CONFLICT, PERFORMANCE, AND DIVERSITY IN TEAMS: A CONTINGENCY APPROACH

Abstract: Prior studies found contrasting effects on the relation between conflict and performance in teams and reported negative, neutral, or positive effects. Therefore, a linear relationship between these two factors appears to be unlikely, and the relation between conflict and performance may depend on further factors. In consequence, we apply a contingency approach and operationalise social category diversity as a contingency variable in the conflict - team performance relation. Our empirical analysis based on a sample of $n = 536$ observations delivers significant and partially unexpected findings with strong implications for both theory and practice. We found that diverse teams perform better than homogeneous teams when task and relational conflicts are low, whereas homogeneous teams outperform diverse teams when the intensity of those is high. However, no effects of process conflicts are discovered. This study thus provides strong support for the inclusion of moderator variables in diversity and team research and calls for a contingency consideration of diversity in teams.

Introduction

Teamwork of people with different backgrounds, different values and demographic profiles has gained in practical importance in the course of globalization and increasing international linkages (Rohn, 2006). In consequence, heterogeneous teams are nowadays an integral part in many firms (Adler, 2002; Earley & Gibson, 2002; Gibson et al., 2003). This trend is exogenously caused by at least two aspects. On the one hand, worldwide economic and therefore personal linkages are rising due to increasing economic cooperation and internationalism, which necessitates teamwork between employees from different cultural

backgrounds (Holtbrügge & Puck, 2003). Owing to the internationalization of firms an increasing heterogeneity of personal composition is inevitable both within and outside of firms (Kirkman & Shapiro, 1997; Van Oudenhoven et al., 1998; Boyacigiller & Adler, 1991). On the other hand, even national labour markets are getting more and more heterogeneous with regard to different aspects such as cultures, gender, or age (Cox et al., 1991; Gibson et al., 2003; Sargent & Sue-Chan, 2001).

Beside these external factors, diversely composed teams have recently been employed also for contentual reasons (Perry et al., 1999; Ilgen, 1999; Gemünden & Högl, 2001; Stock, 2004). From the viewpoint of many researchers as well as practitioners, groups represent the right response to a more dynamic, intense, and competitive environment in which high quality solutions for complex problems need to be found. Stemming from diversity, different opinions may emerge within groups, leading to advantages compared to individuals especially when a firm needs to rapidly respond or adapt to innovations (Marks et al., 2001). Furthermore, from the perspective of human capital theory (Puck & Cerhak, 2005), prevalent market conditions can better be reproduced in diverse teams (incorporation of diversity; Holtbrügge, 2001); therefore diverse teams seem to be particularly suitable when adapting to the increasing heterogeneity of market conditions.

However, past research has shown that diversity may also lead to problems within the team work process. In particular, conflicts are a common phenomenon (Cox, 1997). Numerous studies highlight the significant influence of conflicts on team output and team processes (Amason, 1996; Bettenhausen, 1991; Bettenhausen & Murnighan, 1985; Jehn, 1995; Jehn, 1997). Existing research agrees that conflicts affect team performance; the results regarding the direction in which conflicts influence performance have, however, been contradictory.

Prior research has reported negative, neutral, or positive results (Amason, 1996; Cox et al., 1991; De Dreu & Van de Vliert, 1997; Elron, 1997; Gladstein, 1984; Jehn, 1995; Jehn, 1997; Jehn & Mannix, 2001; Jehn et al., 1999; Pelled et al., 1999; Medina et al., 2005; Simons & Peterson, 1998; Watson et al., 1993). Therefore, a linear relationship between these two factors appears to be unlikely, and the relation between conflict and performance may depend on further factors. However, only few studies have analysed team processes and simultaneously accounted for moderators or contingency variables in team research (Evanschitzky et al., 2008), even though the few existing results clearly show the relevance of these factors (Joshi & Roh, 2009; Puck et al., 2009).

Based on these findings we argue that the relationship between conflict and performance in teams is influenced by the degree of "Social Category Diversity". Social Category Diversity can be defined as a team composition consisting of different social categories. Past research evidence highlights the relevance of diversity for team processes "because people give social significance to the categories or groups they associate with different people" (DiTomaso et al., 2007, p. 475). Thereby, processes of social categorisation may occur in the form of intra-group prejudices and negative behavior, which in turn can affect the conflict - team performance relationship (Joshi & Roh, 2009). Summarising, we argue that different heterogeneous teams vary in terms of settling conflicts, which influences the conflict - team performance relationship.

The effect of diversity on the conflict – team performance relation in teams has never been analysed in the literature in this way before. Accordingly, this study contributes to the literature by closing this research gap. By drawing on the existing literature we first derive hypotheses about the relation between different types of conflict and performance as well as

the influence of "Social Category Diversity" on this relationship. Hypotheses will then be tested against empirical data in order to derive findings for further investigations as well as implications for practice.

To achieve this objective we first develop a framework and explain the key terms and factors of our model before deriving the research hypotheses. We then present our sample and measures and define the operationalisation of variables. The results are discussed in the light of current research followed by the limitations and implications for theory and practice.

Theoretical framework and hypotheses

Many studies analysing processes and performance of teams neglect context-based and/or moderating factors (Jackson et al., 2003; Van Knippenberg & Schippers, 2007) even though numerous researchers have called for the inclusion of context-variables with potential moderating effects (Bettenhausen, 1991; Cohen & Bailey, 1997; Gladstein, 1984; McGrath et al., 2000; Milhous, 1999; Podsiadlowski, 2002; Puck, 2007; Salk, 1996). Furthermore, the relevance of such factors for team research has so far only been tested in a few studies, which considered them in their analyses and revealed a strong relevance of those factors (Joshi & Roh, 2009; Puck et al., 2009).

Based on a contingency approach we therefore investigate the relation between conflict and performance in teams. The contingency approach proceeds from the assumption that a given situation causes an output and this relation in turn is influenced by further variables (Burns & Stalker, 1961; Lawrence & Lorsch, 1967). Drawing on this approach, existing conflicts represent the situative variables whereas team performance represents the output variable.

"Social Category Diversity" represents the contingency variable moderating the relation between conflict and performance.

By drawing on the findings of conflict research we integrate three conflict dimensions in our model: *Task conflict*, *relationship conflict* and *process conflict* thus represent the situational variables in the model. This differentiation between different types of conflict is derived from existing research and represents a valid and frequently applied typology (Amason, 1996; De Dreu & Weingart, 2003; Jehn, 1995; Jehn, 1997; Jehn & Mannix, 2001; Jehn et al., 1999; Kulik, 2004; Pelled, 1996). We expect either a positive or negative effect of each conflict type on the focal variable, which is presented by *performance*. The effects of different types of conflict have been studied in numerous studies in the past (Amason, 1996; Amason & Schweiger, 1997; Cosier & Rose, 1977; Janssen et al., 1999; Jehn, 1995; Jehn, 1997; Pelled et al., 1999; Van de Vliert & De Dreu, 1994), which, however, produced strongly inconsistent results. From the perspective of contingency theory, these inconsistent results can be attributed to the existence of contingencies. Based on this line of reasoning, we argue that context variables influence the relation between conflict types and performance. Therefore, "Social Category Diversity" as the contingency factor is integrated in this study. In the following sections we present the key variables and derive hypotheses within the research model.

