BRIDGING THE FAULTLINE GAP: ANTECEDENTS OF COOPERATIVE DECISION-MAKING IN CROSSED-GROUPS SOCIAL DILEMMAS

Ann-Sophie De Pauw

2013

Advisor: Prof. Dr. Herman Van den Broeck
Co-advisor: Prof. Dr. Jeanne Brett

Submitted at Ghent University, Faculty of Economics and Business Administration
In partial fulfillment of the requirements for the Degree of Doctor in Applied Economics

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ADVISOR

Prof. Dr. VAN DEN BROECK Herman, Department of Management and Organization, FEB, Ghent University

CO-ADVISOR

Prof. Dr. BRETT Jeanne, Dispute Resolution Research Center, Kellogg School of Management (Northwestern University), USA

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To my parents

For raising me to believe that anything was possible

And to Andreas and Helena

For the pleasure of raising them

No man is an island,
Entire of itself,
Every man is a piece of the continent,
A part of the main.
(John Donne)

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For the past years I have been envisioning this moment, the writing of these words quite often. And, I must admit, at times when the going got tough, this was one of the things that motivated me. This moment of serenity when the PhD dust settles down, the curtains are drawn en the last test statistic is analyzed.

It has been quite a journey, this PhD, and now, having the privilege of looking backwards I feel that I have enjoyed every moment of it. Even the theoretical knots, the data-stress, the non-significance dips, I have enjoyed it all. For it is not only the end result that counts, but even more so the path that leads the way. Sometimes this path looked more like a labyrinth than a straight road ahead though, but the faith that somewhere there was a way out became stronger, the more advanced I was on my trip. I would like to thank so many people who made this journey possible and for travelling with me.

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CHAPTER 1

Introduction

General Research Question

Teams are increasingly important in organizations for both decision-making and production (Bettenhausen, 1991; Ilgen, Major, Hollenbeck, & Sego, 1993; Kozlowski & Bell, 2003). For companies to retain a competitive advantage, more emphasis is placed on processes as creativity and social innovation where added value is created by bundling forces via cooperation in work groups (Zaccaro, Marks, & DeChurch, 2012).

In our globalized world, these teams and workgroups have become more diverse due to increasing internationalization of organizations, in operations and in workforce (Li & Hambrick, 2005; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Zaccaro et al., 2012). Common practice after joint ventures, mergers, and other organizational restructurings, is the formation of new workgroups, consisting of employees originating from different organizations or departments that are now restructured into one. These heterogeneous groups then consist of (at least) two distinct subgroups. Group members are representing two (or more) social entities and categorize members of their own subgroup as ingroup while perceiving the other subgroup as outgroup.

Several challenges arise for such heterogeneous groups: First, most frequently the subgroups in this group are of unequal size (Lau & Murnighan, 1998). Subgroup members then represent either a majority or a minority in the group, and this *group composition* may impact members' decisions to cooperate with the group. Members of the heterogeneous group are confronted with a *crossed-groups social dilemma*: should they continue to act in their self-interest or the interest of their former group, which is now only a subgroup, or should they act to the benefit of all and contribute to their new workgroup?

Second, with the rise of the subgroups, *inter-subgroup processes* are instigated within the workgroup (Carton & Cummings, 2012); members evaluate their own in-subgroup more favorable than the out-subgroup (Gaertner et al., 2000; Hewstone, Rubin, & Willis, 2002), which frequently results in less contributions to the group interests, compared to the subgroup and individual interests (Wit & Kerr, 2002).

Key challenge for organizations and their managers is to motivate team members to contribute to these heterogeneous groups and as such solve the social dilemma, not only to the benefit of the team, but also to the organization as a whole. Aim of this doctoral research is to identify potential antecedents of cooperation in such heterogeneous groups, where members deal with a crossed-groups social dilemma in the presence of an in-subgroup and an out-subgroup.

In this introductory chapter we will first review the social dilemma literature, then tie in with findings from faultline and diversity research, to build the theoretical framework of this PhD at the cross-section of both literatures. We also look into the role of leadership to enhance cooperation in heterogeneous groups. Throughout this introduction we define the research objectives of this doctoral research. Finally, we elaborate on the experimental studies that were conducted to identify antecedents of cooperative decision-making in these heterogeneous groups.

Social dilemmas

Defining social dilemmas

A social dilemma in essence poses a fundamental conflict between short-term interests of individuals and the longer-term interests of the groups of which they are part. The ‘dilemma’

is that self-interested behavior (called defection) yields higher payoffs for individuals in the short-run, regardless of the decisions made by others, but everyone is better off if everyone cooperates than if everyone acts selfishly (Dawes, 1980; Komorita & Parks, 1996). The dominant strategy is to not cooperate, but when each group member acts rationally by choosing this strategy, the collective suffers. Each person has a choice: do what makes sense selfishly, or make a personal sacrifice for the good of the whole. If all make a sacrifice, then each will do better than if they all had acted selfishly (Raiffa, Richardson, & Metcalfe, 2002).

Social dilemmas are omnipresent in the workplace, where employees make daily decisions to engage in behavior that supports their group or team. These efforts often go beyond the role requirements of the job (Organ, 1997) and - although organizational citizenship behaviors may come at a personal cost - they significantly contribute to team effectiveness (MacKenzie, Podsakoff, & Ahearne, 1996), and overall organizational performance (Podsakoff & MacKenzie, 1994). So, if no one devotes time, energy and means to these activities, then all group members will be worse off, because the system will not operate as efficiently (Bergeron, 2007; Joireman et al., 2006).

Social dilemmas and Game theory

The study of social dilemmas is grounded in game theory, which focuses on strategic decision-making and the analysis of how individuals solve different conflicts of interest (Luce & Raiffa, 1957; Von Neuman & Morgenstern, 1947; Pruitt & Kimmel, 1977; for a review see Komorita & Parks, 1996).

To study individual decision-making in mixed-motive situations, where self-interest and other interest or group interest are at odds, several game-theoretic paradigms have been developed, all modeling the tension between individual and collective rationality.

The underlying dynamic of the *Prisoner's Dilemma (PD) game* (Axelrod, 1984), and *Social Dilemma (SD) games* (Dawes, 1980; Messick & Brewer, 1983) – such as public goods and common goods dilemmas – is that engaging in self-interest is the most rational choice with the higher pay-off, but contributing to the collective always is the most sustainable option, resulting in higher long-term pay-offs in case others also engage in collective interest. In a PD game individuals make the trade-off between personal and joint interest in a dyad, whereas in the SD game individuals weigh their self- interest in relation to multiple other group members.

In yet another type of game (e.g., Bornstein, 2003), the individual has to decide upon cooperation toward his own group, which is involved in a competition with another group. These so-called *team games* encompass an intra-group conflict (personal interest vs. own group interest) as well as an inter-group conflict (own group interest vs. other group interest). Individuals not only have to weigh individual and collective interests, but also their own group's interests. In both the *Inter-group Prisoner's Dilemma (IPD) game* (Bornstein & Ben-Yossef, 1994) and the *Inter-group Prisoner's Dilemma – Maximizing Difference (IPD-MD) game* (Halevy, Bornstein, & Sagiv, 2008), the groups in conflict are homogeneous in composition.

In studies of so-called *Nested Social Dilemmas* (Wit & Kerr, 2002; Polzer, Stewart, & Simmons, 1999; 2005; Halevy, Chou, Cohen, & Livingston, 2012), an individual's decision to cooperate reflects the simultaneous dynamics between individual, subgroup and group interests. The NSD paradigm addresses situations in which members are part of only one homogeneous group, consisting of two subgroups.

During an organizational restructuring, such as the merger of two former organizations into one, the post-change collective comprises a multitude of newly formed groups, that are heterogeneous in composition. For an individual employee in such heterogeneous groups, some members originate from his pre-merger ingroup and other members originate from the pre-merger outgroup. Given the unequal size of the subgroups present in the larger group (Lau & Murnighan, 1998), subgroup members of ingroup and outgroup will either form a (numerical) majority or minority in the newly formed group (Carton & Cummings, 2012; O'Leary & Mortensen, 2010).

When these (sub)group members decide to contribute to the group, this benefits not only members of the individual's in-subgroup but also members of the out-subgroup. So, either a larger number of in-subgroup members or out-subgroup members profit from an individual's cooperation. The existing game paradigms do not allow yet to study individual decision-making in such heterogeneous groups. Consequently, we need another game paradigm that addresses this specific situation: the Crossed-Groups Social Dilemma (CSD) paradigm.

Research objective 1: The first objective of this dissertation is to develop the Crossed-Groups Social dilemma (CSD) game. This game allows to investigate cooperative decision-making in heterogeneous groups and will be validated in several experimental studies.

Research objective 2: The second objective of this dissertation is to investigate with the CSD game to what extent members' decision to cooperate with the heterogeneous group is influenced by the group composition - with an in-subgroup and an out-subgroup.

Antecedents of cooperation in social dilemmas

For decades, rational choice theory has dominated the field of economics with the assumption of 'homo economicus' or 'rational man'. According to this principle, when a dilemma arises between self-interest and the interest of the group in which individuals take part, all members would act according to the dominant strategy and thus choose selfishly.

However, as the interest in game theory surged, also in social and behavioral sciences, more and more research consistently showed that people cooperated**,** although these theories of rational choice said they should not (Ledyard, 1995). In other words, individuals do not always make the most rational and optimal decision, but rather the one that is most satisfactory to them, also referred to as bounded rationality (Simon, 1991). In decision-making, rationality of individuals is limited by the information they have, the cognitive boundaries of their minds, and the finite amount of time they have to make a decision (Gigerenzer & Reinhardt, 2002). Findings in the fields of behavioral economics, psychology, evolutionary biology and other disciplines have widely supported this assumption and in turn steered research to focus on the study of antecedents of cooperative decision-making in social dilemmas: under which conditions would individuals forfeit their rational self-interest to cooperate with the group to the benefit of all, although this might not personally give them the highest gains on the short-term?

There is a vast body of research on the antecedents of *intra-group cooperation* in social dilemmas, investigating antecedents of individuals' trade-off between their private interests and those of their group (for a review see Kopelman, Weber, & Messick, 2004). In the same realm, considerable effort has been invested in understanding *inter-group cooperation* in the context of prisoner's dilemmas (Insko et al., 1998; Schopler & Insko, 1992; Wildschut, Insko,

& Pinter, 2007; Wildschut, Pinter, Vevea, Insko, & Schopler, 2003), comparing intra-group decision-making of individuals with inter-group decision making (individuals versus groups, groups vs. groups, individuals vs. individuals of other groups). However, these studies have investigated decision making of individuals intra-group and inter-group separately, which surpasses the simultaneous dynamics between individual, subgroup, and group interests in individuals' decision making (Wit & Kerr, 2002). Clear example is the dilemma that arises after corporate acquisitions, when employees continue to act in the interest of themselves or colleagues of their old company, despite the interests of the new group in which their old colleagues now only form a subgroup (Hogan & Overmyer-Day, 1994; Terry & Callan, 1998).

To identify antecedents of cooperation in crossed-groups social dilemmas, where group members have to deal with mixed motives, we can build upon a research tradition identifying factors that promote collectively interested behavior at the expense of self-interested behavior in social dilemmas (for a review see Kopelman, Weber, & Messick, 2004; van Lange, Joireman, Parks, & Van Dijk, 2012). Several *situational factors* that impact cooperation levels in social dilemmas have been investigated, such as: environmental uncertainty (Budescu, Rapoport, & Suleiman, 1990; De Kwaadsteniet, Van Dijk, Wit, & De Cremer, 2006; Gustafsson, Biel, & Gärling, 1999; Messick, Allison, & Samuelson, 1988), rewards and punishment (Balliet, Mulder, & van Lange, 2011; Gächter, 2000), autocratic leadership (Messick et al., 1983; Samuelson, Messick, Rutte, & Wilke, 1984; Samuelson & Messick, 1986; Van Vugt, Jepson, Hart, & De Cremer, 2004), democratic leadership (Van Vugt & De Cremer, 1999), equality heuristics (Allison & Messick, 1990; Roch, Lane, Samuelson, Allison, & Dent, 2000), and framing (Kramer & Brewer, 1984; Parks, Sanna, & Posey, 2003; Van Dijk & Wilke, 2000).

Next to these situational factors, also *individual antecedents* of cooperation in social dilemmas have been studied. People differ in fundamental ways in how they approach social dilemmas, and how they interact in social dilemmas (van Lange et al., 2013). Willingness to sacrifice for the group is influenced by a variety of factors and is driven by personally held goals or social dispositions (Kelley & Thibaut, 1978; McClintock & Liebrand, 1988). One such motivational orientation is Social Value Orientation (SVO), reflecting how people weigh their own and their interaction partner's outcomes in an interdependent relationship (van Lange, 1999; Yamagishi et al., 2013).

In general, a distinction is made between three types of social value orientations: prosocials, individualists, and competitors (Balliet, Parks, & Joireman, 2009; Messick & McClintock, 1968; van Lange, 1999). Prosocials pursue joint outcomes and equality in outcomes, and are more likely to engage in the same level of cooperation as (anticipated from) the interdependent other. Proselves are either individualists (maximizing outcomes for self with little or no regard for others' outcomes) or competitors (maximizing relative advantage over others' outcomes). Research shows that prosocials tend to contribute more than proselves in a social dilemma game (Kramer, McClintock, & Messick, 1986; Liebrand & Van Run, 1985; Roch & Samuelson, 1987). Proselves generally act less cooperatively, irrespective of their levels of identification with fellow group members (Kramer & Goldman, 1995). Being members of a heterogeneous group - consisting of two distinct subgroups (in-subgroup and out-subgroup) - prosocials and proselves might differ in their reactions to the composition of the group or both may be equally (in)sensitive for group composition. Preliminary evidence can be found in representative negotiations research, where prosocials were more willing to sacrifice self-interest to benefit constituency (cf. in-subgroup) and adversary (cf. out-subgroup) combined than proselves (Aaldering, Greer, Van Kleef, & De Dreu, 2013).

Research objective 3: The third objective of this dissertation is to investigate whether prosocials and proselves react differently to the composition of the heterogeneous group - with an in-subgroup and an out-subgroup subgroup - and how this impacts their decision to cooperate with the group.

Faultlines and diversity

Next to our research on the effect of individual social value orientation, we also aim to study situational antecedents of cooperation in these heterogeneous groups, where members are presented with a crossed-groups social dilemma. Above we identified some previously researched factors in the social dilemma literature. These, however, have been investigated more in the context of homogeneous groups. Consequently, we will also build on the faultline and diversity literature with findings on decision-making in heterogeneous groups. We focus on the concept of social categorization, which has been investigated both in the context of social dilemmas as in faultline-based heterogeneous groups. In what follows, we first demonstrate the link between the crossed-groups social dilemma, group faultlines, and identity-based subgroups, to then elaborate on the effects of social categorization on cooperation levels when these faultlines are more (faultline activation) or less salient (faultline deactivation) in the group.

Crossed-groups social dilemma and faultline-based group

When two prior separate groups start working together in one workgroup (e.g. in alliance, organizational merger) a *strong faultline* may arise based on employees' membership of one organization/department or the other (Hambrick, Li, Xin, & Tsui, 2001), causing a crossed-groups social dilemma: members of these groups are now crossed into one new workgroup

and in the trade-off between self-interest and group interest, members will also take the interests of their subgroup – that is now nested in the group – into account.

Faultlines are defined as "hypothetical dividing lines that split a group or a team into two (or more) subgroups based on one or more individual attributes" (Lau & Murnighan, 1998, p. 328), such as pre-merger group membership. In the newly composed group the basis for a faultline – a crack or a divide – is, by definition, present and gives rise to two distinct in- and out-subgroups. Members do not come to the group as individuals, but rather as representatives from two different social entities (Li & Hambrick, 2005), nested in the group. This (salient) subgroup membership emphasizes differences between subgroups and can have an impact on their decision to contribute to the group (Wit & Kerr, 2002).

