de kwaliteit van de beslissingen als de mening van een individu in eerste instantie juist is. De bevindingen, beschreven in Hoofdstuk 5, repliceren inderdaad de bevindingen van Hoofdstuk 4. Cardiovasculaire reacties tijdens een taakconflict blijken wederom nauw verwant zijn aan het gedrag van individuen tijdens het conflict en de beslissingen die zij uiteindelijk nemen. Om preciezer te zijn, individuen die een cardiovasculaire staat van bedreiging vertonen zijn minder snel geneigd om hun mening aan te passen, dan individuen die een cardiovasculaire staat van uitdaging vertonen. Dit resultaat is ook erg robuust. De cardiovasculaire indicatoren van uitdaging en bedreiging voorspelen namelijk in hoeverre deelnemers hun mening aanpassen, ook na het controleren voor belangrijke andere factoren. Deze factoren zijn bijvoorbeeld de waargenomen betrouwbaarheid van het andere groepslid en de eigen competenties van deelnemers om de taak uit te voeren.

Samengevat kan op basis van de bevindingen van dit proefschrift geconcludeerd worden dat het onderscheid tussen de verschillende conflicttypes helpt om conflicten te identificeren die een bedreiging vormen voor groepuitkomsten (relatie- en procesconflict) en conflicten

die het potentieel hebben om de prestaties van groepen te verbeteren (taakconflict). Dit proefschrift toont echter ook aan dat de oplossing voor de "intragroep conflict paradox" niet alleen gezocht moet worden in het onderscheid tussen verschillende typen conflict, maar ook in de context waarin een taakconflict vervolgens plaatsvindt (zoals de aanwezigheid van relatieconflicten, en de stress die mensen ervaren tijdens het taakconflict). Tot slot onderstrepen de bevindingen het nut van een psychofysiologische benadering van intragroep conflict, bijvoorbeeld om een beter begrip te krijgen waarom mensen soms zo sterk blijven vasthouden aan hun eigen mening tijdens conflicten.

Nawoord

Het promoveren is als een lange fietstocht door Vlaanderen. De voorpret is enorm en het gemak en plezier tijdens het eerste deel van de tocht geven je het gevoel dat het allemaal van een leien dakje zal gaan. Halverwege de tocht begint het echter steeds ietsjes zwaarder te worden. De vlakke stukken worden steeds vaker afgewisseld door steile, uitputtende stukken. Er komen meer en meer momenten dat je verlangt naar een korte pauze en gedachten schieten door je hoofd. Gaat me dit wel lukken? Had ik beter materiaal moeten hebben? Moet ik maar afstappen? Opgeven is echter geen optie. Stug ploeter je door. Je denkt aan hoe het anderen ook ooit is gelukt. Je denkt aan de voldoening die je zal krijgen als het lukt, en hoe snel je de vorige obstakels al weer vergeten bent. Vreugde, plezier, en een glimlach volgen als het dan toch lukt. Maar snel volgt er weer een nieuw obstakel, en nog één, en nog één.

Tijdens de tocht kom je verschillende mensen tegen. Sommigen leggen het parcours net als jijzelf voor de eerste keer af, anderen hebben dit al gedaan. Sommigen zie je spartelen en komen bijna niet vooruit. Bij anderen zakt de moed je in de schoenen als ze je voorbij razen en je het gevoel geven dat je er zelf niet veel van kunt. Er zijn ook mensen die precies weten wat je doormaakt maar ook mensen die langs de kant staan te kijken, zien wat je doet, maar zich moeilijk een voorstelling kunnen maken van hoe het echt is. Er zijn mensen die kritiek op je techniek hebben, maar ook mensen die er juist met bewondering naar kijken. Er zijn mensen die zich altijd netjes aan de regels houden, maar er zijn ook mensen die spelen met de grenzen van wat wel en niet kan. En er zijn mensen die zich afvragen waar je in godsnaam mee bezig bent en er het nut niet van inzien, maar ook mensen die langs de kant staan en grote bewondering hebben voor je prestatie.

Uiteindelijk moet je de hele tocht zelf de pedalen rond draaien. Niemand anders doet het voor je maar veel steun krijg je wel. Mensen met ervaring waarschuwen je voor wat er nog komen gaat. Ze stellen kritische vragen. Ga je wel snel genoeg? Weet je zeker dat je die richting op wilt gaan? Maar ze sturen je ook routes op waar je zelf niet van wist en je komt daardoor op plekken waar je anders nooit zou zijn geweest. Verder werkt hun tomeloze energie, positivisme, en enthousiasme aanstekelijk en dit maakt je keer op keer bewust hoe speciaal en leuk het is waar je mee bezig bent. Ook geven zij met hun oneindige hulp en geduld je de ruimte om het beste uit je zelf te halen.

En dan zijn er nog de mensen die tijdens de tocht zorgen voor een goede sfeer en die je de moraal geven om door te gaan. En mensen bij wie je wat er ook gebeurt, hoe goed of slecht het ook gaat, na afloop weer fijn en warm thuis kan komen. Met wie je samen geniet van al de andere mooie dingen die het (nieuwe) leven verder te bieden heeft. Dit proefschrift was niet mogelijk geweest zonder hun steun en ik ben hen (jullie!) daarom allemaal ontzettend dankbaar en hoop dat we na de verdediging met zijn allen net zoveel napret hebben en voldoening zullen ervaren als na een lange fietstocht. Dank!

Curriculum vitae

Frank de Wit was born on June 24, 1980 in Heerhugowaard, The Netherlands. After graduating from the Han Fortmann College in Heerhugowaard, in 1998, he studied International Business, as well as Economic Psychology, at Tilburg University. After obtaining his research-masters degree in International Business in 2004 and travelling around the world for a year, he studied biology, as well as social and organizational psychology at Leiden University between 2005 and 2007. Following the completion of his research-masters degree in psychology, he began his PhD project under the supervision of Professor Karen Jehn and Daan Scheepers at Leiden University in 2008. He is now a post-doc at Leiden University in the department of social and organizational psychology and as of the summer of 2013 will be a post-doc at the Melbourne Business School.

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