Conflicts

Conflicts are an inevitable part of teamwork over time (Jehn, 1995; Medina et al., 2005) and represent an interactive process (Pearson et al., 2002). However, they are not solely associated with negative implications and thus do not necessarily have to be eliminated or avoided as far as possible as many approaches in the past suggested. Conflicts have to be regarded as

multidimensional and dynamic (Greer et al., 2008), and are "[by] itself [!] no evil, but rather a phenomenon which can have constructive or destructive effects depending upon its management" (Thomas, 1976, p. 889). On the one hand, they thus enable to discover and solve problems within teams and their processes (Thomas, 1976). On the other hand, they always create a certain level of stress, frustration, anxiety and tension, or cause negative interpersonal attitudes or perceptions between the team members which may translate into unpleasant emotions or in the destruction of a positive emotional atmosphere (Desivilya & Yagil, 2005; De Dreu, 1997).

Task conflicts and relationship conflicts were first defined as core conflict dimensions within teams in a study of Jehn in 1992 (Jehn, 1997). In a later study, an additional conflict type in the form of process conflict was discovered (Jehn, 1997). These three distinct conflict dimensions and their differing effects on team performance have been confirmed by multiple studies (Jehn, 1997; Jehn & Mannix, 2001; Matsuo, 2006). However, the effects of these conflict types on the effectiveness of teams appear to be very complex (Rentsch & Zelno, 2003). In a next step, we therefore derive three distinct hypotheses for the types of conflict.

Task Conflict

Task conflict is defined as "a condition in which group members disagree about task issues, including goals, key decision areas, procedures, and the appropriate choice of action" (Pelled et al., 1999, p. 2). Task conflicts represent cognitive conflicts, are de-personalized and based on different ideas of the people involved (Priem et al., 1995). This form of conflict was already reported by early studies, even though sometimes naming it differently. Guetzkow & Gyr (1954, p. 369), for instance, mentioned a "substantive conflict", which is "rooted in the substance of the task which the group is undertaking" and refers to the content of a task.

Similarly, Pelled (1996, p. 619) regarded the "substantive conflict" as "task-related" conflict. De Dreu & Weingart (2003, p. 741) defined task conflicts as "conflicts about the distribution of resources, procedures and policies, and judgements and interpretation of facts." Jehn (1994, p. 232) maintained that "differing viewpoints and ideas [are] related to the task." In summary, we define task conflicts as conflicts which contain different attitudes and views with regard to task solving.

Previous studies reported mixed effect directions of this conflict type on the performance of teams. On the one hand, for example Schweiger et al. (1989) found that task conflicts have a positive effect on performance in general. Other researchers reported a generally positive and beneficial influence of task conflict on team output, too (Amason, 1996; Amason & Schweiger, 1997; Cosier & Schwenk, 1990; Janssen et al., 1999; Tjosvold & Deemer, 1980; Song et al., 2006). Based on their line of reasoning, these conflicts enhance the level of knowledge about the task, in particular about its relevance, complexity, and urgency. As a result, team members improve their understanding and knowledge about the task at hand (Pelled et al., 1999). Furthermore, due to the interaction of group members caused by task conflicts, team members can develop different ways of goal attainment. As a consequence, team members are required to reanalyse their own position and to discuss the ideas of other members (Olson et al., 2007). Hence, task conflicts can result in a higher commitment within the group and in an enhanced understanding of the task. Consequently, the quality of decisions can be improved as a consequence of task conflict (Olson et al., 2007; Simons & Peterson, 1998).

On the other hand, some studies differentiate the effect of task conflicts with regard to task type. For example, Jehn (1995) found that task conflicts had a negative effect on teams

working on routine tasks but a positive effect on teams working on complex tasks. However, these results are contrary to the findings of a meta-analytical study conducted by De Dreu & Weingart (2003). They found that "the experience of conflict takes needed resources away from the performance of complex tasks, whereas those resources are more available (...) when working on simpler tasks" (De Dreu & Weingart, 2003, p. 747). Nevertheless, Jehn's results are supported by Gladstein (1984), arguing that discussions about task and task achievement would unnecessarily waste time in teams working on standardized tasks.

However, many studies did not support any effect of task type. For example, Desivilya & Yagil (2005) did not confirm the differentiation by task types, but pointed to a generally beneficial effect of task conflicts in teams, similar to several other scholars (e.g., Amason & Schweiger, 1997; Jehn, 1997; Jehn et al., 1999). Also Baron (1991) and Amason (1996) summarised already existing findings on task conflicts and their effects within group-processes to an overall positive influence. Amason (1996, pp. 139) empirically confirmed the positive effect of task conflicts on team output in terms of "decision quality", "understanding" and "affective acceptance". Olson et al. (2007, p. 214) also found a generally positive effect of task conflicts on output in terms of "decision understanding", "decision commitment" and "decision quality". Therefore, task conflicts seem to be "[a] learning process, whereby through active, heated, and intense debate (…) the parties come to discover and to invent entirely new alternatives" (Mitroff, 1982, p. 222). Thus, in line with Rentsch & Zelno (2003), a potential key for achieving a productive team output could be seen in increasing task conflicts. Jehn & Bendersky (2003, p. 205) also point to the necessity "to encourage high levels of task conflict (…) if one is promoting high performance and creativity". Based on these arguments, we derive the following hypothesis

Hypothesis 1: *The higher the task conflict within a team, the higher is the team's performance.*

Relational conflicts

Relational conflicts within a team arise when personal incompatibilities among team members exist (Jehn & Bendersky, 2003) and "group members have interpersonal clashes characterized by anger, frustration, and other negative feelings" (Pelled et al., 1999, p. 2). Guetzkow & Gyr (1954, p. 369) characterized this type of conflict as "affective conflict", which is "deriving from the emotional, affective aspects of the group's interpersonal relations". Therefore, an affective conflict occurs when group members mostly concentrate on the individual status and the personal satisfaction instead of focusing on the group (Jehn & Bendersky, 2003). Pelled (1996, p. 619) describes this conflict type as "emotion-based". Similarly, Jehn (1994, p. 232) characterized relational conflicts with the attributes "frustration, friction, tension and dislike among [group] members." Integrating the arguments above, this conflict type can thus be defined as conflict on the relationship level.