Identity based subgroups and Social Categorization

Identity-based subgroups are formed when members share a common identity, as is the case with the in-subgroup out-subgroup arising in the larger faultline-based group. Two other types of subgroups have been identified in inter-group processes research (Carton & Cummings, 2012). The class of *knowledge based subgroups* builds on theory of information processing (Galbraith, 1974) and emphasizes that organizations have developed specialized units to adapt to specific domains of knowledge (e.g. accounting, marketing, customer service,…). *Resource-based subgroups* arise along hierarchies according to differences in subgroups' abilities to claim resources; this tenet builds on social dominance theory (Sidanius & Pratto, 1999). This doctoral research focuses on identity-based subgroups, building on social categorization (Turner et al., 1987) and social identification (Taijel & Turner, 1986) theory.

Social identity is defined as "that part of an individual's self-concept which derives from his knowledge of his membership in a social group together with the value and emotional significance attached to that membership (Taifel, 1981, p. 255)". Social identity and social categorization theory (Taifel & Turner, 1986; Turner, 1975; Turner, Brown, & Taifel, 1979) stresses the importance of group membership per se in understanding inter-group relations. A person's membership groups in effect define crucial aspects of one's self, and play a major part in how one perceives and behaves towards members of other groups (i.e., how one weighs individual interests versus subgroup and collective interests) (Hogg & Vaughan, 2010).

To understand individual decision making behavior, research clearly needs to acknowledge the way in which the individual mind is structured by people's social (sub)group memberships (Oakes, Haslam, & Turner, 1994; Tajfel & Turner, 1979; Turner & Oakes, 1986). Group behavior and the perception of (sub)groups as real entities is made possible by the capacity of individuals to define themselves psychologically and to act as (sub)group members (Turner, 1982). The extent to which individual decision makers identify with their (sub)group and use this identification as a reference point for their decision behavior is referred to as their social identity (Brewer, 1979; Brewer & Schneider, 1990; Messick & Brewer, 1983).

Identity in a given situation can range from highly individuated personal identities to shared collective or group identities. Individuals' personal and group identities tend to be inversely related, so that when one identity is salient, the other recedes in importance. Consequently, increasing the salience of an individual's social identity can result in a de-emphasis on the self. When identity moves from the personal to the group level, there is "a shift towards the

perception of the self as an interchangeable exemplar of some social category and away from the perception of self as a unique person (Turner, 1987, p.50-51)". People who think of themselves as sharing a common (sub)group membership become relatively more concerned with the welfare of those in that (sub)group (Brewer, 1979, 1991; Kramer & Brewer, 1984), and thus are more likely to forfeit their private interests in favor of common interests (Wit & Kerr, 2002).

Social categorization in social dilemma and faultline research

This important psychological processes of social identification and categorization is critical to individual cooperation rates in social dilemmas. Members who strongly identify with their group have been shown to invest more in public goods dilemmas and exercise greater restraint in resource dilemmas than low-identifying group members, both in laboratory and field dilemmas (Brewer & Kramer, 1986; Dawes & Messick, 2000; Kramer, 1991; Kramer & Brewer, 1984; Kramer & Goldman, 1995; Kramer, Pommerenke, & Newton, 1993; Van Vugt & De Cremer, 1999; Wit & Wilke, 1990). Strong social identification incites individuals to assign more weight to their (sub)group's interests, converse to their personal interests.

The effects of social categorization have not only been studied in social dilemmas with homogeneous groups, but are shown to have important implications in heterogeneous faultline-based groups as well. Social categorization and identification is enhanced by increasing the salience of faultlines in the (heterogeneous) group, referred to as *faultline activation* (Van der Kamp, Jehn, & Tjemkes, 2012). The merging of two prior separate groups into a new workgroup is enough a trigger to activate the faultlines and initiate the subgroup formation (Chrobot-Mason, Ruderman, Weber, & Ernst, 2009; Hambrick et al., 2001). Making the faultline more salient will shift group members' cognitive processes and

result in more attention for subgroup interests and less attention for the interests of the larger group. Members of subgroups thus do not always interact as individual agents but quite often on behalf of the social subgroups to which they belong and with which they identify (Wit & Kerr, 2002).

Stronger and activated faultlines are frequently found to result in greater conflict, reduced team cohesion, performance and satisfaction (Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson, Joshi, & Erhardt, 2003; Kerr & Tindale, 2004; Lau & Murnighan, 2005; Thatcher, Jehn, & Zanutto, 2003). The subgroups resulting from these faultlines may cause an imbalance in the distribution of power, resources, and abilities (Lau & Murnighan, 1998), and differences in team outcomes (O-Leary & Mortensen, 2010), while their presence has important implications for inter-subgroup dynamics (Harrison & Klein, 2007). Consequently, it is of utmost importance to group outcomes to prevent and deal with subgroup formation and its resulting team conflict (de Wit, Greer, & Jehn, 2012; Jehn & Bezrukova, 2010).

Nevertheless, the process of minimizing the salience of activated faultlines in teams - and thus subgroup categorization - via *faultline deactivation*, has been hardly tapped into (Van der Kamp et al., 2012). Previous research did advance some specific interventions, effective in focusing individuals on the group as a whole, to enhance cooperative decision-making in faultline-based groups and minimize the adversities of faultlines: team goal setting (van Knippenberg, Dawson, West, & Homan, 2011), leadership style (Gratton, Voigt, & Erickson, 2007 ; Kunze & Bruch, 2010), reward structure (Homan et al., 2008), prodiversity beliefs (Homan, van Knippenberg, Van Kleef, & De Dreu, 2007), task autonomy and goal structure strategies (Rico, Molleman, Sanchez-Manzanares, & Vegt, 2007; Rico, Sànchez-Manzanares, Antino, & Lau, 2012).

Inter-group comparisons may also focus individuals' attention to their group and lead to favoritism towards the own group (Turner, Brown, & Taifel, 1979). For example, the practice of comparing the outcomes of one group to another can enhance a connection between members of that group, make them act upon the common goal of obtaining better outcomes than the other group and rise contributions to their own group (cf. Carton & Cummings, 2012; Gunnthorsdottir & Rapoport, 2006; Hornsey & Hogg, 2000). When faultlines operate, such a common goal, evoked by inter-group comparison, can stimulate group members to overcome their divisive subgroups (Lau & Murnighan, 2000). A *superordinate goal* or shared objective (Anderson & West, 1998; van Knippenberg et al., 2011) may override the tendency of identity-based subgroups to promote identity fragmentation (Hornsey & Hogg, 2000).

Research objective 4: The fourth objective of this dissertation is to investigate whether under faultline (de)activation group members react differently to the composition of the heterogeneous group – with an in-subgroup and an out-subgroup - and how this impacts their decision to cooperate with the group.

Research gaps

Our research addresses several gaps in both faultline and social dilemma literature. First, the interest in the field of study on group faultlines, although limited in size, is rapidly surging (e.g. Rico et al., 2012, Thatcher & Patel, 2012). Most faultline research addresses the alignment of demographic characteristics and its impact on the formation of subgroups and team outcomes. However, there is a call to further investigation on *faultlines composed of non-demographic attributes*, such as geographic work location (e.g. Polzer et al., 2006), and workgroup members' origin in faultline-based groups (Li & Hambrick, 2005). Although

faultlines can inhibit team processes, such as cooperative decision-making, to date the *research on management of team faultlines remains scarce* (Rico et al., 2012).

Second, faultline and strategy literature recently introduced the conceptualization of alliances as social dilemmas causing tension between cooperation and competition (Li & Hambrick, 2005; Zeng & Chen, 2003). However, to date there is little investigation on *how cooperation can be achieved and sustained in newly composed workgroups*, although lack of cooperation is a main cause of the relatively high failure rate (Arino & de la Torre, 1988; Doz & Hamel,, 1998; Park & Russo, 1996; Teece, 1992; Ulrich & Van Dick, 2007; Yan & Zeng, 1999). Past research has focused mainly on the enhancement of cooperation at an organizational level, but little attention has been devoted to the implications for employees on the work floor being confronted with conflicts of interests in newly composed workgroups.

Third, although the effects of group composition and emerging subgroups are well-documented in diversity and faultline literature, these findings have to our knowledge not yet been implicated on *cooperative decision-making in social dilemmas*. Previous social dilemma research already showed that a focus on present subgroups resulted in decreasing contributions to the group (Polzer et al., 1999; Polzer, 2004; Wit & Kerr, 2002). However, the link between the composition of subgroups and contributions to the group has to date not been investigated.

Finally, this study answers the call for research that investigates the *effect of a superordinate goal when stronger faultlines are activated* (Rico et al., 2012).

Faultline deactivation via superordinate goals: Limitations

On the one hand, faultline deactivation via a superordinate goal may reduce subgroup categorization in faultline teams by lowering comparative fit, promoting group welfare, and increasing subgroup cooperation (Rico et al., 2012). However, faultline deactivation can also lead to *identity threat* (Pearsall, Ellis, & Evans, 2008). Establishing a superordinate goal and categorization could undermine the distinctiveness of the subgroups, producing a threat to the integrity of members' separate subgroup identities and their need for subgroup distinctiveness. As a result, group members could maintain relatively high or even increased levels of inter-subgroup bias (Brown & Wade, 1987; Hornsey & Hogg, 2000; Jetten, Spears, & Manstead, 1997). Group members may feel that their subgroup identity is not accounted for in the workgroup and counteract with non-cooperative behavior in the workgroup.

On the other hand, faultline deactivation with the superordinate goal might result in a process of *decategorization* (Gaertner & Dividio, 2000). Due to the strong reduction in salience of subgroup distinctions, group members may categorize themselves at an individual level - not on a (sub)group level - and perceive themselves and other group members as individuals (Hewstone et al., 2002).

Superordinate recategorization alone is thus not always the optimal strategy to promote inter-subgroup harmony and cooperation (Dovidio, Gaertner, & Validzic, 1998; González & Brown, 2003). Clearly, research needs to investigate the conditions for superordinate goals to work, depending on the specific context in which (sub)groups are interacting (Crisp, Turner, & Hewstone, 2010). Prior research already showed that the benefits of superordinate goals might be achieved better when they are combined with other managerial strategies (see also Rico et al., 2012). This tenet is the point of departure for the study of the second situational antecedent of cooperation in this doctoral research: visionary leadership.

Leadership

Visionary Leadership and Superordinate Goals

Leadership might increase the effectiveness of faultline deactivation on cooperation levels in heterogeneous groups. Team leaders are continuously challenged by situations in which social identification - based conflicts can occur, due to faultlines that cross a group's structure (Chrobot-Mason et al., 2009). The presence of a leader in heterogeneous groups might reduce out-subgroup schemas (Hogg, van Knippenberg, & Rast, 2012; Pittinsky & Simon, 2007) and establish trust in the (cooperative) intentions of other subgroup members.

Articulating a vision for long term cooperation as the only viable option for all (sub)group members to tackle the crossed-groups social dilemma, might be a powerful means to further induce superordinate categorization. A leader supervising group members' cooperation might instill more assurance that under his management members from the out-subgroup will also cooperate and considerably lowers the risk for group members to be the 'sucker' rather than the 'savior'.

Consequently, we propose combining faultline deactivation via a superordinate goal, with visionary leadership to deal with the potential identity threat or decategorization, associated with the superordinate goal. This strategy – as a second situational antecedent of cooperation in the heterogeneous group - may allow to capitalize on the positive effects of a superordinate goal in faultline-based groups. Research that investigates the effectiveness of different managerial and leadership strategies to deal with identity - based group faultlines, is scarce to date, although it has been advanced as a promising avenue worth exploring (Kunze & Bruch, 2010; Rico et al., 2012).

Leadership in social dilemma and faultline research

Several studies already demonstrated the positive impact of leadership on cooperation with the group in social dilemmas (e.g. De Cremer & van Knippenberg, 2002; Mulder & Nelissen, 2010; Pinter et al., 2007; Stouten, De Cremer, & Van Dijk, 2005; Van Vugt & De Cremer, 1999). Leaders can increase cooperation by encouraging group members to contribute their time and/or finances to the group and by supervising and regulating the provision of common resources. A leader that envisions repeated interactions in the future can induce a long-term perspective ('shadow of the future'), and - from the stand-point of maximizing outcomes - motivate group members to shift away from their self-interest to the interests of the group (cfr. Axelrod, 1984; Kelley, 1984, 1997; Rapoport, 1967).

To gain insight into how leaders deal with the presence of subgroups and motivate members in the heterogeneous groups to tackle the conflicts of interest, we build upon inter-group leadership, faultline, and diversity literature. Although to date research has had limited attention for leadership across (sub)groups (Pittinsky & Simon, 2007) and the connection between group faultlines and leadership (Kunze & Bruch, 2010; Rico et al. 2012), prior studies offer some direction. Transformational leadership has been found to increase the positive effects of age-based faultlines (Kunze & Bruch, 2010), of functional diversity (Somech, 2006), of educational background diversity (Shin & Zhou, 2007) on for example team performance (Kearney & Gebert, 2009). This type of leadership has the potential to craft a new collective identity (Conger, Kanungo, & Menon, 2000; Halevy, Berson, & Galinsky, 2011; Kunze & Bruch, 2010; Pittinsky & Simon, 2007) by introducing shared factors (Gaertner et al., 1993).

Research objective 5: The fifth objective of this dissertation is to investigate whether under a visionary leader group members react differently to the composition of the heterogeneous group – with an in-subgroup and an out-subgroup - and how this impacts their decision to cooperate with the group.

Leader affiliation in heterogeneous groups

The leader of a faultline-based group most frequently originates from the one or the other membership subgroup, which is common practice after change processes such as mergers and joint ventures (see Li & Hambrick, 2005; Zeng & Chen, 2003). As such, the leader is affiliated more closely to one subgroup than to the other, which can impact his potential to increase cooperation levels in this newly formed group (Hogg et al., 2012).

A vast amount of leadership research (Yukl, 2002) has focused on the effects of properties and characteristics of the individual leader on cooperation. However, this approach has been criticized for placing too much emphasis on the intrinsic quality of the leader and too little emphasis on the social systems or groups within which leadership is embedded (Chemers, 2001; Hall & Lord, 1995; Haslam & Platow, 2001; Lord, Brown, & Harvey, & Hall, 2001; Pawar & Eastman, 1997). Leaders are most often also members of the (sub)groups they lead, and characteristics of the leader as a (sub)group member can influence leadership effectiveness (van Knippenberg & Hogg, 2003).

The *social identity theory of leadership* (Hogg, 2001; Hogg & van Knippenberg, 2003; van Knippenberg & Hogg, 2003; van Knippenberg, van Knippenberg, De Cremer, & Hogg, 2004) emphasizes the interaction between individuals' social identification and the leader's effectiveness in engaging subgroup members to contribute time, energy, effort, and resources to interdependent tasks and actions that benefit the group and organization. Individual

perception of a common identity with the leader is crucial for the leader's effectiveness in mobilizing individual efforts toward collective goals (Ellemers, De Gilder, & Haslam, 2004).

For (sub)group members who strongly identify with their (sub)group, leadership endorsement, perceptions of leadership effectiveness, and actual leadership effectiveness are strongly influenced by how *(sub)group prototypical* the leader is perceived to be (Hogg et al., 2006). This prototypicality implies that the leader is representative of the (sub)group's identity and acts according to the (sub)group norm (Hains, Hogg, & Duck, 1997; Hogg, Hains, & Mason, 1998). (Sub)group members will often favor leaders who display (sub)group prototypical characteristics ahead of those who display qualities that are simply stereotypical of leaders in general (De Cremer, van Dijke, & Mayer, 2010; Haslam, Reicher, & Platow, 2011).

Research objective 6: The sixth objective of this dissertation is to investigate whether group members react differently to the composition of the heterogeneous group – with an in-subgroup and an out-subgroup - depending on the affiliation of their (visionary) leader and how this impacts their decision to cooperate with the group.

Research gaps

To date, research on group faultlines and leadership is scarce, although the presence of a leader can determine whether diversity positively or negatively affects team functioning (Joshi & Roh, 2009; van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007). Also, the impact of leadership on cooperation in nested- and crossed-groups social dilemmas has remained relatively unexplored, despite the theoretical underpinnings for its effects. Our study is one of the first that provides a test of the effects of visionary leadership and leader

affiliation on cooperation levels in a faultline-based group, where group members need to deal with a crossed-groups social dilemma due to subgroupings.

Overview of this dissertation

We conducted five experimental studies to address our research objectives. These empirical studies were bundled in three papers, of which the theoretical framework, design and results are described in Chapter 2 to 4.

In Chapter 2, we address research objective 1 to 3. In the paper entitled *'Group composition and Social Value Orientation in Crossed-Groups Social Dilemmas'* we first lay-out the properties of the crossed-groups social dilemma game, designed to investigate cooperative decision-making in heterogeneous groups with subgroups. Second, we show how group composition has an impact on (sub)group members' decision to cooperate with the group. Third, we investigate how prosocials and proselves react to this group composition and how this social value orientation influences their contributions to the group. This paper reports on the results of two studies, where the second one replicated research findings to increase the validity of our results.

In Chapter 3, we specifically address research objective 4, i.e. to investigate the effect of faultline (de)activation on cooperation levels in the heterogeneous group. In the paper *'Bridging the Faultline Gap: Subgroup Composition and Goal Structure in Crossed-Groups Social Dilemmas'* we further validate the crossed-groups social dilemma game and show how group members' sensitivity to the group composition can be altered by faultline (de)activation. Again two studies were conducted, with the aim of replicating the research findings.

In Chapter 4, we address research objective 5 and 6, in the paper entitled *'Visionary Leader Affiliation and Faultline Deactivation in Crossed-Groups Social Dilemmas'.* We investigate whether visionary leadership and leader affiliation, combined with faultline deactivation, has an effect on group members' cooperation levels in the heterogeneous group. To this end, this study integrates findings from faultline and diversity literature with theory on charismatic and visionary leadership, inter-group leadership, and social identity processes in leadership.

We conclude this dissertation with an epilogue in which we highlight the empirical, methodological, and managerial implications of the research conducted. We show how our findings add to the literature on social dilemmas, faultlines and diversity, inter-group leadership, and leadership prototypicality. We also identify interesting avenues for future research.

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CHAPTER 2

Group composition and Social Value Orientation

in Crossed-Groups Social Dilemmas

Ann-Sophie DE PAUW, Arjaan P. WIT, & Herman VAN DEN BROECK

ABSTRACT

This paper introduces the Crossed-groups Social Dilemma game paradigm (CSD) that allows analysis of individual decision-making in 10-person heterogeneous groups. These heterogeneous groups are designed to simulate decision-making groups that result from mergers, joint ventures, and organizational restructuring, by modeling the presence of members of a former ingroup and a former outgroup in a newly formed heterogeneous group. Participants' cooperative behavior was assessed in two successive heterogeneous 10-person groups. These two groups differed with regards to the number of in-subgroup and out-subgroup members. Results of Study 1 confirmed that overall participants consistently showed parochial cooperation, i.e., more cooperation in a heterogeneous group with a majority of in-subgroup members than in a heterogeneous group with a majority of out-subgroup members. Prosocials were more likely to display consistent cooperation regardless of the composition of their heterogeneous groups whereas proselves were mostly consistent defectors. These findings were replicated in Study 2.

Keywords: Crossed-groups social dilemma, Parochial cooperation, Social Value Orientation, Group composition, Diversity, Game theory, In-subgroup, Out-subgroup.

INTRODUCTION

A social dilemma or multi-person prisoner's dilemma poses a fundamental conflict between short-term interests of individuals and the longer-term interests of the groups of which they are part. The 'dilemma' is that self-interested behavior (called defection) yields higher payoffs for individuals in the short-run regardless of the decisions made by others, but everyone is better off if everyone cooperates than if everyone acts selfishly (Dawes, 1980; Komorita & Parks, 1996). The essence of a social dilemma is that each person has a dominant strategy, but when each acts rationally by choosing this strategy, the collective suffers. Each person has a choice: do what makes sense selfishly, or make a personal sacrifice for the good of the whole. If all make a sacrifice, then each will do better than if they had all acted selfishly (Raiffa, Richardson, & Metcalfe, 2002).

Many organizational and workplace problems pose such social dilemmas (Foddy, Smithson, Schneider, & Hogg, 1999; Komorita & Parks, 1996; Liebrand, Messick, & Wilke, 1992; Messick & Brewer, 1983). Examples are problems of resource distribution within organizations (Kramer, 1991), employees' choice to engage in organizational citizenship behaviors (Joireman, Kamdar, Daniels, & Duell, 2006), provision of public services (Eek, Biel, & Garling, 2000), and dilemmas in business competition, such as cut-throat pricing and competitive advertising (Raiffa et al., 2002).

In social and organizational settings, groups confronted with social dilemmas are frequently heterogeneous and the dilemma takes the shape of a conflict of interests between different parties. Especially after change processes when new groups are formed, the interests of employees from different departments and/or organizations (i.c. merger, alliance, joint venture) have to be reconciled. As subgroups arise in these new groups, the social dilemma embodies the nested social structure and interests of the group members (Wit & Kerr, 2002). In the trade-off they make between personal interests and the new group's interests, group

members also take into account the interests of their subgroup, which is now nested in the newly formed group. Their decision to invest time, energy, monetary means in the new group, however, may not only depend on the mere presence of subgroups, but even more so on the composition of the group (Lau & Murnighan, 1998).

Social Dilemma games and the Crossed-groups Social Dilemma

Most game-theoretic paradigms to study individual decision-making in mixed-motive situations, model a tension between individual and collective rationality. The underlying dynamic of the *Prisoner's Dilemma (PD) game* (Axelrod, 1984), and *Social Dilemma (SD) games* (Dawes, 1980; Messick & Brewer, 1983) – such as public goods and common goods dilemmas – is that engaging in self-interest is the most rational choice with the higher pay-off, but contributing to the collective always is the most sustainable option, resulting in higher long-term pay-offs in case others also engage in collective interest. In a PD game individuals make the trade-off between personal and joint interest in a dyad, whereas in the SD game individuals weigh their self- interest in relation to multiple other group members. A long research tradition has been built around the identification of individual and contextual factors that promote collectively interested behavior at the expense of self-interested behavior (for a review see Kopelman, Weber, & Messick, 2004). And considerable effort has been invested in understanding the difference of cooperation in inter-individual interactions compared to inter-group interactions (Insko et al., 1998; Schopler & Insko, 1992; Wildschut, Insko, & Pinter, 2007; Wildschut, Pinter, Vevea, Insko, & Schopler, 2003), termed as the discontinuity effect.

In yet another type of game (e.g., Bornstein, 2003), the individual has to decide upon cooperation toward his own group, which is involved in a competition with another group. These so-called *team games* encompass an intra-group conflict (personal interest vs. own group interest) as well as an inter-group conflict (own group interest vs. other group interest).

Individuals not only have to weigh individual and collective interests, but also their own group's interests. However, in both the *Inter-group Prisoner's Dilemma (IPD) game* (Bornstein & Ben-Yossef, 1994) and the *Inter-group Prisoner's Dilemma – Maximizing Difference (IPD-MD) game* (Halevy, Bornstein, & Sagiv, 2008), the groups in conflict are homogeneous in composition.

In studies of so-called *Nested Social Dilemmas* (Halevy, Chou, Cohen, & Livingston, 2012; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Polzer, Stewart, & Simmons, 1999; Wit & Kerr, 2002), an individual's decision to cooperate reflects the simultaneous dynamics between individual, subgroup and group interests. The NSD paradigm addresses situations in which members are part of only one homogeneous group, consisting of two subgroups. However, after a merger of two former organizations into one, the post-merger collective comprises a multitude of newly formed groups, that are heterogeneous in composition. For an individual employee in such new heterogeneous groups, some members originate from his pre-merger ingroup and other members originate from the pre-merger outgroup. In the NSD paradigm group members cannot advantage one group over the other, based on the composition of these (sub)groups.

Crossed-groups social dilemmas arise when members of ingroup and outgroup are crossed into one new group – forming then an in-subgroup and an out-subgroup – and individuals have to decide upon cooperation with this heterogeneous group. Until now, none of the existing game theoretic paradigms addressed decision-making in heterogeneous groups, consisting of subgroups, to study the effect of group composition on participants' decision to cooperate. The new paradigm advanced in this paper models the presence of in-subgroup and out-subgroup members in a Crossed-groups Social Dilemma (CSD) game. Participants' cooperative behavior is assessed in two consecutive heterogeneous 10-person groups that differ with regards to the number of in-subgroup and out-subgroup members. The

one 10-p. group consists of the participant and 6 other in-subgroup members and 3 out-subgroup members (the Majority- Ingroup (MI) group); the other 10-p. group consists of the participant and 2 other in-subgroup members and 7 out-subgroup members (the Majority-Outgroup (MO) group). A participant's cooperative choices in these groups equally benefit members of this individual's in-subgroup but also members of his or her out-subgroup. In the MI group a larger number of in-subgroup members than out-subgroup members profit from an individual's cooperation, whereas in the MO group a larger number of out-subgroup members than in-subgroup members profit from this cooperation. Participants' repeated choices in these two heterogeneous groups yield choice patterns and allow to study their choice as a function of the composition of the group.

Aim of this paper is to test hypotheses about the effects of group composition on cooperative decision-making in heterogeneous groups with the CSD paradigm: To what extent do individual members of newly formed groups differentiate in their level of cooperation between a group that consists of a majority of in-subgroup members and a group that consists of a majority of out-subgroup members? Second aim is to test hypotheses about whether Social Value Orientation as an individual difference characteristic influences the effect of group composition on cooperation.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Group composition

In case of *inter-group conflict*, persons tend to regulate this conflict through parochial cooperation; they self-sacrifice to contribute to ingroup welfare (ingroup love) and to aggress against competing outgroups (outgroup hate) (Bornstein, 2003; Halevy et al., 2008; De Dreu et al., 2010). In an evolutionary analysis of parochial cooperation, Caporael, Dawes, Orbell and Van De Kragt (1989; see also Schwartz-Shea & Simmons, 1991) have argued that, in

general, people show a preference to cooperate with members of their ingroup. Also, interactions between groups are more competitive than interactions between individuals (Cohen, Wildschut, & Insko, 2010; Insko et al., 1998; Insko et al., 2005; Pinter et al., 2007; Schopler et al., 2001; Wildschut & Insko, 2007; Wildschut et al., 2003). Other research has consistently shown that increasing the salience of people's ingroup membership (by unit-forming factors such as shared characteristics, shared fate, shared rewards, or the mere presence of members of an opposing outgroup) enhances their preference to cooperate with members of their ingroup, sometimes at the expense of people who do not belong to their ingroup (e.g. Baron, 2001; Kramer & Brewer, 1984; Komorita & Lapworth, 1982, Orbell, Van De Kragt & Dawes, 1988; Polzer, 2004; Polzer et al., 1999; Wit & Kerr, 2002).

When people are involved in interactions simultaneously with members of their ingroup as well as outgroup members, the question arises as to whether the difference in ingroup / outgroup composition within the group will lead to different decisions to cooperate or not. From *intra-group conflict* literature we know that heterogeneity in groups can result in better team outcomes because of its effects on *social categorization processes* and increased information processing (de Wit, Greer, & Jehn, 2012; Jackson, Joshi, & Erhardt, 2003; van Knippenberg & Schippers, 2007; De Dreu, Weingart, & Kwon, 2000; Williams & O'Reilly, 1998). Diversity, however, can also undermine group cohesion and it may elicit hostilities and inter(sub)group competition, detracting from team performance. The effects of diversity are largely dependent on the extent to which differences in a group lead to subgroup formation, or coalitions (Lau & Murnighan, 1998). Only the fact of merging two prior separate groups can invoke a *faultline*[1], splitting up the group in subgroups (Li & Hambrick, 2005). Faultlines in groups are positively and significantly related to intra-group conflict (Pearsall et al., 2008; Polzer et al., 2006; Zanutto et al., 2010), although there is also evidence

[1] Faultlines are "hypothetical dividing lines that split a group or a team into two or more subgroups based on one or more individual attributes" (Lau & Murnighan, 1998, p. 328). We will focus more extensively on this concept in Chapter 3.

of high levels of cooperation within subgroups (Bezrukova, Spell, & Perry, 2010; Hart & Van Vugt, 2006; Phillips, Mannix, & Neale, 2004). In other words, faultlines will divide a group into subgroups, which increases conflict and distrust across subgroups within the team (Choi & Sy, 2010; Greer & Jehn, 2007), but also results in individual group members attending to the interests of their subgroup(s) within that team. Often members of faultline-based subgroups have a strong connection with one another and a rather negative stance toward members who are not part of their own subgroup (Hornsey & Hogg, 2000; Pickett & Brewer, 2001), also related to inter-subgroup bias (Hewstone, Rubin, & Willis, 2002).

Based on intra-group and inter-group conflict research, we hypothesize in a crossed-groups social dilemma:

H1: Group composition has a significant effect on cooperation in crossed-groups social dilemmas: Group members cooperate more if the majority of their group consists of in-subgroup members (MI), than if the majority of their group consists of out-subgroup members (MO) (parochial cooperation).

Social Value Orientation

Considering that in a heterogeneous group, members are more likely to cooperate if the group consists of a majority (rather than a minority) of in-subgroup members, entertains the question as to whether certain group members are more motivated to cooperate than others, regardless of the composition of this group. Willingness to sacrifice in relationships is influenced by a variety of factors and is driven by personally held goals or social dispositions (Kelley & Thibaut, 1978; McClintock & Liebrand, 1988). One such motivational orientation is Social Value Orientation (SVO), reflecting how people weigh their own and their interaction partner's outcomes in an interdependent relationship (van Lange, 1999; Yamagishi et al., 2013). In general, a distinction is made between three types of social value

orientations: prosocials, individualists, and competitors (Balliet, Parks, & Joireman, 2009; Messick & Clintock, 1968; van Lange, 1999). Prosocials pursue joint outcomes and equality in outcomes, and are more likely to engage in the same level of cooperation as the interdependent other. Proselves are either individualists (maximizing outcomes for self with little or no regard for others' outcomes) or competitors (maximizing relative advantage over others' outcomes).

Extensive research showed that prosocials tend to contribute more than proselves in a social dilemma game (Kramer, McClintock, & Messick, 1986; Liebrand & Van Run, 1985; Roch & Samuelson, 1987). Proselves act less cooperatively, irrespective of their levels of identification with fellow group members (Kramer & Goldman, 1995). For proselves the pursuit of long-term self-interest and personal well-being, immediate or distant, is the primary or exclusive goal (van Lange, Otten, De Bruin, & Joireman, 1997). Similarly, it is found that, in distributive bargaining and two-party negotiations, prosocials tended to demand less and concede more than negotiators with a proself orientation (e.g., Aaldering, Greer, Van Kleef, & De Dreu, 2013; Beersma & De Dreu, 1999; De Dreu & van Lange, 1995; Gillespie, Weingart, & Brett, 2000; Olekalns & Smith, 2003; Schei & Rognes, 2003; Trötschel & Gollwitzer, 2007). Consequently, we hypothesize:

H2: Prosocials will cooperate more than proselves in a crossed-groups social dilemma, regardless of group composition.