In the case of relational conflict the member's focus shifts to a personal, emotional level and thus impedes the members in both achieving their objectives and their decision-making ability (e.g. Greer & Jehn, 2007; Jehn, 1995; Jehn et al., 1999). Relational conflict therefore "limits the information processing ability of the group because group members spend their time and energy focusing on each other rather than on the group's task-related problems" (De Dreu & Weingart, 2003, p. 742). Pelled (1996) stated three reasons for this negative influence of relational conflicts. First, they lead to a misjudgement of other member's provided information. Second, member's ideas, suggestions and opinions who are in a relational conflict with other members, will be blocked, e.g. "you know, I really don't like Bob, and I

think I'm just going to trash every idea he comes up with in this meeting" (Jehn, 1997, p. 541). Third, too much time is spent on fighting existing relational conflicts instead of pursuing the objective. Hence, we do not expect that relational conflicts have at any time a positive effect on a team performance (Jehn & Mannix, 2001). Relational conflicts rather prevent the development of a trustful cooperation as well as a motivational and satisfactory climate within the team (Ayoko et al., 2001; Jehn, 1995; Jehn & Mannix, 2001).

This effect is also supported by many empirical studies. Passos & Caetano (2005) pointed to several empirical findings of Jehn who investigated the effect of relational conflicts within teams. She revealed a negative effect on both team performance and team satisfaction although "the conflicts may not influence work as much as expected, because the members involved in the conflicts choose to avoid working with those with whom they experience conflict" (Jehn, 1995, p. 276). Similar negative effects on team performance were reported in studies of Amason (1996) and Pelled (1996). Moreover, Simons & Peterson (1998) solely regarded negative effects as a consequence of relational conflicts as well as lower performance as prior studies have shown (Simons & Peterson, 1998). Greer et al. (2008, p. 280) also considered "consistent negative effects" as a consequence of relational conflicts. Overall, this leads to the following hypothesis.

Hypothesis 2: *The higher the relational conflict within a team, the lower is the team's performance.*

Process conflicts

Jehn (1997, p. 540) delineated process conflicts as "conflict about how task accomplishment should proceed in the work unit, who's responsible for what, and how things should be

delegated." Subjects of discussions in times of process conflict are "disagreements about assignments of duties or resources" (Jehn, 1997, p. 540). "When four researchers disagree about data interpretation and the meaning of the results, they are experiencing task conflict. If they argue about who is responsible for writing up the final report and who will make the presentation, they are having a process conflict" (Jehn & Bendersky, 2003, p. 201). Therefore, in this study process conflicts are understood as conflicts caused by disagreements about the process how to achieve the objective.

Jehn's (1997) study revealed that teams faced with intense process conflicts score one of the worst team results over time. These findings could be seen as consequence of discussions about responsibilities and competencies within the team which translates into frustration, perceived unfairness and dissatisfaction about the group's membership (Jehn, 1997). One person in group with high process conflicts and weak performance subsumed the group's experiences: "How to utilize people and how the structure should be (…) at times who's responsible for what would probably be the major disagreement we have. It always interferes" (Jehn, 1997, p. 548).

Jehn's (1997) study is one of the first evidences of process conflict as well as its apparently negative influence on team performance. Jehn & Mannix (2001) also investigated the effect of process conflicts on team achievement potential. They found, too, that teams faced with a higher degree of process conflicts performed worse than teams with a lower degree of this conflict type (Jehn & Mannix, 2001). Overall, we therefore derive the following hypothesis.

Hypothesis 3: *The higher the process conflict within a team, the lower is the team's performance.*

Social Category Diversity

Diversity can be described by a non-homogenous distribution of individual attributes among team members (Jackson et al., 2003). Therefore, diversely composed teams are characterized by individuals with different attributes, contributing various values, norms, and behavior patterns to the team (Govindarajan & Gupta 2001).

Diversity research mainly focuses on how differences in the structural composition of teams influence processes, goal achievement, behavior of team members, and team output (Van Knippenberg & Schippers 2007). Numerous researchers have tried to find answers to the effect of diversity on processes and output in teams (e.g., Garcia-Prieto et al., 2003; Guzzo & Dickson, 1996; Ilgen et al., 2005; Jackson et al., 2003; Kerr & Tindale, 2004; Levine & Moreland, 1990; Marks et al., 2001; McGrath et al., 2000; Milliken & Martins, 1996; Van Knippenberg & Schippers, 2007; Van Knippenberg et al., 2004; Williams & O'Reilly, 1998). However, studies which integrated diversity in their research model provided highly ambivalent results. Thus, diversity research lacks both a persuasive output and a common paradigm (Jackson et al., 2003). "Is there, as some researchers suggest, a "value in diversity", or, as suggested by others, does diversity make group functioning more difficult?" (Williams & O'Reilly, 1998, p. 77). In this paper we therefore take a different conceptual perspective and investigate the moderating effect of "Social Category Diversity" (SCD) on the relation between conflict and performance. In the existing literature, SCD is often operationalised by the demographic attributes gender and national origin (Jackson, 1992; Jehn et al., 1999; Pelled, 1996). Based on these two visible characteristics, people tend to categorise themselves and others (Jehn et al., 1999). Personal attitudes, cultural norms and values are thus the result

of belonging to a "social category" (Hofstede, 1993, p. 18). We believe that this diversity of deeply embedded values, social norms and attitudes affects the behavior in conflict situations.

Considering demographic attributes, culture is often argued to be the attribute with the strongest impact (Earley & Mosakowski, 2000). According to Hofstede (1997) there are strong integrative forces within single countries. These forces are source of a considerably high extent in collective mental programming of their citizens (Hofstede, 1997). However, statements to value propositions within a country may just outline a basic tendency of the respective country (Bronner & Jedrzejczyk, 2008). Therefore, propositions to a nation's characteristic attribute are not related to everyone but the majority of the members of this culture (Triandis, 1994). Nevertheless, cultural diversity promotes the development of sub-groups within teams due to similar mental programming of specific team members. National origin thus may impede efficient interactions to solve conflicts within a team (DiStefano & Maznevski, 2000).

Gender also represents an important driver for categorisation and stereotyping processes and has been an essential variable in numerous prior studies (Hoffman & Maier, 1961; Jehn et al., 1999; Kent & McGrath, 1969; Konrad, 2003; Murnighan & Conlon, 1991; Murray, 1989; Pelled, 1996; Sessa & Jackson, 1995). "From a management perspective gender (…) is strongly linked to the problem of stereotyping (Hanappi-Egger, 2006, p. 122).

By looking at the effect of gender on the relation between conflict and performance the emotional aspect of gender-specific behavior plays a significant role. Besides culture, gender influences individual's social relations as well (Sessa & Jackson, 1995). Teams with high gender diversity are subjected to intense task conflicts. For example, Pelled (1996, p. 627)

found that "gender diversity will have a stronger influence, making the conflict predominantly affective." Therefore, this effect would have a negative influence on the relationship between conflict and performance. In this context, Murnighan & Conlon (1991, p. 180) found in their investigation of British string-quartets, that "same-sex groups" perceive conflicts as "healthy" and gain both better results and a higher team stability compared to "mixed-sex groups".