Interaction Group composition x SVO

When presented with a social dilemma, the most 'rational' decision – in line with principal agency theory (Eisenhardt, 1989) – is to prefer defection over cooperation. Nevertheless, individuals most often violate this assumption of rationality, when confronted with a conflict of interests. They sacrifice self-interest for the group, often acting upon social

categorization and group identity processes (Brewer & Kramer, 1986; Kramer & Brewer, 1984; Polzer, 2004; Wit & Kerr, 2002). Social group memberships and the way in which people define themselves as part of those categories determine how they act as group members (Oakes, Haslam, & Turner, 1994; Tajfel & Turner, 1979; Turner, 1982; Turner & Oakes, 1986), and are critical to individual cooperation rates in social dilemmas. Group membership per se can lead to more contributions towards the own ingroup (Dawes & Messick, 2000; Kramer, 1991; Kramer & Goldman, 1995; Kramer, Pommerenke, & Newton, 1993; Van Vugt & De Cremer, 1999; Wit & Wilke, 1990), often to the detriment of outgroup members (Bornstein, 2003; Halevy et al., 2008).

Prior social dilemma research indicated that prosocials and proselves behave differently, when they are members of a group. Prosocials consistently make cooperative choices, irrespective of their level of identification with fellow group members (De Cremer & Van Dijk, 2002; De Cremer & Van Vugt, 1999), whereas proselves show less cooperation overall (Kramer & Goldman, 1995). The question arises as to whether prosocials' and proselves' willingness to cooperate would remain stable, regardless of the composition of the groups of which they are part. In heterogeneous groups, individuals are involved in simultaneous interactions with members of the in-subgroup and the out-subgroup, as is often the case in mergers, reorganizations, alliances,… Would prosocials then consistently cooperate regardless of their groups' composition or would they contribute significantly more to the group in which in-subgroup members were in the majority? Although there is still limited research on the difference between prosocials' and proselves' cooperative behavior toward members of ingroup and outgroup combined, results of previous studies offer some direction.

Prosocials are found to cooperate more towards fellow group members with whom they identify strongly than under low identification (Kramer & Goldman, 1995). Proselves,

on the other hand, are much more indifferent toward other group members, and always follow the strategy that leads to the highest personal benefit (Balliet et al., 2009; De Dreu et al., 2000; van Lange, De Cremer, Van Dijk, & Van Vugt, 2007). In representative negotiations, prosocial representatives appeared to be more willing to self-sacrifice if this served their constituency only than when it indirectly served their adversary too. Proselves, on the other hand, showed consistently selfish behavior, towards both constituency and adversary (Aaldering et al., 2013).

We can assume that prosocials and proselves understand cooperative and competitive behavior in fundamentally different ways, based on the Transformation hypothesis of Interdependency Theory (Kelley & Thibaut, 1978): prosocials view rationality in collective terms and thus are more likely to cooperate than proselves who tend to see rationality in individual terms (egocentrically) (Liebrand, Jansen, Rijken, & Suhre, 1986, van Lange, Liebrand, & Kuhlman, 1990). According to Kelley and Stahelski's (1970) so-called Triangle Hypothesis (see also van Lange, 1992), proselves hold homogeneous views of others by assuming that most others are non-cooperative like themselves, whereas prosocials hold heterogeneous views of others by assuming that others may be either cooperative or non-cooperative. Rather than expecting reciprocity, it seems that prosocials are more likely to cooperate because they believe that that is the right thing to do, regardless of whether other individuals do the same (cf. Joireman, van Lange, Kuhlman, Van Vugt, & Shelley, 1997; van Lange et al., 1998). Although they might expect more cooperation from ingroup members and less from outgroup members (Hewstone et al., 2002), they will still cooperate. In other words, the collective is more salient to prosocials and in case of nested interests they are likely to show more self-sacrificial cooperation towards this collective level of ingroup and outgroup combined (Polzer et al., 1999), instead of being preoccupied by the subgroup level.

Prosocials are not only prepared to self-sacrifice for their group, but also show cooperation and make large concessions towards their counterpart across different settings (e.g., De Dreu & Boles, 1998; De Dreu & van Lange, 1995; Giacomantonio, et al., 2010; Van Dijk, De Cremer, & Handgraaf, 2004). In representative negotiations, they are more willing to sacrifice self-interest to benefit constituency and adversary combined than proselves (Aaldering et al., 2013). Consequently, we hypothesize:

H3: Prosocials prefer consistent cooperation in a crossed-groups social dilemma, whereas proselves defect consistently.

STUDY 1

METHOD

Sample

Participants were 392 undergraduate psychology students enrolled in a Western-European university, both men (22%) and women (78%) with M_{age} = 20.4 years. Data collection took place during the first lecture of the course, when students were still unfamiliar with one another. After being seated they received an envelope with experimental instructions in a booklet. From then on participants were not allowed to talk to each other. They were seated far enough from one another to prevent them seeing each other's materials and decisions.

Social Value Orientation (SVO)

First, participants filled out the measure of Social Value Orientation (van Lange, Otten, De Bruin, & Joireman, 1997). This measure consisted of nine items, each containing three alternative outcome distributions between self and an anonymous other. Each item contained a prosocial (e.g., self: 500, other: 500), an individualistic (e.g., self: 550, other:

300) and a competitive alternative (e.g., self: 500, other: 100). Participants were asked in the instructions to state their nine preferences. An exemplary item:

	A	B	C
You get	500	500	550
Other gets	100	500	300

In this example, if you chose A, You would receive 500 points and the Other would receive 100 points; If you chose B, You would receive 500 points and the Other 500 points; If you chose C, You would receive 550 points and the Other 300 points. This measure is internally consistent (e.g., Parks, 1994), reliable over substantial time periods (Eisenberger, Kuhlman, & Cotterell, 1992) and not related to measures of social desirability (Platow, 1994).

Participants were classified as prosocials or proselves, following the standard procedure (van Lange et al., 1997). Of the 392 respondents, 354 could be classified as having either a prosocial or a proself SVO. There were 209 (53.4%) prosocials and 145 (37%) proselves of which most were Individualists (n = 129, 33%) and the rest Competitors (n = 16, 4%). Because in the current context no differences in cooperative behavior were expected between individualists and competitors, these two groups were combined to form one category of proselves, as in earlier studies (e.g., Kramer et al., 1986; Mc-Clintock & Liebrand, 1988; van Lange, 1999; van Lange & Kuhlman, 1994). Participants who made less than six out of the nine choices, consistent with one of the two social value orientations (n = 38, 9.6%), were excluded from further analyses.

CSD vignette

The booklet contained the scenario of a 10-person Crossed-Groups Social Dilemma (CSD). Each participant took the role of a factory manager. Each had to decide either to 'limit production' at the factory to avoid overproduction (cooperation) or to 'stick to the current production level' (defection), which would result in overproduction if the other

managers decided similarly. Managers of factories producing at maximum capacity would always earn more profit than those reducing production, irrespective of the number of other managers who decided to reduce their production rate. However, the more managers stuck to their high production rates, the lower the profits all of them earned. If all ten managers decided to stick to their current production rates, this would yield all of them a lower profit (10 million Euros each) than if all of them decided to reduce their production rates (25 million Euros each).

After reading the instructions and inspecting the pay-off matrix (Appendix 1), which was explained by an example of the choice configurations (“ If 7 managers stick to the current production and 3 managers reduce production, then profit for those who ‘stick’ is 16 mio Euro, whereas those who ‘reduce’ only make 11 mio Euro”), participants received information on the composition of the 10-person groups that were the context in which they had to make their choice.

Group Composition Manipulation (within subjects)

Participants were informed they had to make consecutive choices in two differently composed 10-person groups. They were told that some of the managers in each group would be psychology students from their own university (ingroup members) and others would be psychology students from another neighboring university (outgroup members). In one 10-p. group, students from the own university were in the majority. The Majority Ingroup (MI) group consisted of 7 managers from their own university (including themselves) and 3 managers from the neighboring university. In the other 10-p. group, students of the neighboring university were in the majority. The Majority Outgroup (MO) group consisted of 3 managers from their own university (including themselves) and 7 managers from the neighboring university. The order in which the type of group was presented was counterbalanced in the booklet.

We *checked the group composition manipulation* with four items, in the MI group and MO group separately. Participants were asked to indicate how many of the members of their own subgroup (including themselves) they expected to 'stick to the current production level' and how many they expected to 'reduce the production'. They also indicated how many of the members of the other subgroup they expected to 'stick' and how many they expected to 'reduce'. All participants comprehended that the 10-p. group consisted of 7 in-subgroup members and 3 out-subgroup members in condition MI (Majority Ingroup), and that the 10-p. group consisted of 3 in-subgroup members and 7 out-subgroup members in condition MO (Majority Outgroup).

Measures

After the introduction of their first group's composition (MI or MO), participants completed a series of questions. To assess *choice behavior*, they were asked whether they would 'stick to their present production level' or 'reduce their present production level'.

They were also asked how many of the participants of their own subgroup (including themselves) and the other subgroup they expected to 'stick' to current production levels and how many they expected to 'reduce' production. These questions measured *actual expectations* of other group members' cooperative behavior and checked respondents' comprehension of the group composition. Due to the phrasing of the questions, participants' responses included their own choices in each of the two groups. Consequently, we first corrected the original responses of participants who made cooperative choices themselves toward the MI group and/or toward the MO group. For example, when a participant acted cooperatively (i.e. indicated that he would reduce his own production), and indicated that he expected 5 out of 7 in-subgroup members to cooperate in the MI group, then participant's expected number of co-operators was corrected from 5 to 4; this indicated that he expected 4 in-subgroup members, in addition to himself, to cooperate. Because cooperative expectation

was measured on a different scale in MI (seven in-subgroup members) than in MO (three in-subgroup members), proportions of cooperation were calculated, e.g. if a participant expected 4 other in-subgroup members to cooperate, then the expected proportion of cooperation was calculated as 4/6 ingroup subgroup members (= .67).

To assess participants' *understanding of the pay-off matrix*, they were asked to write down the profits (in million Euros) to be earned by those in the 10-p. group who 'stuck' and the profits to be earned by those who 'reduced'.

Lastly, to measure their *concern with group welfare*, participants rated on a 5-point Likert scale ("very important" to "not at all important") how important was a joint reduction in production and, thus, a higher return for the group as a whole.

After completing the first decision and all of it supporting questions, participants were requested to proceed to the next page of the booklet and the instructions for the other group scenario. Thus, the first half of all participants then read the instructions of the MO group, while the second half of all participants read the instructions of the MI group (counterbalancing). Participants were requested to answer the same series of questions in this context: choice behavior, cooperative expectations, pay-off matrix). Participants were asked to indicate their gender and age and then complete a post-experimental questionnaire about their *identification with in-subgroup and out-subgroup members.* This was measured with three items on a 5-point scale: *'I identify with L participants*[2]*', 'I feel connected with L participants', 'I am concerned with L participants'* (α = .93); and *' I identify with R participants', 'I feel connected with R participants', 'I am concerned with R participants'* (α = .91) (Derks, van Laar, & Ellemers, 2009). They also read a paragraph on 'guarantee of anonymity'.

[2] 'L participants' refers to in-subgroup members from participants' own university; 'R participants' refers to out-subgroup members from the other university.

To investigate the distinct *perceptions of prosocials* who consistently cooperated across groups and those who contributed more to the group in which their ingroup was nested as a majority subgroup, we conducted exploratory analyses to compare identification with in-subgroup and out-subgroup, concern for the group welfare, and cooperative expectations about in-subgroup and out-subgroup members.

Debriefing

After completing the booklet all participants were collectively debriefed by means of a lecture on social dilemmas and received a report on some of the prior results.

Procedure of data analysis

To test the hypotheses we used two data-analytic approaches. First, to test Hypothesis 1, 2, and 3, we used the Generalized Estimating Equations (GEE) procedure (Liang & Zeger, 1986) that treated the repeated (non)cooperative choices of individual participants in the crossed-groups social dilemma game as the units of analysis. As an extension of the Generalized Linear Model (logistic regression), this procedure allows for the analysis of repeated measurements of binary ('reduce production' or 'stick to production') response variables, with correction for the non-independence of data. Data are assumed to be dependent within subjects and independent between subjects. The hypotheses were tested by the Wald statistic that has a Chi-square distribution and results were reported in probabilities of cooperation in the MI- and MO group separately.

Second, to understand how prosocial and proself participants responded differently to group composition, we analyzed participants' choice patterns - based on their repeated choices in MI and MO respectively (C-C, C-D, D-C, D-D)[3] - with a Chi-square analysis. C-C and D-D choice patterns indicated consistent cooperation and defection, respectively, in both MI and MO. C-D patterns indicated cooperation only when in-subgroup members were in the

[3] C denoting a Cooperative choice ('limit production') and D denoting a Defective choice ('stick to the current production level')

majority (MI), not when outgroup subgroup members were in the majority (MO). D-C patterns indicated cooperation only when outgroup subgroup members were in the majority (MO), not when ingroup subgroup members were in the majority (MI).

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Order. The order of presenting the MI group (7-3) and MO group (3-7) did not yield a different pattern of results ($Wald\ \chi^2_{(1)} = 1.24$, $p < .27$). Overall, cooperation probabilities were very similar in the MI-MO order (.54) as in the MO-MI order (.59).

Hypothesis 1: Group Composition. There was a significant main effect of group composition on cooperation ($Wald\ \chi^2_{(1)} = 5.96$, $p < .02$), indicating that, overall, participants made significantly more cooperative choices in the MI group (.63) than in the MO group (.47), i.e. a difference of 16%[4]. Hypothesis 1 on parochial cooperation was supported by the data.

Hypothesis 2: SVO. The GEE method showed a significant main effect of SVO on cooperation ($Wald\ \chi^2_{(1)} = 14.67$, $p < .001$). Overall, prosocials made significantly more cooperative choices (.67) than proselves (.42), i.e. a difference of 25%[5].

Hypothesis 3: Group Composition x Social Value Orientation. There was no significant interaction effect of group composition and social value orientation on cooperation ($Wald\ \chi^2_{(1)} = 2.08$, $p < .15$).

[4] For the ease of interpretation the magnitude of all effects are reported in probabilities instead of Odds ratios (Exp (B)). These probabilities (Estimated Marginal Means) were calculated via a non-linear transformation of the Odds.

[5] The means of the overall probabilities (of cooperation) for both prosocials and proselves are calculated via the means of the MI and MO Odds (of cooperation) that are then back transformed to probabilities (EMMeans) with the function Exp (x)= Exp [(ln(p/1-p) + ln (p/1-p))/2]/ 1+ Exp [(ln(p/1-p) + ln (p/1-p)/2].
For Prosocials: Exp[((ln(.77/.23) + ln(.57/.43))/2]/ 1 + Exp[[((ln(.77/.23) + ln(.57/.43))/2]= Exp [1.21+ .29 /2]/ 1 + Exp [1.21+ .29/2]= Exp (.75)/ 1+ Exp (.75) = 2.12/3.12 = .67
For Proselfs: Exp[((ln(.48/.52) +ln(.37/.63)) /2]/ 1 + Exp[((ln(.48/.52) +ln(.37/.63)) /2]= Exp[(-0.08 - .53)/2]/ 1+ Exp[(-0.08 - .53)/2]= Exp (-.31)/ 1+ Exp (-.31)= 1.36/2.36 = .42.

Table 2.1. Cooperation probabilities in the MI group and MO group for prosocials and proselves (n = 354)

	MI	MO	SVO (main effect)
Prosocials	.77	.57	.67
Proselves	.48	.37	.42
GroupComposition (main effect)	.63	.47	

The results showed that prosocials made more cooperative choices toward the MI group (.77) than toward the MO group (.57)[6], i.e. a difference of 20% (Table 2.1)[7]. Proselves also made more cooperative choices toward the MI group (.48) than toward the MO group (.37), i.e. a difference of 11%. Prosocials did not show a significantly different sensitivity to the composition of the group than proselves.

To understand how prosocials and proselves responded to group composition, we performed a Chi square analysis on participants' *choice patterns*. This analysis allowed us to compare the frequencies of prosocials' and proselves' repeated choices in the MI group and MO group respectively. Choice patterns (MI-MO) were generated by placing participants' choice in the MI group before that in the MO group. There was no significant interaction effect of order with group composition and social value orientation (B = .78, $Wald\ \chi^2_{(1)}$ = 2.45, p < .12). Consequently, this recoding strategy could be reliably executed.

[6] The probabilities obtained from the GEE analyses are calculated via the accumulated frequencies of participants' cooperative choices in the MI group and MO group. To obtain the probability of cooperation in the MI group for prosocials the frequencies of C-C and C-D choices are summed: 111 C-C choices + 49 C-D choices/ 209 prosocials = .77. To obtain the probability of cooperation in the MO group for prosocials the frequencies of C-C and D-C choices are summed: 111 C-C choices + 9 D-C choices/ 209 prosocials = .57.

[7] These results are based on a (non-linear) transformation of the logOdds ratios into estimated marginal means (expected probabilities). A significant interaction effect in GEE logistic regression analysis indicates that the difference in logOdds between the conditions is significant. To double-check whether this significance also held for the estimated marginal means, a GEE linear regression analysis with identity link was performed of which the results are reported here.

Table 2.2. Choice patterns of prosocials and proselves (n = 354)

	MI-MO C-C	MI-MO C-D	MI-MO D-C	MI-MO D-D
Prosocials	**52.6%**	23.4%	4.3%	19.6%
Proselves	26.9%	20.7%	9.7%	**42.8%**

There was a significant difference in choice patterns between prosocials and proselves ($\chi^2_{(3)} = 33.29$, $p < .0001$) (Table 2.2). Prosocials (52.6%) were more consistent cooperators (C-C), whereas proselves (42.8%) were more consistent defectors (D-D). About an equal proportion of prosocials (23.4%) and proselves (20.7%) preferred to cooperate only when the in-subgroup was in the majority (MI) (C-D). In conclusion, the inspection of choice patterns showed that prosocials differed from proselves in their responses to group composition: Prosocials chose cooperation significantly more consistently (C-C) and proselves chose defection significantly more consistently (D-D).

Additional measures

(Sub)group identification. Participants identified significantly more with in-subgroup members ($M = 3.23$, $SD = 1.10$) than with out-subgroup members ($M = 1.94$, $SD = .92$; $t_{(353)} = 18.48$, $p < .0001$).

Prosocials showed stronger identification with their in-subgroup members ($M = 3.28$, $SD = 1.11$) than proselves ($M = 3.16$, $SD = 1.09$; $t_{(352)} = 1.06$, $p < .29$) and showed stronger identification with out-subgroup members ($M = 2.02$, $SD = .95$) than proselves ($M = 1.83$, $SD = .87$; $t_{(352)} = 1.98$, $p < .05$). Prosocials showed more concern for welfare of the MI group ($M = 4.33$, $SD = 1.03$) than proselves ($M = 4.05$, $SD = 1.07$; $t_{(352)} = 2.92$, $p < .01$). They also

showed more concern for welfare of the MO group (M = 4.21, SD = .90) than proselves (M = 3.86, SD = .94; $t_{(352)}$ = 3.15, p < .01).

Cooperative expectations. Participants expected in-subgroup members to cooperate more frequently in the MI group (M = .47, SD = .28) than in the MO group (M = . 26, SD = .27 ; $t_{(352)}$ = 11.68, p < .0001). Participants also expected out-subgroup members to cooperate more frequently in the MO group (M = .52, SD = .32) than in the MI group (M = .37, SD = .36 ; $t_{(352)}$ = 6.91, p < .0001). In other words, participants expected more cooperation when group members' in-subgroup was in the majority than when their in-subgroup was in the minority in the heterogeneous group.

Prosocials in the MI group expected more in-subgroup members (M = .50, SD = .27) to cooperate, than proselves (M = .43, SD = .28 ; $t_{(352)}$ = 2.41, p < .02); they also expected more out-subgroup members (M = .40, SD = .35) to cooperate compared to proselves (M = .33, SD = .35; $t_{(352)}$ = 1.75, p < .08). Prosocials in the MO group expected more out-subgroup members (M = . 54, SD = .31) to cooperate compared to proselves (M = .49, SD = .32; $t_{(352)}$ = 1.59, p < .11). Overall, prosocials expected more cooperation of other group members than proselves, regardless whether the other group members belonged to the ingroup or the outgroup.

Perceptions of prosocials with C-D patterns (n = 49) and with C-C patterns (n = 110) differed in several ways: Prosocials with C-C patterns were more concerned with the welfare of the MO group (M = 4.49, SD = .82) than those with C-D patterns (M = 3.82, SD = 1.15; $t_{(157)}$ = 4.21 , p < .0001), they expected more cooperation of in-subgroup members in the MO group (M = .33, SD = .27) than prosocials with C-D patterns (M = .16, SD = .26; $t_{(157)}$ = 3.72, p < .002), and they expected more cooperation of out-subgroup members in the MI group (M = .55, SD = .35) than prosocials with C-D patterns (M = .29, SD = .34; $t_{(157)}$ = 4.42 p < .001).

DISCUSSION

Results of Study 1 confirmed the hypotheses on group composition and social value orientation. Participants were more likely to cooperate in the 10-p. group with a majority of in-subgroup members (MI) than in the group with a minority of in-subgroup members (MO) (H1). This finding was evidence for parochial cooperation, as participants' contributions were affected by the majority versus minority status of their in-subgroup. Group members identified more with in-subgroup members than with out-subgroup members and expected group members to cooperate more when their in-subgroup was in the majority than when it was in the minority. Overall, prosocials cooperated more than proselves (H2) and they expected more frequent cooperation of group members than proselves. Prosocials and proselves displayed equal sensitivity to group composition, but prosocials were more consistent cooperators (C-C) whereas proselves were more consistent defectors (D-D) (H3). Prosocials identified more with in-subgroup and out-subgroup members than proselves, and they showed more concern for the group welfare, both in the MI - and MO group. Additional descriptive data confirmed the results found in Study 1. To replicate these results and to gain insight in the underlying mechanism of participants' choices in the MI- and MO group, we ran a second experiment with a similar design. We now also measured participants' identification with the MI 10-p. group and with the MO 10-p. group, next to cooperative expectations of in-subgroup and of out-subgroup members. This allowed to investigate these variables as potential parallel mediators of the group composition effect on choice.

STUDY 2

METHOD

Sample

Participants were 404 undergraduate psychology students enrolled in a Western-European university, both men (22%)[8] and women (78%) with M_{age} = 22 years. Data collection took place during the first lecture of the course with a similar procedure as in Study 1.

Social Value Orientation (SVO)

We used the same measure of Social Value Orientation as in the first experiment. Participants were again classified as prosocials or proselves, following the standard procedure (van Lange et al., 1997). Of the 404 respondents, 357 could be classified as having either a prosocial or a proself SVO. There were 225 (56%) Prosocials and 134 (33%) proselves of which most were individualists (n = 112, 29%) and the rest competitors (n = 14, 4%). Individualists and competitors were again combined to form one category of proselves. Participants who made less than six out of the nine choices, consistent with one of the two social value orientations (n = 45, 11%), were excluded from further analyses.

Procedure

The CSD vignette, manipulation of the group composition variable, and measures were similar to the ones used in Study 1.

Measures

In addition to the measures of Study 1, we now also measured participants' identification with the MI 10-p. group and the MO 10-p. group with three items on a 5-point scale (adapted from Derks, van Laar, & Ellemers, 2009): '*I identify with the 10-p. group of 7 L and 3 R participants '*, *'I feel connected with the 10-p. group of 7 L and 3 R participants '*,

[8] We double checked the descriptive data and surprisingly the men-women distribution was similar in both samples of Study 1 and Study 2.

'I am concerned with the 10-p. group of 7 L and 3 R participants (α = .93) (for the MI group)[9]; and *' I identify with the 10-p. group of 3 L and 7 R participants, 'I feel connected with the 10-p. group of 3 L and 7 R participants', 'I am concerned with the 10-p. group of 3 L and 7 R participants'* (α = .92) (for the MO group). Identification with the in-subgroup (α = .94) and identification with the out-subgroup (α = .92) were also measured, as in Study 1.

To investigate the *perceptions of prosocials* who consistently cooperated across groups (MI and MO) and those who contributed more to the group in which their in-subgroup was nested in a majority, we conducted exploratory analyses to compare identification with in-subgroup and out-subgroup, 10-p. group identification, concern for the 10-p. group welfare, and cooperative expectations about in-subgroup and out-subgroup members between those groups of prosocials.

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The group composition manipulation was checked with the same four items as in Study 1. Again, all participants comprehended that the 10-p. group consisted of 7 in-subgroup members and 3 out-subgroup members in condition MI (Majority Ingroup), and that the 10-p. group consisted of 3 in-subgroup members and 7 out-subgroup members in condition MO (Majority Outgroup).

Hypotheses were tested with the Generalized Estimating Equations (GEE) procedure to check overall cooperation probabilities of prosocials and proselves in the MI group and in the MO group. A Chi-square analysis of participants' choice patterns was conducted to understand how prosocial and proself participants responded differently to group composition.

Cooperative choice behavior

[9] L participants' refers to in-subgroup members from participants' own university; 'R participants' refers to out-subgroup members from the other university.

Order. The order of presenting the MI group (7-3) and MO group (3-7) did not yield a different pattern of results (*Wald* $\chi^2_{(1)}$ = .16, p < .70). Cooperation probabilities were very similar in the MI-MO order (.60) as in the MO-MI order (.58).

Hypothesis 1: Group Composition. There was a significant main effect of group composition on cooperation (*Wald* $\chi^2_{(1)}$ = 52.06, p < .0001), indicating that, overall, participants in the MI group (.69) made significantly more cooperative choices than when in the MO group (.48), i.e. a difference of 21%. Hypothesis 1 on parochial cooperation was supported by the data.

Hypothesis 2: SVO. The GEE method showed a significant main effect of SVO on cooperation (*Wald* $\chi^2_{(1)}$ = 14.03, p < .0001). Overall, prosocials were significantly more likely to make a cooperative choice (.65) than proselves (.49), i.e. a difference of 16%.

Hypothesis 3: Interaction Group Composition x Social Value Orientation. There was no significant interaction of group composition and social value orientation on cooperation (*Wald* $\chi^2_{(1)}$ = .15, p < .70).

Table 2.3. Cooperation probabilities in the MI group and MO group for prosocials and proselves (n = 359)

	MI	MO	SVO (main effect)
Prosocials	.76	.58	.65
Proselves	.54	.39	.49
GroupComposition (main effect)	.69	.48	

Prosocials in the MI group (.76) were more likely to make a cooperative choice than prosocials in the MO group (.58), i.e. a difference of 18% (Table 2.3)[10]. Proselves in the MI group (.54) also made more cooperative choices than in the MO group (.39), i.e. a difference of 15%. However, prosocials did not show a significantly different sensitivity to the composition of the group than proselves.

To understand how prosocials and proselves responded to group composition, we performed a Chi square analysis on their *choice patterns*. This analysis compared prosocials' and proselves' repeated choices in the MI and MO group. Again, choice patterns (MI-MO) were generated by placing participants' choice in the MI group before that in the MO group. There was no significant interaction effect of order with group composition and social value orientation (B = .20, $Wald\ \chi^2_{(1)}$= .15, p < .70). Consequently, this recoding strategy could be reliably executed.

Table 2.4. Choice patterns of prosocials and proselves (n = 359)

	MI-MO C-C	MI-MO C-D	MI-MO D-C	MI-MO D-D
Prosocials	**49.3%**	25.8%	4.9%	20%
Proselves	32.1%	26.9%	7.5%	**33.6%**

There was a significant difference in choice patterns between prosocials and proselves ($\chi^2_{(3)}$ = 12.99, p < .005) (Table 2.4). Most prosocials (49.3%) were consistent cooperators (C-C), whereas most proselves (33.6%) were consistent defectors (D-D). About an equal

[10] These results are based on a (non-linear) transformation of the logOdds ratios into estimated marginal means (expected probabilities). A significant interaction effect in GEE logistic regression analysis indicates that the difference in logOdds between the conditions is significant. To double-check whether this significance also held for the estimated marginal means, a GEE linear regression analysis with identity link was performed of which results were reported.

proportion of prosocials (25.8%) and proselves (26.9%) preferred to cooperate only when their in-subgroup was in the majority (MI) (C-D). The inspection of choice patterns showed that prosocials differed from proselves in their response to group composition: Prosocials were more consistent cooperators (C-C) and proselves were more consistent defectors (D-D).

Additional measures

(Sub)group identification. Participants identified significantly more with in-subgroup members (M = 3.48, SD = 1.07) than with out-subgroup members (M = 2.24, SD = .95 ; $t_{(351)}$ = 18.40, $p < .0001$). Participants identified more strongly with the MI group (M = 3.27, SD = 1.00) than with the MO group (M = 2.66, SD = .95 ; $t_{(353)}$ = 12.11, $p < .0001$).

Prosocials showed stronger identification with in-subgroup members (M = 3.54, SD = 1.06) than proselves (M = 3.38, SD = 1.08 ; $t_{(350)}$ = 1.36, $p < .18$) and showed stronger identification with out-subgroup members (M = 2.34, SD = .95) than proselves (M = 2.04, SD = .94 ; $t_{(356)}$ = 2.91, $p < .004$). Prosocials showed more concern for group welfare of the MI group (M = 4.26, SD = .84) than proselves (M = 4.07, SD = 1.06, $t_{(355)}$ = 1.93, $p < .05$); and they showed more concern for welfare of the MO group (M = 3.98, SD = 1.01) than proselves (M = 3.78, SD = 1.21, $t_{(356)}$ = 1.63, $p < .10$).

Cooperative expectations. Participants expected more in-subgroup members to cooperate in the MI group (M = .51, SD = .25) than in the MO group (M = . 29, SD = .28; $t_{(348)}$ = 12.55, $p < .0001$). Participants also expected more out-subgroup members to cooperate in the MO group (M = .54, SD = .30) than in the MI group (M = .41, SD = .35 ; $t_{(348)}$ = 6.93, $p < .0001$). In other words, they expected members to cooperate more when their own in-subgroup was in the majority than when their in-subgroup was in the minority.

Prosocials expected more in-subgroup members to cooperate in the MI group (M = .52, SD = .25) than proselves (M = .49, SD = .26; $t_{(357)}$ = 1.26, $p < .21$); they also expected more out-subgroup members to cooperate in the MI group (M = .45, SD = .36) than proselves

(M = .35, SD = .33 ; $t_{(357)}$ = 2.71, p < .007). Prosocials expected more out-subgroup members to cooperate in the MO group (M = . 56, SD = .30) than proselves (M = .50, SD = .30 , $t_{(357)}$ = 1.72, p < .08). Overall, prosocials expected more group members to cooperate than proselves, regardless whether they belonged to the in-subgroup or the out-subgroup.