Overall, if team members differ from each other with regard to cultural background or gender they tend to compare themselves with other members and categorise them in stereotypes. Therefore, individuals view themselves as members of a specific group within the team while dissociating themselves from the "outgroup" (Podsiadlowski, 2002, p. 105). This categorisation in "ingroup" and "outgroup" affects the influence of conflicts on team performance. Individuals tend to sympathize with members of the own "ingroup" with equal demographic attributes which lead to a positive feeling and mutual trust (Tajfel & Turner 1986; Thomas, 1999; Baugher et al., 2000). This mutual trust plays a considerable role in conflict situations. A discrimination of the "outgroup" during the process of conflict resolution may have a significant effect on the relationship between conflict and performance. Thus, summarising the findings above, the following hypotheses can be derived:

Hypothesis 4: High "Social Category Diversity" within the team enhances a negative effect and weakens a positive effect of conflict on performance.

In summary, this paper thus analyses a model with three different conflict dimensions representing the independent variables. The dependent variable is team performance and SCD is conceptualized as the moderating variable. Figure 1 presents the research model. .

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Methods

In the following, the design of our study will be described. First, the data source and the sample will be explained. Second, we present the operationalisation of the variables in the model.

Data and Sample

Primary data was gathered from a sample of a laboratory experiment with students lasting several weeks. An experiment represents an examination of a presumed cause and effect relationship under controlled prior determined conditions (Berndt 1992, p. 139). This method provides two critical advantages. First, an experimental survey enables to systematically examine priorly stated hypotheses because causal determined relations can be clearly confirmed or rejected (Rack & Christophersen 2007). On the other hand, an experiment simplifies the conditions of a survey due to both a better control and a minimization of disturbing effects which leads to higher levels of quality in experimental procedure (Bortz & Döring, 2002; Sarris, 1992).

The following advantages of an experimental design with students as participants for the study at hand can be distinguished. First, a survey with students enables to collect wide-ranging data. Second, numerous control variables could be determined before the experiment started. Third, students are particularly suitable because they fulfill both a relative uniform representation in terms of gender (i.e., nearly the same percentage of female and male participants) and very different cultural backgrounds.

Within the experiment the students had to work on two tasks in their team. The result was afterwards assessed by all other participants. In a time interval of 20 minutes per task they worked on each of these two tasks. One half of the teams had to solve task 1 before working on task 2. The other half got the tasks in reverse order to avoid disturbing effects due to learning. In order to split the students up in heterogeneous teams in advance, the demographic attributes as well as the previous teamwork experiences were collected. This was operationalised by questionnaires, which were distributed in the first and second meeting at the beginning of the semester. The collected information helped us to split the students up in teams with varying heterogeneity. Cultures and gender within the teams were varied by the research team to a differently high extent in order to improve the possibilities of statistical analysis (see also Lamnek's 1989, pp. 110 observations to the principle of maximal contrastation).

Overall, 268 students participated in our experiment, representing 24 different nations respectively cultures. 63 percent of all participants were female students and the overall average age was 24.39 years. The number of different cultures within the teams varied between one and five.

Measures

After the tasks were completed, every team had to present their results at the plenum in front of the other participants. Based on a standardized questionnaire the performance of each team was evaluated by all participants, thus using a peer review mechanism. This questionnaire contained six items developed in line with Hyatt & Ruddy (1997) and was measured on 7-point Likert-scale. The following questions were used: "How do you assess the team with regard to the uniqueness of their solution?", "How do you assess the number of arguments of

the team they brought forward within this task?", "How do you assess the quality of arguments the team suggested within this task?", "How do you assess the overall performance the team has achieved within the task?", "Has the presentation of the team convinced you regarding the suggested solution?", "How do you assess the creative performance of the team within the task?" The single items were summarised to a composite index representing the performance variable in the paper at hand (Cronbachs α = 0.89).

The three conflict dimensions were operationalised with seven items. We derived questions from Jehn's (1995) scale of intra-group conflicts and measured them on 5-point Likert-scales. The participants evaluated the individual perception about existing conflicts within the team from 1 = "none" to 5 = "a lot". With respect to the particular amount of items, the arithmetical mean for every conflict dimension was determined and resepectively combined into a single variable. To ensure the reliability of these multi-item constructs, the Cronbach's alpha was computed for every conflict type, revealing a Cronbach's alpha of 0.84 for task conflict, 0.69 for relational conflicts, and 0.62 for process conflicts. Results are considered satisfactory (Nunnally, 1967; Nunnally, 1970).

We applied an entropy measure to calculate SCD. This measure was significantly affected by Blau (1977), therefore the notion Blau-index is often used in literature (Bunderson & Sutcliffe, 2002; Harrison & Klein, 2007; Simons et al., 1999; Van Knippenberg & Schippers, 2007).

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We operationalised "Social Category Diversity" with cultural diversity and gender diversity. In calculating the cultural diversity, the relative amount of nations represented within the team was gathered, representing the categories. Thus, p_k represents the amount of group members in category k, whereas K builds the amount of all possible categories. The values within the index can range between 0 and $(K-1)/K$. A maximal value of 1 could be theoretically reached, but therefore a $K = +\infty$ needs to be the essential condition. The higher the calculated index value, the more heterogeneous the group is composed. For example, if a team consists of 4 members with $k = 1, \ldots 3$ nations and $p_1 = 0.25$, $p_2 = 0.25$, and $p_3 = 0.5$ the diversity index of Blau reaches $H = 0.625$. The calculation of gender diversity differentiates between "female" and "male". If a team consists of $p_1 = 0.75$ male members and $p_2 = 0.25$ female members, the team's heterogeneity would be $H = 0.375$.

In the following, the arithmetical mean of cultural and gender diversity was built for every observation. Consequently, the corresponding group-specific SCD-value was assigned to each observation. Prior studies (Jehn et al., 1999; Pelled, 1996; Pelled et al., 1999) integrated "age" as a further "immutable characteristic" (Pelled et al., 1999, p. 1) in their calculation of diversity. We did not include this characteristic because the survey was conducted with students within a semester where we assumed a non-significant variance in the age structure.

Controls

We integrated three additional variables as controls in our model. First, we assessed the individual "Teamwork Experience". In this context we paid attention to general teamwork experiences as well as experiences within multicultural teams. All 268 students stated their personal experiences at 7-point Likert-scale anchored by 1 = "no experience" and 7 = "high experience". Thereby, the newly formed variable "Teamwork Experience" was calculated by

the arithmetical average of both experience values. By integrating this variable as a control, we intended to avoid bias based on different experiences with teamwork.

In addition, we incorporated "Team Size" as a control. Group size plays a very important role in team research. With an increasing number of team members, "the psychological distance between individuals can increase" (Pearce & Herbik, 2004, p. 297).

We additionally integrated "Task Type" as a third control variable in the analysis since the students had to work on two different task types both of which had to be solved. Task 1 was defined as a creative-generating task (McGrath, 1984), which encompassed the development of a publicity related concept for a university chair's public image. Task 2 was designed as a decision-choice task (McGrath, 1984). Within this task, a critical consideration of the upcoming reorganization of diploma-studies to master- respectively bachelor-studies needed to be discussed, and a decision had to be taken within the time limit. The consideration of "Task Type" is specifically relevant for the following three reasons. First, with regard to the development of sub-groups within heterogeneous teams (Earley & Mosakowski, 2000). Second, since task type determines the possibility of improvising during the task process as compared to explicitly scheduled steps (Chevrier, 2003). Finally, it is of high relevance because it may affect tensions and stereotyping (Henderson, 2005) within diverse teams.

Results and discussion

The collected data was evaluated and analysed with SPSS 17. Before analyzing the results in depth, we calculated a correlation matrix. This analysis was conducted to present first signs of multicollinearity between the variables (Backhaus at al., 2003). Table 1 presents the arithmetical means and standard deviations as well as the bivariate correlations of the model.

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The analysis presents considerably high correlations between the independent variables in the model at a significant level. "Multicollinearity exists, if the independent variables are dependent among themselves. This generally leads to high standard deviations of regression coefficients and in consequence to a lack in interpretation possibilities" (Albers & Skiera, 1999, p. 222).

To face the problem of multicollinearity and to ensure the interpretation of results we split the research model in three parts and conducted a single analysis for each conflict dimension. Therefore, we took the valid concept of conflict differentiation in the literature into account (Amason, 1996; De Dreu & Weingart, 2003; Jehn 1995; Jehn 1997; Jehn & Mannix 2001; Jehn et al. 1999; Kulik 2004; Pelled 1996). On the other hand, we avoided bias caused by multicollinearity.

To facilitate interpretation, to decrease still existing multicollinearity, and to achieve a better comparability between the variables, we standardized the data (Aiken & West, 1991; Cohen et al., 2003; Frazier et al., 2004). We used a moderated multiple hierarchical regression as method of analysis (Aguinis, 1995), which was applied in numerous studies analysing similar relationships (Jehn & Mannix, 2001; Jehn et al., 1999).

Each hierarchical regression consists of three steps. In step one, the control variables (Teamwork Experience, Team Size, and Task Type) were entered in the research model. The independent variables as well as the moderating variable (Task Conflict, Relational Conflict,

Process Conflict, and Social Category Diversity) were added in step two. The moderator needs to be included as an independent variable, "[because] moderator variables always function as interdependent variables" (Baron & Kenny, 1986, p. 1174) and the direct effect of the moderator to the focal variable needs to be tested. In the third step we entered the interaction effects, representing the product of independent variable and moderating variable.

If X is the independent, Y the dependent, and Z the moderating variable, the interaction term XZ (multiplication of X and Z) enters as additional regressor beside the independent variable into the model. "Moderator effects are indicated by the significant effect of XZ while X and Z are controlled" (Baron & Kenny, 1986, p. 1176). The results of the regression models are presented in Table 2.

As a next step, we applied a heuristic method for estimating the relative weight of each variable in a combined model that includes all independent, moderating and control variables. We did so, since our separated test of each conflict dimension allows for an interpretation of the direction of causality, but not about the weight or relevance of the conflict dimensions in a combined model. Although multicollinearity issues prohibit the inclusion of all three conflict dimensions in a combined regression model, Johnson (2000) developed a heuristic method to estimate the proportional contribution that each variable makes to R^2, thus reflecting the importance of each variable in the regression model. This approach addresses the issue of variable collinearity using a variable transformation approach. First, a new set of uncorrelated predictor variables that are maximally correlated with the (intercorrelated) predictor variables are calculated. In a second step, the dependent variable is regressed on the new uncorrelated predictor variables, yielding standardized regression coefficients. To derive estimates of relative weight, these coefficients are then squared and combined with the standardized

regression coefficients obtained by regressing the original predictors on the new uncorrelated terms. As discussed by LeBreton et al. (2007), this approach yields estimates that are highly consistent and leads to meaningful estimates in the presence of multicollinearity. As a consequence, a clear statement about the weight of the contingency factor can be derived. These results are reported in Table 3.

======INSERT TABLE 2 ABOUT HERE=====

======INSERT TABLE 3 ABOUT HERE=====

The results of the descriptive statistics (see Table 1) show that the perceived conflict level with an arithmetical mean of 1.91 to 2.45 (5-point-Likert scales)within the team is relatively high. Besides the positive externally assessed performance rating with an mean of 4.94, the team members quoted their teamwork experience with a mean of 4.13 relatively high as well. Performance and teamwork experience were measured on 7-point Likert-scales.

Regarding the hierarchical regression, the three regressions were each divided in three steps as stated above. On closer examination it is striking that significant effects occur in Step 2 and Step 3 regarding task conflicts and relational conflicts but not with regard to process conflicts. SCD consistently exhibits positive, direct effects; however, they are only significant with regard to task and relational conflicts. Our integrated controls consistently show similar values. However, except to "Task Type" where our controls show significant effects on a very low level (.074; $p < .1$), they do not enter significantly. Even in the heuristics of Johnson (2000; see Table 3) the contributions to the R^2 of the controls are at a rather low level.

In hypothesis 1 we predicted an enhanced team performance as an effect of high task conflict. As can been seen in Step 2 of our regression analysis, the direct effect of task conflict on performance is positive at a high level of significance (.190; $p < .01$). When SCD is included as a moderating variable, the significant main effect of task conflicts considerably increases (.458; $p < .01$). The heuristic analysis presents a high contribution and relevance of this conflict dimension to the R^2 for the whole model, too (see Table 3). With respect to the results at hand, hypothesis 1 is thus supported by our data.

This effect of task conflicts on performance is in line with the prediction in hypothesis 1. The positive influence of task conflicts and their generally beneficial effect for team outputs also corresponds with the results of numerous existing studies (Amason, 1996; Amason & Schweiger, 1997; Cosier & Schwenk, 1990; Janssen et al., 1999; Jehn, 1995; Jehn, 1997; Matsuo, 2006; Pelled et al., 1999; Putnam, 1994; Schweiger et al., 1989; Tjosvold & Deemer, 1980; Song et al., 2006). However, it is interesting that the task structure did not turn out to be relevant, which is contrary to prior studies (De Dreu & Weingart, 2003; Gladstein, 1984; Jehn, 1995). If task type had a critical impact, there would not be such a significant effect since each team worked on the creative as well as on the decision-choice task. It thus seems like the participants of the experiment were able to use communication models, which allowed them to find a consensus within the group and avoid win-lose situations (Lovelace et al., 2001).

In Step 2 a low but significant positive effect of relational conflicts on performance (.098; $p < .05$) was found. A considerable increase of this effect at the same significance level was found in Step 3 (.432; $p < .05$). Therefore, opposite to the prediction, relational conflicts lead to higher performance. Thus, hypothesis 2 needs to be rejected.