Perceptions of prosocials with C-D patterns (n = 58) and C-C patterns (n = 110) differed in several ways: Prosocials with C-C patterns were more concerned with the welfare of the MO group (M = 4.42, SD = .75) than those with C-D patterns (M = 3.34, SD = 1.10; $t_{(166)}$ = 7.48, p < .0001), they identified more with the MO group (M = 2.96, SD = 1.01) than those with C-D patterns (M = 2.64, SD = .75, $t_{(164)}$ = 2.14, p < .05), they identified more with the out-subgroup (M = 2.62, SD = .96) than those with C-D patterns (M = 2.02, SD = .68, $t_{(166)}$ = 4.14, p < .0001), they expected more cooperation of in-subgroup members in the MO group (M = .38, SD = .29) than prosocials with C-D patterns (M = .21, SD = .24; $t_{(167)}$ = 3.76, p < .0001), and they expected more cooperation of out-subgroup members in the MI group (M = .61, SD = .32) than prosocials with C-D patterns (M = .26, SD = .29; $t_{(167)}$ = 7.03, p < .0001)

Exploratory Mediation Analysis

Simple mediation. To gain more insight into the relationships between group composition, group identification, cooperative expectations of in-subgroup and out-subgroup, and choice behavior, we conducted an exploratory mediation analysis. Current statistical techniques do not allow yet to conduct the analysis with clustered data (time in individual) and a binary outcome variable in the model. Consequently, we analyzed the effects of the first group composition in which participants made their choice, in either the MI group or the MO group. This procedure eliminated the repeatedness from the design which allowed to test for mediation effects with the PROCESS procedure of Hayes (2013). Group composition at Time 1 (MI or MO), and Choice at Time 1 (cooperation or defection) were defined as the

predictor and outcome variable respectively. The variables 'identification with the MI group', 'identification with the MO group', 'cooperative expectations about in-subgroup members', and 'cooperative expectations about out-subgroup members' were included as parallel mediators in the model. Indirect effects were calculated as the products of the estimates (*ab*) of the effect of the factor on the mediator (*a*), and the effect of the mediator on the dependent variable (*b*). Whether the indirect effects were significant was determined via the bootstrapping confidence intervals.

We conducted a simple mediation analysis on the sample of *Study 1*, where cooperative expectations about in-subgroup and out-subgroup members were measured. This analysis showed that group composition indirectly influenced cooperative choice through its effects on cooperative expectations about in-subgroup and out-subgroup members. Participants expected in the MI group more cooperation from in-subgroup members (a_1 = .19, p < .0001), and they expected less cooperation from out-subgroup members (a_2 = -.19, p < .0001). And participants who expected more cooperation of in-subgroup members (b_1 = 2.76, p < .0001) and more cooperation of out-subgroup members (b_2 = 1.50, p < .001), all showed more cooperation with their group. The bias-corrected bootstrap confidence intervals for the indirect effects based on 5000 bootstrap samples did not include zero, for cooperative expectations about in-subgroup and out-subgroup members (for ab_1 = .52: .78 to .32; for ab_2 = -.29: -.15 to -.47 respectively), so there was evidence of the indirect effect of group composition on cooperative choice through cooperative expectations about subgroup members.

From the simple mediation analysis conducted on the sample of *Study 2*, group composition indirectly influenced cooperative choice through its effects on identification with the MI group, on identification with the MO group, and on cooperative expectations about in-subgroup and out-subgroup members. Participants showed in the MI group stronger group

identification (a_1 = .63, p < .0001), expected more cooperation from in-subgroup members (a_2 = .17, p < .0001), and expected less cooperation from out-subgroup members (a_3 = -.11, p < .01). And participants who identified more with their group (b_1 = .79, p < .0001), who expected more cooperation from in-subgroup members (b_2 = 2.76, p < .0001) and more cooperation from out-subgroup members (b_3 = 1.90, p < .0001), all showed more cooperation with their group. The bias-corrected bootstrap confidence intervals for the indirect effects based on 5000 bootstrap samples did not include zero, for group identification and cooperative expectations about in-subgroup and out-subgroup members, which indicated significance of these effects (for ab_1 = .49: .69 to .30; for ab_2 = .47: .72 to .29; for ab_3 = -.21: -.09 to -.40 respectively).

GENERAL DISCUSSION

After organizational restructuring, mergers, in project teams, employees are often regrouped in new entities and face a crossed-groups social dilemma: to act in the interest of themselves or their old group, or in the interest of the new heterogeneous group in which they and members of their former ingroup are a subgroup. Crucial for organizations is to understand how these employees – presented with a conflict of interests - can be motivated to cooperate, acting for the benefit of the new heterogeneous group as a whole.

Summary of Findings

This research set out to investigate the impact of group composition and individual social value orientation on group members' willingness to cooperate in heterogeneous groups. First we discuss the effects of group composition, to continue thereafter with the findings related to social value orientation.

Group composition

Both studies showed a robust effect of group composition: group members were more inclined to cooperate with a 10-p. group consisting of a majority of in-subgroup members,

than when their in-subgroup was in the minority (parochial cooperation). Additional analyses confirmed the mediating effects from group composition to choice behavior via group identification and cooperative expectations about in-subgroup and out-subgroup members.

Group identification. Participants identified more strongly with the in-subgroup than with out-subgroup members, and more with the group in which this in-subgroup was nested as a majority. Higher levels of cooperation were in turn related to higher levels of group identification, in line with previous social dilemma studies (Brewer & Kramer, 1986; Wit & Kerr, 2002; Wit & Wilke, 1992). There was a 'cascading' effect of *identification:* the presence of in-subgroup members with whom participants identified, instilled identification with the heterogeneous group in which this in-subgroup was nested as a majority. Results of Study 2[11] showed that participants identified more with their in-subgroup than with the MI group and the MO group, in which in-subgroup members were nested. These results are consistent with nested social dilemma research (Halevy et al., 2012; Wit & Kerr, 2002), showing that group members prioritize the interests of their in-subgroup over and above the interests of the group in which their in-subgroup is nested. In the crossed-groups social dilemma the 10-p. groups consisted of two clear subgroups with members originating from the participant's own or another university, forming either a majority (MI group) or a minority (MO group) of own university members in the heterogeneous 10-p. group. In making their choices, participants made a trade-off between their self-interest and the interest of the heterogeneous group. Although they could not contribute directly to in-subgroup interests, they were more likely to make a cooperative choice when their in-subgroup was in the majority than when it was in the minority. This behavior indicates they favored their own in-subgroup over the interests of the heterogeneous group as a whole.

[11] Participants' identification with the MI group and with the MO group was only measured in Study 2, not in Study 1.

Our results indicated that group composition also generated a strong *faultline*, dividing the group into two distinct subgroups. Prior research showed more cooperation in increasingly heterogeneous groups because of less subgroup categorization (van Knippenberg & Schippers, 2007). However, in the crossed-groups social dilemma setting of this study, majority-minority social category diversity gave rise to in-subgroup/out-subgroup hostilities (cf. Jehn, Northcraft, & Neale, 1998; Pelled, 1996; Pelled, Eisenhardt, & Xin, 1999), and the presence of a majority of out-subgroup members might have increased the salience of in-subgroup membership. The stronger concern for and identification with their in-subgroup motivated participants, when presented with nested interests, to contribute more to the group in which their in-subgroup was in the majority (MI) than to the group with a minority of in-subgroup members (MO).

Cooperative expectations. Participants, especially prosocials, did not always act as individual 'agents' but many based their choices on the strength-in-numbers of their in-subgroup in the heterogeneous group. Our results showed that they expected more cooperation from subgroup members in the group in which their subgroup was nested as a majority. So they expected in-subgroup members to cooperate more in the MI group, and out-subgroup members to cooperate more in the MO group. These expectations were shown to act as parallel mediators of the group composition effect, together with group identification. Participants' choice behavior covaried with their expectations about other (sub)group members' behavior, which is in line with prior social dilemma research (Dawes, McTavish, & Shaklee, 1977; Messick et al., 1983; Schroeder et al., 1983; van Lange & Liebrand, 1989; Wade-Benzoni, Tenbrunsel, & Bazerman, 1996; Wade-Benzoni et al., 2002).

Status. An alternative explanation for the MI-MO effect is the *relative (sub)group size*, as a potential antecedent of status (Ebenbach & Keltner, 1998; Guinote, 2004; Ng, 1982). Subgroups that have numerically more members (majority subgroups) tend to have

higher status (Guinote, Judd, & Brauer, 2002), defined as "the prominence, respect, and influence individuals enjoy in the eyes of others" (Anderson et al., 2006, p. 1094; for other definitions see also Fiske, 2010; Magee & Galinsky, 2008). In the MI group the in-subgroup may have been viewed as being in a high-status position because it was in the majority in the heterogeneous group. So, a member of a majority subgroup, nested in the heterogeneous group, might contribute more to the group in order to confirm the subgroup's status and identity (Ellemers & Scheepers, 2005; Sachdev & Bourhis, 1991; Tajfel & Turner, 1986; Turner, 1987). In a similar vein, the in-subgroup may have been viewed as being in a low-status position in the MO group because it was in the minority. So a member of the minority subgroup, nested in the heterogeneous group, might contribute less to the group in order to protect self-interest and avoid being taken advantage of by the majority (Insko et al., 1998; Pemberton, Insko, & Schopler, 1996). They may react adversely to the fact that the high-status out-subgroup, being in the majority, will have greater influence (Terry, 2003; Van Leeuwen, van Knippenberg, & Ellemers, 2003).

Social Value Orientation

When comparing prosocials' and proselves' choice patterns, they demonstrated similar levels of cooperation when their in-subgroup subgroup was in the majority (20-25%) (C-D). Prosocials and proselves both identified more with their in-subgroup and with the MI group than with the out-subgroup and with the MO group. Noteworthy is that, next to prosocials, *proselves* were also more concerned with the group welfare in the MI group than in the MO group. Proselves showed higher contribution levels with increased group identification, in line with the *goal transformation hypothesis* (De Cremer & Van Dijk, 2002; De Cremer, van Knippenberg, Van Dijk, & van Leeuwen, 2008). A stronger willingness to sacrifice was associated with greater commitment toward the in-subgroup members. This fits in with prior research, showing that the commitment-sacrifice link can be even more

pronounced among proselves (van Lange et al., 1997), although other studies also showed high levels of ingroup favoritism in prosocials (Aaldering et al., 2013; De Dreu et al., 2010).

Prosocials and proselves also acted differently upon the heterogeneous group composition. Prosocials most frequently (50%) displayed consistent cooperation (C-C) whereas proselves were mostly (34-43%) consistent defectors (D-D). Additional descriptive data analyses for both studies indicated that prosocials showed more concern for the group welfare in both MI- and MO groups, and in general expected more cooperation of other group members, compared to proselves. Proselves were more self-interested and displayed lower levels of concern and cooperation toward members of both in-subgroup and out-subgroup. Prosocials attached more importance to a joint reduction in production in both groups than proselves, and even if all other group members would defect, prosocials would continue to engage in cooperation[12]. These findings concur with Interdependency Theory (Kelley & Thibaut, 1978), stating that the willingness to sacrifice in relationships is influenced by a variety of factors, including not only personally held goals or social dispositions, but also beliefs regarding a partner's willingness to sacrifice (cf. Kelley, 1979; McClintock & Liebrand, 1988). Prosocials acted out of collective rationality, whereas proselves were more self-oriented with an individual rationality.

But what were the prosocials' motives for a D-D choice (vs. a C-D choice), and did they actually relative more to the collective group interests (vs. subgroup interests)? In previous studies on inter-group conflict, ingroup and outgroup were always separate entities and a choice to contribute came only to the advantage of the ingroup, and fairly often even to the detriment of the outgroup, referred to as ingroup love and outgroup hate (Halevy et al.,

[12] Participants responded to the following item: 'If I would be really sure that all other nine group members would limit their production in this 10-p. group, I would choose to…(choose one alternative): stick to the current production level OR limit production.' In the MI group 80% of the prosocials chose to limit production (20% chose defection); in the MO group 76% of the prosocials chose to cooperate (24% chose defection). Similar percentages were found in Exp 2. A vast majority of prosocials thus decided to cooperate in both groups ('limit production'), despite the temptation to free-ride.

2008). In the crossed-groups social dilemma, however, out-subgroup members belonged to the same group as in-subgroup members. The only way for participants to advantage their own subgroup was to contribute to the collective in which their subgroup was nested, together with a majority or minority of out-subgroup members. So a consistent cooperative choice might be motivated not so much by collective interests but rather by a desire to advance their own subgroup (parochialism).

Representative negotiations research showed that prosocials self-sacrificed for the collective – containing both constituency and counterpart – but mostly motivated to benefit their ingroup; they accepted the benefit to the rivaling outgroup as 'collateral damage' (Aaldering et al., 2013; Abbink, Brandts, Hermann, & Orzen, 2012; De Dreu et al., 2010). We conducted exploratory analyses across Study 1 and 2 to compare the perceptions of prosocials with C-C en C-D choice patterns toward in-subgroup, out-subgroup, and the heterogeneous 10-p. group. Results indicated that prosocials with C-C behavior identified more with out-subgroup members, identified more with the MO group, were more concerned with the group welfare in the MO group, and expected more cooperation from the out-subgroup members in the MI group and from the in-subgroup members in the MO group, compared to prosocials with C-D behavior. Prosocials displaying C-D behavior identified significantly more with their in-subgroup. These findings suggest that prosocials displayed C-C behavior with a strong concern towards both in-subgroup and out-subgroup members, while C-D behavior was motivated rather out of in-subgroup-only interests, or parochialism.

Contributions and future research

This research has methodological contributions, and adds to the literature on social dilemmas, faultlines and social value orientation. First, we developed a *new game theoretic paradigm* to study cooperative decision-making in heterogeneous groups with subgroups, in which participants are confronted with conflicts of interest in crossed-groups social dilemmas.

Measuring cooperation repeatedly in different group compositions allowed to investigate the effects of heterogeneity in crossed-groups social dilemmas. To date, the impact of group composition on cooperative decision-making in social dilemmas is scarcely researched.

Secondly, prior *social dilemma research* shows that if group members thought of the group in terms of two subgroups, they acted more in the subgroup's interest and acted less in terms of their self-interest or the collective interests, including those of others in the group who were not members of their in-subgroup (Wit & Kerr, 2002). Our research indicates that when participants were presented with heterogeneous groups, comprising two distinct subgroups, indeed a certain amount of them preferred cooperation in the group with a majority of in-subgroup members. However, a significant proportion of participants choose to forfeit self-interest and cooperate with the group (C-C – consistent cooperation), despite strong subgroup identification with (and more cooperative expectations from) their in-subgroup than with the out-subgroup members. Some of them also acted selfishly toward the group, making a D-D choice (consistent defection), and as such placed self-interest above subgroup interests. These results show that in a social dilemma, the presence of subgroups and associated subgroup identification does not necessarily result in less attention for the collective interests.

Thirdly, with our study we contribute to the research on *group faultlines*. Although limited in size, the interest in this field of study is rapidly surging (e.g. Rico, Sànchez-Manzanares, Antino, & Lau, 2012, Thatcher & Patel, 2012). Previous faultline and diversity studies already indicated that the effects of heterogeneous group composition on group- and individual performance and group member satisfaction are determined by the salience of a certain form of diversity (i.e. gender, organizational tenure, pre-merger organization of origin,…) experienced by group members (Harrison, Price, & Bell, 1998; Jehn, Bezrukova, & Thatcher, 2008; Lawrence, 1997). Perceived differences even have a larger effect on group

outcomes than actual differences (Strauss, Barrick, & Connerley, 2001; Turban & Jones, 1988). The presence of a strong faultline throughout both of our studies - splitting up the group in an in-subgroup and out- subgroup - led to social category diversity. We showed that these (sub)group identifications clearly impacted cooperation levels in a heterogeneous group, with participants attending more to the interests of a group containing a majority of in-subgroup members. However, not only identification processes were determining cooperative choice, but also cooperative expectations about in-subgroup and out-subgroup members. These variables acted as parallel mediators of the group composition effect on cooperation. Measuring identification with the (sub)groups, expectations about (sub)group members' cooperation, and concern with group welfare in both studies gave insight into when consistent cooperators would arise (cf. Weber & Murnighan, 2008). Limitation of our studies is that perceptions were measured after individuals had made a series of cooperative and/or competitive choices. These choices might have influenced the reports of participants' perceptions and might be linked to post-hoc justification (Messé & Sivacek, 1979).