These effects of relational conflicts are surprising. Contrary to a large number of existing studies (e.g., Ayoko et al., 2001; Greer et al., 2008; Jehn & Mannix, 2001; Passos & Caetano, 2005; Simons & Peterson, 1998), relational conflicts impair performance in our study. However, Jehn's results in her studies concerning relational conflicts were as well partly opposed to the postulated hypothesis. Relational conflicts indeed provoked high dissatisfaction of team members but team performance was not as strongly impaired as previously expected. In the paper at hand the available time might be a core reason for explaining this surprising result. Teams were strongly restricted by the given time limit of 20 minutes for processing their tasks. It is thus likely that the team members perceived time pressure. Each team had to deliver output before the time limit was expired. The interpretation of Jehn (1995, p. 276) that "members [who are] involved in the conflicts choose to avoid working with those whom they experience conflict" thus seems not to be transferable to our study. Due to the time pressure it might not have been possible for team members to evade others in consequence of relational conflicts. Team members rather may have overlooked the intensive conflict within these short-term tasks and contributed to the group's success due to the time constraint. Although the results in the study of Jehn & Mannix (2001) are different, a closer consideration of the temporal conflict occurrence thus leaves room for further interpretation. In their study, relational conflicts are split in three periods whereas in the first period conflicts are consistently lower and increase over time. Similarly, Deutsch (1973) sees in "conflict[s] (..) a tendency to escalate and expand" (Jehn & Bendersky, 2003, p. 211). Applied to our study, team members may have thus neglected an intensive processing with interpersonal tensions within the short-term tasks. With the knowledge of working together just once and having to deliver output within a limited time period, the team members may have taken on roles causing beneficial effects of relational conflicts on team performance.

The effects of process conflict range between .010 in Step 2 and .068 in Step 3 at a very low and not significant level. The heuristic estimate (see Table 3) illustrates a small contribution to the R^2 as well. The negative effect of process conflicts we supposed n hypothesis 3 therefore cannot be verified. In consequence, based on our findings, hypothesis 3 needs to be rejected.

The following remarks may explain this surprising result. It can be assumed that the "understanding of topics such as delegation and allocation of resources" (De Wit & Greer, 2008, p. 2) among the team members were quite different, since the teams worked in this composition for the first time on the tasks. Therefore, structures of roles were not existent at the start. Disagreements about "how to do it" impair the "decision-making effectiveness" (Passos & Caetano, 2005, p. 241) and consequently diminish the success of a team. Jehn & Mannix (2001) predicted a U-shaped progress of process conflicts. But "the results show that process conflict for high-performing groups increases significantly from the early to the middle to the late time block, rather than (…) hypothesized" (Jehn & Mannix, 2001, p. 245). Again, the time aspect may thus play a critical role in our study. Caused by the clearly communicated time limit for working on the task and the first-time group composition as well, team members may have avoided process conflicts within their groups. Individuals, who would aim ambitious roles within team structures over time, may have accepted a subordinated role with respect to the group task and avoided position battles. They all may thus have focused on generating team output, and process conflicts did not have a critical impact or significant effect as a consequence.

In hypothesis 4 we predicted that SCD enhances a negative effect of conflicts on performance or diminishes a positive effect. Concerning the relationship between task conflicts and performance, SCD has a negative moderating effect on a significant level (-.356; $p < .05$). The influence of relational conflicts on team performance is also negatively and significantly affected by SCD (-.427; $p < .05$). The relevance of both interaction terms is also reflected by the significant change in R^2 for those regressions. The relationship between process conflicts and performance is negatively influenced by SCD as well, whereas with -.075 at a very small and not significant extent. The additional contribution to R^2 of this regression is not significant as well. These findings are represented in an identical way in the heuristic estimate of Johnson (2000; see Table 3). Summarising the results of the data at hand, hypothesis 4 is supported for task conflicts and relational conflicts. To clarify the interaction effects, we graphically illustrate them as follows (Aiken & West, 1991; see figure 2 and 3). Due to its insignificance, we do not illustrate the interaction effect of process conflict.

=====INSERT FIGURE 2 ABOUT HERE=====

=====INSERT FIGURE 3 ABOUT HERE=====

SCD consistently shows negative interaction effects. Further, data reveals for both significant cases that differing conflict intensities do lead to strong performance variations in teams with high SCD. In the case of low SCD, intensive conflicts lead to a statistically significant increase of performance compared with low conflict intensities for both types of conflict. A possible basis for interpretation could be seen in the results of Watson et al. (1993). In their study, heterogeneous teams reached similar results as homogeneous teams only over time (Watson et al., 1993). Therefore, heterogeneous teams seem to need to learn working together

to convert conflicts into positive outcomes for their group. Thus, the combination of a limited time period with the completely new team composition may contribute to an explanation of the results.

Passos & Caetano (2005, p. 241) state that "values may influence the way individuals interpret and react to the different types of intragroup conflict". This proposition could outline another explanation for the results. In teams with high SCD, different views and behavior roles concerning the task processing and task achieving as well as communication behavior seem to lead to high difficulties of converting conflicts into performance. Barriers in language, visible diversity among the team members and categorisation in "ingroup" and "outgroup" as a consequence may be possible explanations for this phenomenon, as outlined above.

Based on the fact that diverse teams "are more likely to be less integrated, have less communication, and more conflict" (Williams & O'Reilly, 1998, p. 115) the not inevitably existent independence between the conflict dimensions (e.g., Amason, 1996; Jehn, 1997; Pelled et al., 1999; Medina et al., 2005) attaches a higher importance. "Emotional harsh language" (Ross, 1989, p. 140) or used "intimidation tactics" (Simons & Peterson, 1998, p. A2) during the task process can evoke high irritations between members within a team with high SCD. "If one dislikes the position another takes, (…) there is a psychological tendency to develop similar attitudes toward the person" (Walton, 1969, p. 87). The lack of authority and role allocation within a team with high SCD can lead to impair an efficient conflict management. Applied to our study, results may thus show that in heterogeneous teams resources were used for dealing with conflicts instead of deploying them on the group task. Consequently, the team performance was reduced.

Implications and limitations

The results of our study once more clarify the complexity of the investigated relations. However, we found no significant effect of process conflicts on performance. Our results yielded positive effects of task and relational conflicts on performance on a significant level. Hence, our findings allow to derive implications for both research and practice. The data reveals highly significant and positive effects of task conflicts on team performance. The beneficial influence of task conflicts correlates with many results of prior studies. Heterogeneous teams are more successful than homogeneous teams when they experience low task conflicts (see figure 2). When teams contain just a low degree of SCD, the performance increases as soon as they experience higher task conflicts. In addition, a variation of the task conflict intensity influences the performance within teams with high SCD just marginally. Hence, a clear implication for practice can be derived. Task conflicts positively affect performance when team members work on short-term tasks. Therefore, task conflicts could be strategically provoked in organizational practice for enhancing team performance. Since our study focused on a student design where short-term tasks had to be solved, a task change towards long-term tasks could deliver valuable insights for research. A positive effect based on task conflicts might be supported under these circumstances as well.

The results for relational conflicts are surprising because our data reveals that they positively affect performance. If the conflict intensity changed to higher relational conflicts, homogenous teams reached a higher team performance whereas in heterogeneous teams no crucial variations could be attested. These findings produce a number of practical implications. First, there seems to be no need to avoid relational conflicts in advance if teams have to work on short-term tasks. Teams with low SCD in this context are even able to

increase their performance in case of high conflicts. It might be that a strategic incorporation of a provocateur in a team may thus lead to beneficial effects in practice. For further research our findings need to be validated or refuted by a larger sample and/or teams, which work on long-term tasks.

As mentioned before, process conflicts did not have a significant effect on team performance. Therefore, this conflict dimension obviously could be almost ignored within student teams working on short-term tasks. The following implications could be interesting for further research. First, the influence of process conflicts should be proved in long-term tasks. Second, process conflicts could be a rather neglectable conflict dimension, which should be examined under changed contextual conditions.

"Social Category Diversity" negatively influenced the relationships between the two significant conflict dimensions and performance. Hereby, the contextual circumstances need to be attended and, thus, a negative categorisation of diversity should be avoided. On the one hand, our results build on an experiment with students and on the other hand, they worked on short-term tasks. When teams experienced task and relational conflicts on a lower level, heterogeneous teams achieved higher levels of performance than homogeneous teams. As soon as the conflict intensity increased, homogeneous teams outperformed teams with higher diversity and accomplished higher levels of performance (see figure 2; figure 3). Further investigations focusing on diversity effects within long-term tasks need to be exerted for enhancing the generalisability of our findings in diversity research. For practice, the results constitute a clarification to possibly control diversity within teams. If there are tasks to be solved which are supposed to entail high levels of conflict during the task process, the organizational practice could recruit less diversely composed teams and vice versa. The result

at hand also hints to the high relevance of trainings such as developed by Puck (2007), which sensitise team members to successful teamwork within heterogeneous groups.

Beside the stated implications for practice and further research, we also have to consider the limitations of our study. First, we investigated a relatively small sample of 92 task observations. Further studies should validate the results with a larger sample. Second, the teams worked on short-term tasks which we outlined several times. This fact restricts the predictive power of our results to this specific context. There is need for further examinations with longer-term tasks which would entail a longer cooperation of team members. Hence, practical implications could be more delineated and deliver a more comprehensive understanding of team research. Third, in our study diversity is limited to demographical attributes and nationality is operationalised as a substitute for "underlying attributes" (Jackson et al., 2003, p. 802). Consequently, there is a lack of illustrating individual differences respectively sub-group building within nations. Studies, which do not limit their focus on "immutable characteristic[s]" (Pelled et al., 1999, p. 1) of diversity, but undertake more in-depth investigations of this contingency factor, could provide important findings.

Despite these limitations this study provides key contributions for research. Diversity has been incorporated as a structural variable into models so far, but has never been operationalised as a contingency factor in a conflict-performance model. Especially the heuristic model of Johnson (2000; see Table 3) underlines the high relevance of diversity as an interaction term. The direct effect of SCD on performance is relatively low representing a contribution of 1.4% to R^2, but the interaction effect is extremely high with a nearly 25% contribution to R^2. Summarising, our study points to the high relevance of contingency factors, which calls for further integration in future research.

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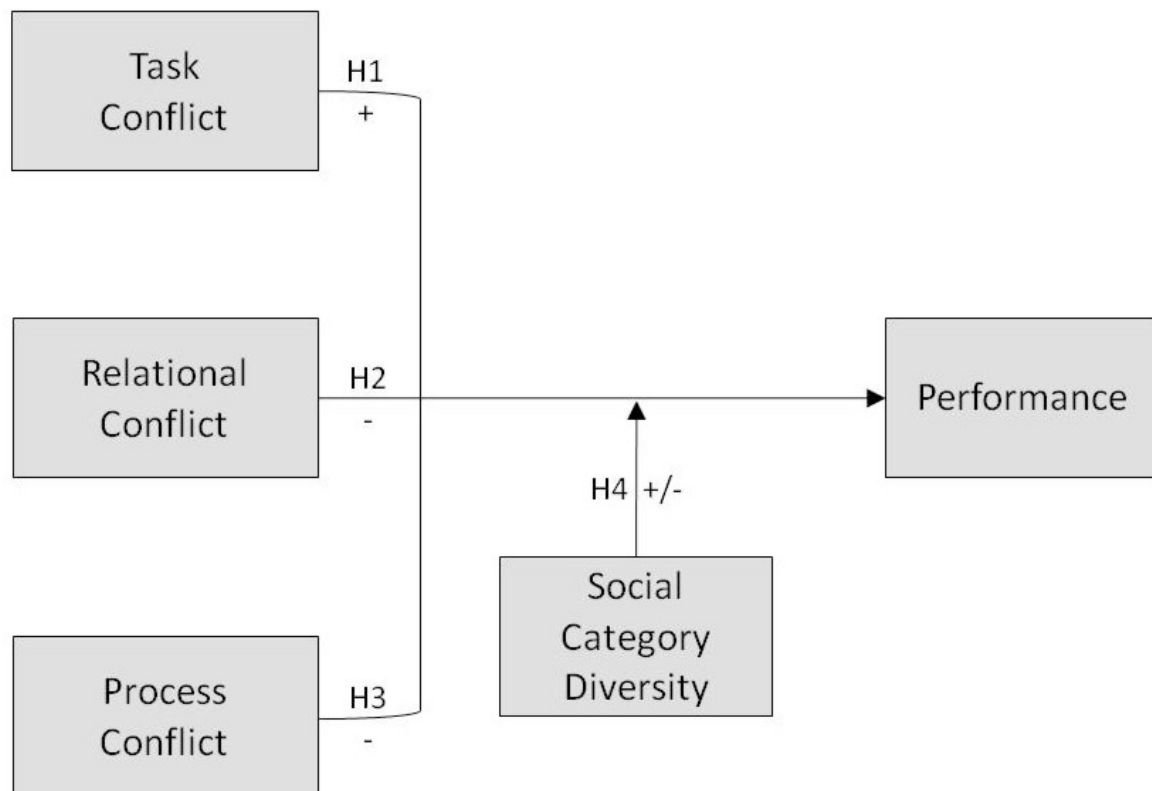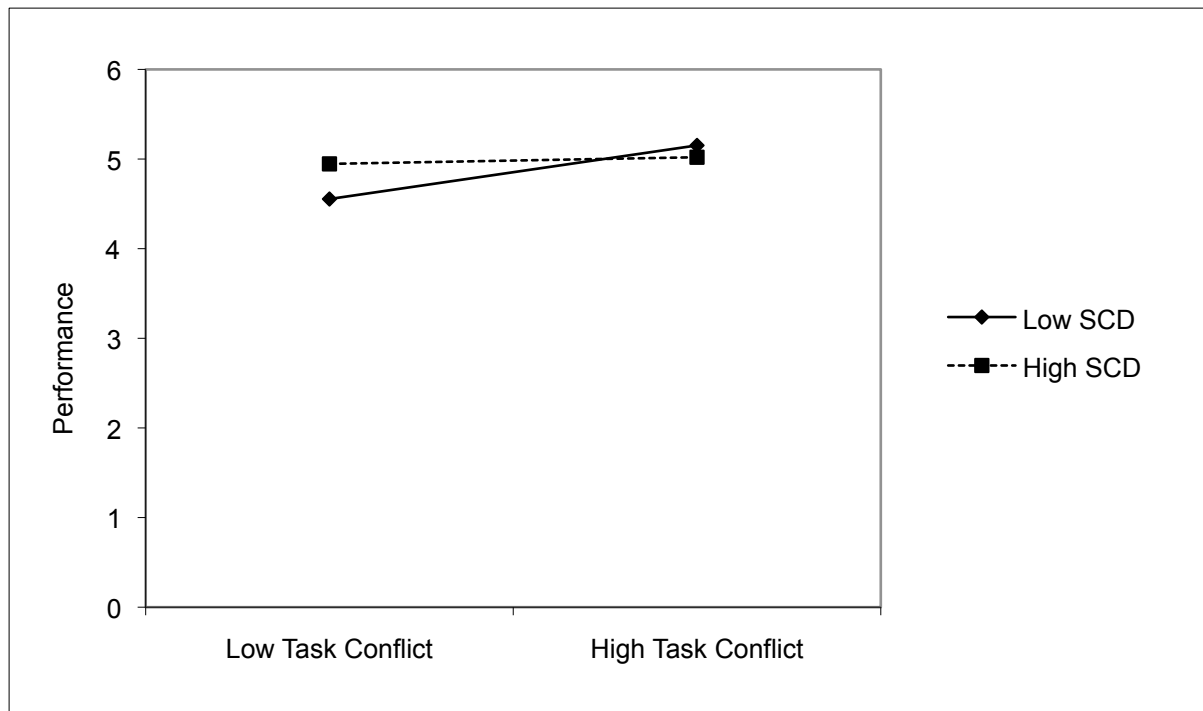
FIGURES