Another interesting avenue for future research involves the study of how and when the present faultline – splitting up the group in two subgroups – could be deactivated, as a potential mechanism to increase overall cooperation rates in newly composed groups and to simultaneously decrease parochial cooperation. Defined as the process of minimizing the salience of activated faultlines in teams, faultline deactivation can be introduced by an external trigger that shifts attention away from (demographically) aligned subgroups (Van der Kamp, Tjemkes, & Jehn, 2012). Changing the cognitive representation of the group situation from one involving two separate subgroups to one involving one collective group (recategorization), and common goal-setting (Rico et al., 2012; van Knippenberg, Dawson, West, & Homan, 2011), might act as faultline deactivators in this context, encouraging consistent cooperation.

Finally, these studies not only tied in with social dilemma and faultline research, but also provided some new insights into the boundary conditions of *social value orientation* effects. From prior research we know that social value orientation will exert its effects mainly in situations of high uncertainty (de Kwaadsteniet, Van Dijk, Wit, & De Cremer, 2006; Roch & Samuelson, 1997). The crossed-groups social dilemma in which participants were placed might be characterized as an uncertain context: no actual interactions between group members, no visual contact, no prior acquaintance with other members. The only cue participants could go by was the faultline separating the in-subgroup and out-subgroup. However, this faultline appeared to provide a strong context (Snyder & Ickes, 1985), as distinct subgroups triggered cooperation rates in the majority ingroup (MI) more than in the majority outgroup (MO), even in this minimal group situation. Both prosocials and proselves showed fairly equal levels of parochial cooperation. On the other hand, did prosocials' and proselves' choice patterns reflect most frequently behavior in line with their individual disposition, namely consistent cooperation and consistent defection respectively. Although a strong situation usually allows for little interpersonal differences in people's behavior, prosocials acted in line with their tendency to cooperate more whereas proselves acted mostly selfish. These findings add to the literature showing that not all strong situations automatically lead to the suppression of behavior in line with individual social value orientation, but that it might depend on the type of situation. The degree to which prosocials and proselves will be influenced by the strength of the situation or perceive the situation as strong can differ. In prior research, proselves are found to act mostly self-interested in a wide array of contexts, so they are most consistent in their behavior and less influenced by the context. Prosocials on the other hand revealed themselves in a context of mixed motives as attending more to their own group's interests than to the collective interest (Aaldering et al., 2013). Future research could further investigate in which types of (strong) situations

prosocials and proselves might act differently, how strong they perceive the situation. For example, based on the theory of collective and individual rationality as motives for their behavior (Kelley & Thibaut, 1978), we could expect that for proselves individual incentives might motivate cooperation more than for prosocials. Explicitly measuring participants' reasons to cooperate in the MI- and MO groups can tease out the motivational mechanism underlying prosocials' and proselves' decisions. This would also offer more insight in their motives for consistent cooperation and consistent defection respectively.

The effects of social value orientation in crossed-groups social dilemmas might also differ over time. In a one-shot game, participant choices are mostly a function of disposition, whereas in an iterated context with repeated rounds, behavior is not only a function of dispositional social motives but more so of other group members' prior behavior (Balliet, Parks, & Joireman, 2009). The effects of SVO on cooperation in a crossed-groups social dilemma may alter over time, based on the feedback (given in between rounds) of others' behavior. Prior research showed that co-operators and individualists assimilated the low level of cooperation of competitive partners, whereas competitor's behavior did not change in response to another competitor (Kelley & Stahelski, 1970; Kuhlman & Marshello, 1975). So, although SVO has been found to be a stable trait over time (Bogaert, Boone, & Declerck, 2008), the presence of competitors in the group - even in a minority - could drastically shift cooperation rates (see also Steinel, De Dreu, Ouwehand, & Ramírez-Marín, 2009) in crossed-groups social dilemmas and may shift prosocials' C-C choices to D-D and C-D choices. Also, the effects of SVO will likely change as the group matures: reactions to other group members' behavior might be different in the initial phase of group formation compared to when employees are more familiar with one another, and gained experience in working together.

Managerial implications

Insights from the present studies have implications for organizations as well. Employees who work simultaneously with members of their ingroup and with members of an outgroup are likely more willing to cooperate when their cooperation profits mainly members of their ingroup. They will cooperate more if their group consists of a majority of in-subgroup members than when it consists of a minority of in-subgroup members (and their cooperation mainly profits outgroup members). Similarly, they might cooperate more in groups that merely consist of in-subgroup members than in heterogeneous groups that consist of both in-subgroup and out-subgroup members.

However, not all employees will act alike when confronted with the same situation: The present results suggest that employees with a prosocial SVO are more willing to show cooperative behavior in heterogeneous groups not only toward in-subgroup members, but also toward the out-subgroup. Proselves, on the other hand, are much more likely to show less cooperation toward their in-subgroup ánd out-subgroup. For organizations this implies that the same inter-group situation can elicit fundamentally different responses from different employees, depending on their social value orientation.

Clearly, team management will need to be diversified and adapted to (subgroups of) team members, with attention for the composition of the team. A majority of prosocials in the team could be advantageous, because consistent contributors can act as a role model to other members and create an implicit group norm of cooperation (Weber & Murnighan, 2008). However, a minority of proselves can be more persuasive and influential than the co-operators, who tend to be ignored when in the minority. This because group members accord more weight to their messages than to those of co-operators (Steinel et al., 2009). Overall, proselves showed lower cooperation rates and preferred self-interest over cooperation with the group. One way to increase cooperation rates in proselves could be to further increase the situational strength. Strong situations are more structured and defined and therefore provide salient cues

for behavior (Snyder & Ickes, 1985). In strong situations, behavior is usually guided more by constraints of the situation and less by interpersonal differences (de Kwaadsteniet et al., 2006). The increase in complexity of heterogeneity and compounded faultlines - based on the alignment of group members' different characteristics - can provide salient situational cues for cooperation, by which proselves might forfeit their intrinsic motivation for defection to the advantage of increased cooperation rates.

A longer-term solution to the cooperation on an organizational level would not only be the search for consistent co-operators displaying organizational citizenship behaviors, but more so to garner broad support when they do emerge. These team members can effectively catalyze cooperation, even when other group members' inclinations are not prosocial, and often appear to benefit from their cooperative actions (Weber & Murnighan, 2008). Encouraging organizational citizenship behavior of employees will come to the benefit of individuals, teams, and the broader organization, and it carries potential to dissipate the negative effects of heterogeneous group composition.

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APPENDICES

Appendix 1. Vignette Crossed-Groups Social Dilemma Game

"Imagine all ten of you being the manager of one of ten private firms producing product X. In order to increase your profits, you all have just made large private investments to heighten the production capacity of product X. Because all ten of you did so, each in his or her own firm, the total production of X will soon exceed the public demand, resulting in a drop in prizes. You all have to choose between sticking to your present (high) production rate or reducing your production rate to a level under its present capacity. Firms producing at maximum capacity will always earn more profit than those reducing their production rate, irrespective of the number of other managers who decide to do so. However, the more firms that stick to their high production rates, the lower the profits all of you earn on product X: If all ten of you decide to stick to your high production rates, this will yield all of you a lower profit (10 million Euros each) than if all of you decide to reduce your production rates (25 million Euros each). In the table below, you see how profits vary as a function of the decisions made in your 10-person group".

Appendix 2. Pay-off matrix of the 10-p. Crossed-Groups Social Dilemma game

Choice configuration			Pay- off for "stick" (x million)	Pay-off for "reduce" (x million)
0 STICK	\	10 REDUCE	---	25
1 STICK	\	9 REDUCE	28	23
2 STICK	\	8 REDUCE	26	21
3 STICK	\	7 REDUCE	24	19
4 STICK	\	6 REDUCE	22	17
5 STICK	\	5 REDUCE	20	15
6 STICK	\	4 REDUCE	18	13
7 STICK	\	3 REDUCE	16	11
8 STICK	\	2 REDUCE	14	9
9 STICK	\	1 REDUCE	12	7
10 STICK	\	0 REDUCE	10	---

CHAPTER 3

Bridging the faultline gap: Subgroup composition and Goal Structure in Crossed-Groups Social Dilemmas

Ann-Sophie DE PAUW, Arjaan P. WIT, & Herman VAN DEN BROECK

ABSTRACT

How should organizations deal with the dilemma that arises during and after change processes such as corporate mergers and alliances, when employees continue to act in the interest of their prior ingroup, at the expense of the new group's interests, in which their ingroup is now just a subgroup? The results of a Crossed-groups Social Dilemma (CSD) game confirmed that participants consistently showed parochial cooperation, i.e., more cooperation toward a heterogeneous group with a majority of in-subgroup members than toward a heterogeneous group with a majority of out-subgroup members. Participants' sensitivity to the subgroup composition could be attenuated by faultline deactivation processes to make the in-subgroup – out-subgroup distinction less salient via a superordinate goal. Results were replicated in a second experimental study. Implications for research and management practice are discussed.

Keywords: Crossed-groups Social Dilemma, Parochial cooperation, Faultlines, In-subgroup, Out-subgroup, Subgroup composition, Subgroup size, Faultline deactivation, Superordinate goal, Game theory.

INTRODUCTION

In general, teamwork has gained increasing importance in organizations for both decision-making and production (Bettenhausen & Murnighan, 1991; Ilgen, Major, Hollenbeck, & Sego, 1993; Kozlowski & Bell, 2003). For companies to retain a competitive advantage, more emphasis is placed on processes as creativity and social innovation where added value is created by bundling forces via cooperation in work groups (Zaccaro, Marks, & DeChurch, 2012). At the same time in our globalized world, these groups have become more diverse due to increasing internationalization of organizations, in operations and in workforce. Strategic processes within and between organizations, such as joint ventures, mergers, and other internal organizational restructurings also result in increasingly heterogeneous workgroups (Li & Hambrick, 2005). Common practice then is the formation of newly composed teams, consisting of employees originating from different organizations or departments that are now restructured into one. The emergence of these heterogeneous groups poses significant challenges for the organization and its managers.

Firstly, regrouping employees with distinct backgrounds into one workgroup can give rise to *subgroup formation*, depending on the alignment of the individual differences within the group, also referred to as faultlines. These faultlines are defined as "hypothetical dividing lines that split a group or a team into two or more subgroups based on one or more individual attributes" (Lau & Murnighan, 1998, p. 328). Faultlines are found to have positive effects on creativity, group learning, and team performance (Bezrukova & Uparna, 2009; Bezrukova, Jehn, Zanutto, & Thatcher, 2009; Gibson & Vermeulen, 2003; Jehn, Northcraft, & Neale, 1999; Watson, Kumar, & Michaelson, 1993). The presence of subgroups and their accompanying psychological support may even provide positive benefits to individual group members (Spell, Bezrukova, Haar, & Spell, 2011). Stronger faultlines, however, also frequently result in greater conflict, reduced team cohesion, performance and satisfaction

(Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson, Joshi, & Erhardt, 2003; Kerr & Tindale, 2004; Lau & Murnighan, 2005; Thatcher, Jehn, & Zanutto, 2003). Subgroups may cause an imbalance in the distribution of power, resources, and abilities (Lau & Murnighan, 1998), and differences in team outcomes (O-Leary & Mortensen, 2010), while their presence has important implications for inter-subgroup dynamics (Harrison & Klein, 2007). Consequently, it is of utmost importance to group outcomes to prevent and deal with subgroup formation and its resulting team conflict (de Wit, Greer, & Jehn, 2011; Jehn & Bezrukova, 2010).

Secondly, after a merger or organizational change, a *strong faultline* may arise within the newly composed group, based on members' prior group membership. This faultline divides the group into two distinct subgroups with group members representing two social entities and categorizing members of their own subgroup as ingroup while viewing the other subgroup as outgroup (Polzer, Crisp, Jarvenpaa, & Kim, 2006). Employees are faced with the inherent tension between cooperation and competition in this new group. They can continue acting in the interest of themselves or their former ingroup, at the expense of the workgroup in which their ingroup is now just a subgroup. Result is short-term wins, but if all group members act similarly collective loss awaits for the new group. Due to the presence of these heterogeneous workgroups in organizations, employees and their managers are faced with a *social dilemma*: forfeit acting in the interest of themselves or their in-subgroup to advance the workgroup and the organization as a whole, or reap the profits of self-interest? Free-riding always results in higher wins, regardless of other group members' choices, but if all engage in this behavior individual benefits are lower than if all would contribute to the group.

To address these challenges we integrate theories on faultlines, intragroup and inter-group conflict, and social dilemmas, to offer a new perspective on the cooperation-competition dilemma in these heterogeneous workgroups. First, we investigate cooperative

decision-making in faultline-based groups with the crossed-groups social dilemma approach, as a useful framework to study the conflict of interests arising for group members. The *CSD paradigm* (De Pauw, Wit, & Van den Broeck, 2013) allows us to model the composition of an in-subgroup and an out-subgroups into a social dilemma and to gain understanding into how group composition impacts individual group members' decision to cooperate. Second, we propose the strategy of faultline deactivation via a superordinate goal to counteract the (negative) effects of team faultlines. We report on the results of two vignette studies that investigated this intervention' s distinctive impact on group member cooperation.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

A social dilemma or multi-person prisoner's dilemma poses a fundamental conflict between short-term interests of individuals and the longer-term interests of the groups of which they are part. On the one hand, all individuals in the group get a higher payoff for not cooperating than for cooperating, regardless of what others do. But on the other hand, if no one cooperates then individual payoffs are lower than if everyone had cooperated. So, all group members are better off if everyone cooperates than if everyone acts selfishly (Dawes, 1980; Komorita & Parks, 1996).

Social dilemmas are omnipresent in the workplace, where employees make daily decisions to engage in behavior that supports their group or team. These efforts often go beyond the role requirements of the job (Organ, 1997) and - although organizational citizenship behaviors may come at a personal cost - they significantly contribute to team effectiveness (MacKenzie, Podsakoff, & Ahearne, 1996), and overall organizational performance (Podsakoff & MacKenzie, 1994). So, if no one devotes time, energy and means to these activities, then all group members will be worse off, because the system will not operate as efficiently (Bergeron, 2007; Joireman, Kamdall, Daniels, & Duell, 2006).

In social dilemmas, individuals make a trade-off between self-interest and the interests of the group of which they are part. When workgroups are formed after organizational restructuring, alliance, or merger, very often these units consist of two distinct subgroups. Employees originating from two different organizations or departments are now regrouped together into one new unit, forming an in-subgroup and an out-subgroup in this new workgroup. Group members have to decide upon their self-interest, or the group's interest, but - in choosing (not) to cooperate with the group - also weigh their subgroup's interest. The social dilemma then embodies the nested social structure and interests of the group members (Wit & Kerr, 2002).

Group faultline

When two prior separate groups start working together in one workgroup (e.g. in alliance, organizational merger) a strong faultline may arise based on employees' membership of one organization/department or the other (Hambrick et al., 2001). In the newly composed group the basis for a faultline – a crack or a divide – is, by definition, present and gives rise to two distinct in- and out-subgroups. Members do not come to the group as individuals, but rather as representatives from two different social entities (Li & Hambrick, 2005), nested in the group. This (salient) subgroup membership will have an impact on their decision to contribute to the group. Alliance teams are typical examples of such teams that have a *strong faultline*. In joint ventures, the primary salient attribute of parent company affiliations may cause the dormant faultline between subgroups to become activated.