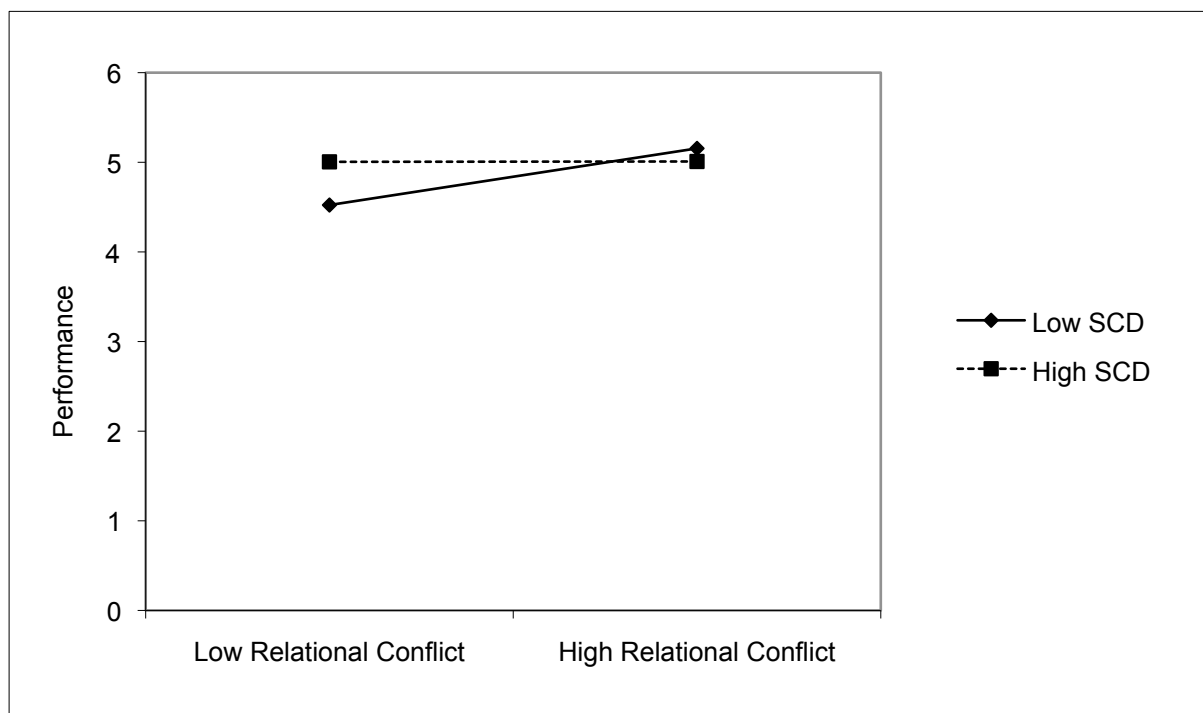Figure 1: Research model

Figure 2: Plotted Interaction Effects

Figure 3: Plotted Interaction Effects

TABLES

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Performance	4,94	0,37	-							
2. Task Conflict	2,33	1,11	,195**	-						
3. Relational Conflict	1,91	0,98	,104*	,598**	-					
4. Process Conflict	2,45	1,20	,016	,464**	,493**	-				
5. SCD	0,37	0,13	,002	,086*	,033	-,020	-			
6. Team Size	5,99	1,04	-,024	-,073	-,043	-,090*	-,086*	-		
7. Teamwork Experience	4,13	1,26	,039	,137*	,007	,038	-,034	-,125*	-	
8. Task Type	0,5	0,5	,075	,005	,039	,031	,000	,000	,000	-

*p < ,05
**p < ,01
N = 536

Table 1: Means, standard deviations and correlations

Regression matrix

	Task Conflict			Relational Conflict			Process Conflict		
Step 1: Controls									
Team Size	-,022	-,011	-,012	-,022	-,018	-,020	-,022	-,021	-,021
Teamwork Experience	,027	,008	,008	,027	,027	,022	,027	,027	,028
Task Type	,074†	,074†	,072	,074†	,071	,058	,074†	,074†	,072†
Step 2: Main effects									
Task Conflict		,190**	,458**						
Relational Conflict					,098*	,432*			
Process Conflict								,010	,068
Social Category Diversity		-,015	,179†		-,002	,229*		,001	,045
Step 3: Interaction effects									
SCD x Task Conflict			-,356*						
SCD x Relational Conflict						-,427*			
SCD x Process Conflict									-,075
Change in R²		,035	,008		,010	,012		,000	,000
F Change		9,728**	4,498*		2,586†	6,433*		,027	,248
R²	,007	,042	,050	,007	,016	,028	,007	,007	,007
Adj. R²	,001	,033	,039	,001	,007	,017	,001	-,002	-,004
F	1,222	4,648**	4,649**	1,222	1,772	2,564*	1,222	,741	,658

†$p < ,1$; *$p < ,05$; **$p < ,01$; ***$p < ,001$

$N = 92$

Table 2: Hierarchical Regression Analyses

Variable	Percentage of R^2
Controls	
Team Size	0,6%
Teamwork Experience	1,1%
Task Type	8,2%
Main effects	
Task Conflict	45,4%
Relational Conflict	14,0%
Process Conflict	5,3%
Social Category Diversity	1,4%
Interaction variables	
SCD x Task Conflict	16,1%
SCD x Relational Conflict	6,0%
SCD x Process Conflict	1,9%
R^2	0,067

Table 3: Relative Weights as Percentage of R-Square
according to Johnson (2000)