Strong faultlines can increase conflict and distrust across subgroups within the workgroup (Choi & Sy, 2010; Greer & Jehn, 2007; Pearsall, Ellis, & Evans, 2008; Polzer et al., 2006; Zanutto, Bezrukova, & Jehn, 2011), and negatively affect group performance and social integration (Harrison, Price, Gavin, & Florey, 2002; Rico, Molleman, Sànchez-

Manzanares, & Van der Vegt, 2007). These outcomes arise because, in these faultline-based groups, individual group members will attend more to the interests of their subgroup within that team, to the detriment of the workgroup in which these subgroups are nested (Lau & Murnighan, 1998; Rico, Sànchez-Manzanares, Antino, & Lau, 2012). These consequences are exacerbated as the strength of the faultline increases. When alignment on a particular characteristic (e.g. pre-merger membership of an organization, company affiliation,…) is unambiguous, this leads to a strong attribute alignment clarity and stronger faultlines (Thatcher & Patel, 2012). A low number of subgroups also increases the strength of the faultline significantly (Nishii & Goncalo, 2008; Polzer et al., 2006), resulting in more intra-subgroup similarity and more inter-subgroup differences. This effect is enhanced when all members of the other subgroup actually share membership in a (demographic) social category as a natural, pre-existing group (Ostrom & Sedikides, 1992). Geographic dispersion, often present in these types of teams, is also found to lead to activated faultlines and conflicts (Polzer et al., 2006). Finally, just the fact of bringing together members from two clearly distinct groups into one workgroup acts as a faultline trigger and activates already existing faultlines (Hambrick et al., 2001).

Subgroup composition

These groups with a strong faultline are not homogeneous – being populated by in-subgroup and out-subgroup members. The presence of subgroups in this case gives rise to a *crossed-groups social dilemma*. Members of ingroup and outgroup are crossed into one new workgroup and in the trade-off between self-interest and group interest, group members will also take the interests of their subgroup - that is now nested in the newly formed group - into account. Cooperation in this setting can be defined as "the willingness of group members to act to the advantage of the workgroup and as such maximize the joint interests of all members of both subgroups" (De Pauw et al., 2013). Prior studies (see Schopler & Insko, 1992)

consistently showed that participants who are members of a subgroup show de facto less concern for the group interest (i.e. are less likely to make the cooperative or C choice) than participants who act as single individuals (see also Komorita & Lapworth, 1982; McCallum et al., 1985; Rabbie, Visser, & van Oostrum, 1982).

The presence of subgroups and heterogeneity in group composition instigates *inter-subgroup processes* within the workgroup (Carton & Cummings, 2012). Group members have "the systematic tendency to evaluate one's own membership subgroup or its members more favorably than a non-membership subgroup" (Hewstone, Rubin, & Willis, 2002, p. 576). Obviously, this stereotyping or inter-subgroup bias (Gaertner et al., 2000; Taifel, 1982; Taifel & Turner, 1979) may result in less cooperation of individuals across subgroups, compared to within their subgroup, and thus less contribution to the group interests, compared to the subgroup and individual interests (Wit & Kerr, 2002). Subgroup biases lead people to favor and trust in-subgroup members more than out-subgroup members, and to identify more with their in-subgroup than with the full group (Tajfel & Turner, 1986). Because the group is inherently divided in two subgroups, in-subgroup and out-subgroup categorizations will arise (Alderfer, 1987; Taijfel, 1982; Taylor, Sheatsley, & Greeley, 1978). In the same realm, there is a well-known tendency for people to be drawn to, like, and trust others like themselves, and to avoid, distrust, and dislike others who are dissimilar (cf. Tsui & O'Reilly, 1989). More so, group members often settle inter-group conflict with self-sacrifice to contribute to ingroup welfare (ingroup love), and to harm competing outgroups (outgroup hate) (Bornstein, 2003; Halevy, Bornstein, & Sagiv, 2008; De Dreu et al., 2010). Clearly, members are likely to prioritize their own subgroup's interests over the other subgroup's interests and over the interests of the group, in which their subgroup is nested.

Subgroup size

When a new workgroup is formed usually subgroups are of unequal size, especially when these groups are getting large (Lau & Murnighan, 1998). This group then contains a majority and a minority of (sub)group members aligning on several characteristics (Carton & Cummings, 2012; O'Leary & Mortensen, 2010). When these (sub)group members decide to contribute to the group, this benefits not only members of the individual's in-subgroup but also members of the out-subgroup. So, either a larger number of in-subgroup members than out-subgroup members profit from an individual's cooperation, or a larger number of out-subgroup members than in-subgroup members profit from it. Findings with respect to whether variation in the size of subgroups is better (Harrison & Sin, 2005; Jehn & Bezrukova, 2010; Menon & Phillips, 2010; Phillips, Mannix, Neale, & Gruenfeld, 2004) or worse (Gigone & Hastie, 1993; Janis, 1982; Mannix, 1993; O'Leary & Mortensen, 2010; Stasser & Titus, 1985) for group outcomes, than when there is low variation in subgroup size are contradictory (Carton & Cummings, 2012). Nevertheless, *relative subgroup size,* as a potential antecedent of status (Ebenbach & Keltner, 1998; Guinote, 2004; Ng, 1982), may have a significant impact on cooperation levels toward the group. Subgroups that have numerically more members (majority subgroups) tend to have higher status (Guinote, Judd, & Brauer, 2002), defined as "the prominence, respect, and influence individuals enjoy in the eyes of others" (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006, p. 1094; for other definitions see also Fiske, 2010; Magee & Galinsky, 2008). So, a member of a majority subgroup, nested in the newly composed group, is in a high-status position (compared to the minority subgroup) and might contribute more to the group in order to confirm the subgroup's status and identity (Ellemers & Scheepers, 2005; Sachdev & Bourhis, 1991). Even more so, if this majority subgroup is populated by ingroup members, originating from the same organization/department and more similar to him, group identification will be stronger (Tajfel & Turner, 1986; Turner, 1987). Consequently, the member will navigate

toward this majority subgroup and most likely contribute more to the workgroup in which this subgroup is nested (in MI). On the other hand, when members are part of the low-status minority subgroup (in MO), ingroup subgroup members are likely to feel threatened. They can react adversely to the fact that the high-status outgroup subgroup, being in the majority, will have greater influence (Terry, 2003; van Leeuwen, van Knippenberg, & Ellemers, 2003)

In a crossed-groups social dilemma - combining an in-subgroup and an out-subgroup - cooperation with the workgroup always comes to the benefit of both subgroups. However, in one case the in-subgroup will be in the majority, and in another the out-subgroup will be in the majority. Given group members' preference to place subgroup interests above group interests, and the prioritizing of the in-subgroup's interests over those of the out-subgroup, we hypothesize:

H1: Subgroup composition has a significant effect on cooperation in a faultline-based group. Group members cooperate more if the majority of their group consists of in-subgroup members (MI), than if the majority of their group consists of out-subgroup members (MO) (parochial cooperation).

Faultline activation and deactivation

For organizations it is not desirable that employees cooperate more with one group (with a majority of in-subgroup members) and less with the other (with a minority of in-subgroup members). The question arises as to which contextual factors might trigger individuals to move away from this in-subgroup favoritism towards attention for the workgroup as a whole. In other words: how can the group environment influence employees to make less distinction between in-subgroup and out-subgroup to cooperate more with the new workgroup?

Individual, team, and organizational factors can determine whether an array of (demographic) characteristics become more or less salient in a group, either emphasizing or de-emphasizing subgroup differences (Lau & Murnighan, 1998; Mathieu, Maynard, Rapp, & Gilson, 2008; Thatcher & Patel, 2012). Making subgroup differences more or less salient shifts cognitive processes of group members and results in individuals attending more or less to the interests of that subgroup (Wit & Kerr, 2002). When the faultline arises primarily due to (prior) group or organizational membership, this results in inter-subgroup bias between the in-subgroup and the out-group subgroup. So, making the faultline more or less salient in this case will result in more or less attention for the in-subgroup and out-subgroup interests or the interests of the new workgroup respectively.

Faultline activation is "the process by which an objective alignment of (demographic) characteristics (a potential or dormant faultline) is actually perceived by team members as the division of the team into separate subgroups (an activated faultline)" (Jehn & Bezrukova, 2010, p. 24). The activation of faultlines requires a trigger to initiate the subgroup formation (Chrobot-Mason, Ruderman, Weber, & Ernst, 2009), such as the merging of two prior separate groups (Hambrick et al., 2001). Faultlines are activated when group members identify with a subgroup based on *social identification and social categorization processes* (Lau & Murnighan, 1998; Thatcher & Patel, 2011), also referred to as *identity-based activated faultlines* (Carton & Cummings, 2012). Members classify themselves with others based on perceived similarities and identify with them as their in-subgroup, motivated by the need for self-esteem and safety (Hogg & Terry, 2000). Higher levels of within-subgroup similarity and between-subgroup differentiation make subgroup categorization more likely (Gaertner, Sedikides, & Graetz, 1999; van Knippenberg, van Knippenberg, de Cremer, & Hogg, 2004). When categories become salient and the faultline(s) activated, coalitions are likely to divide the group. Under such circumstances, subgroup biases lead people to

cooperate and *expect others to cooperate* with in-subgroup members more than out-subgroup members, fueling intra-group conflict, which may interfere with information processing (Dahlin, Weingart, & Hinds, 2005; Turner et al., 1987), block communications (O'Reilly, Caldwell, & Barnett, 1989), and hinder the negotiation of agreements (Clark, Anand, & Roberson, 2000). An individual's social categorization is not fixed but may vary over time and across situations, depending on contextual cues (Brewer, 1991; Gardner, Gabriel, & Lee, 1999). In faultline activation, when individuals perceive of the group primarily as a collection of two subgroups, they will be relatively more concerned with serving subgroup interests rather than group interests. So, members of subgroups do not always interact as individual 'agents' but quite often act on behalf of the social subgroups to which they belong and with which they identify (Wit & Kerr, 2002).

Faultline deactivation on the other hand is the process of minimizing the salience of activated faultlines in teams (Van der Kamp, Tjemkes, & Jehn, 2012). Some specific interventions may be effective in focusing individuals on the group as a whole, to enhance decision-making in faultline teams, and minimize the adversities of faultlines: team goal setting (van Knippenberg, Dawson, West, & Homan, 2011), leadership style (Gratton, Voigt, & Erickson, 2007; Kunze & Bruch, 2010), reward structure (Homan et al., 2008), strong team identification (Homan et al., 2008; Jehn & Bezrukova, 2010), prodiversity beliefs (Homan, van Knippenberg, Van Kleef, & De Dreu, 2007), task autonomy and goal structure strategies (Rico et al., 2007, 2012).

Inter-group comparisons can also focus individuals' attention on their group and lead to favoritism toward the own group (Turner, Brown, & Taifel, 1979). For example, the prospect of comparing the outcomes of one group to another can enhance a connection between members of that group, make them act upon the common goal of obtaining better outcomes than the other group and rise contributions to their own group (cf. Carton &

Cummings, 2012; Gunnthorsdottir & Rapoport, 2006; Hornsey & Hogg, 2000). When faultlines operate, such a common goal, evoked by inter-group comparison, can stimulate group members to overcome their divisive subgroups (Lau & Murnighan, 2005). A *superordinate goal* or shared objective (Anderson & West, 1998; van Knippenberg et al., 2011) may override the tendency of identity-based subgroups to promote identity fragmentation (Hornsey & Hogg, 2000).

The transformation of group members' cognitive representation of the inter-subgroup interaction as one involving two separate subgroups (in-subgroup and out-subgroup) to one involving a single, common group - with a common goal - is a *recategorization* strategy (Gaertner et al., 1993; Wildschut et al., 2003). This social cognitive process decreases the distinction between the in-subgroup and the out-subgroup, reduces perceptions of subgroup differences, making subgroup categorization less likely, and renders the categorization as one group more salient (van Knippenberg, 2003). So although it does not reduce the differences between subgroup members per se, the perceived salience of subgroups is reduced (Homan et al., 2008). Social (re)categorization can reduce the salience of the strong faultline when priming individuals with a superordinate goal that focuses their attention on the group, instead of focusing on the presence of subgroups within this group (Dovidio, Gaertner, & Validzic, 1998). When the salience of the overarching group is enhanced, this can transform the prior 'we versus they' dichotomy into a unique 'us' category (Brown & Turner, 1981; Sherif, 1958), override the negative process effects of activated faultline subgroups (Jehn & Bezrukova, 2010), and shift self-sacrificial cooperation to the overarching group level, thus benefitting members of both subgroups (Aaldering, Greer, Van Kleef, & De Dreu, 2013; Wit & Kerr, 2002). Prior research shows that superordinate goals create a new overarching inclusive group categorization and contribute to reducing the inter-subgroup bias associated with strong faultline teams (Gaertner & Dovidio, 2000; Rico et al., 2012), resulting in better

performance (Homan et al., 2008), reduced coalition formation, and less team conflict (Homan, et al., 2008; Jehn & Bezrukova, 2010). We hypothesize:

H 2: Faultline (de)activation moderates the effect of subgroup composition on cooperation in a faultline-based group. Group members show less sensitivity to the subgroup composition if they are presented with a superordinate goal for their group (faultline de-activation) than when the presence of subgroups in their group is made salient via a subordinate goal (faultline activation).

First aim of this paper is to further validate the CSD paradigm by studying the effects of group composition on parochial cooperation, i.e., the extent to which individual group members show more cooperation toward a heterogeneous group in which members of their own subgroup are in the majority than toward a heterogeneous group in which members of another subgroup are in the majority. Second aim is to investigate the potential of faultline deactivation (via a superordinate goal) to attenuate the effect of group composition on parochial cooperation. To this end we conducted two studies with the purpose of replicating the results from the first study in the second one, to increase validity of the findings.

STUDY 1

METHOD

Sample

Participants were 145 prospective psychology students of a Western-European university, both men (22%) and women with an average age of 17.2 years (*SD* = 1.08), relatively unfamiliar to one another. They were gathered in a lecture hall and volunteered to participate in the experiment as part of an introductory class. After being seated they received

an envelope with experimental instructions in a booklet[13]. From then on participants were not allowed to talk to each other. They were seated far enough from one another to prevent them seeing each other's materials and decisions.

CSD vignette

Participants read in a booklet the instructions of a 10-person Crossed-groups Social Dilemma (CSD) scenario that was also used by De Pauw et al. (2013) (Appendix 1). As a manager, participants had to decide – just as the 9 other managers in their group - to either 'limit production' of their factory (cooperation) to avoid overproduction or to 'stick to their current production level' (defection), which would result in overproduction if the other managers decided similarly. Firms producing at maximum capacity would always earn more profit than those reducing their production rate, irrespective of the number of other managers who decided to do so. However, the more managers stuck to their high production rates, the lower the profits all of them earned. If all ten managers decided to stick to their current production rates, this would yield all of them a lower profit (10 million Euros each) than if all of them decided to reduce their production rates (25 million Euros each). After private reading of the instructions and inspection of the pay-off matrix (Appendix 2), which was explained by examples of two choice configurations (3 stick to production \ 7 reduce production and 7 stick \ 3 reduce, respectively), participants received information on the groups of managers in which they had to make their choice.

Manipulations

Subgroup Composition (within subjects)

Participants were informed they had to make their choice in two differently composed 10-p. groups, where the managers in each case were psychology students of their own university (ingroup subgroup members) and psychology students from another neighboring

[13] We thank Frank de Vos for his assistance with data-collection

university (outgroup subgroup members). In one 10-p. group, managers from the own university were in the majority. In the other 10-p. group, managers of the neighboring university were in the majority. Participants first read the instructions of one of the two experimental within-subjects conditions (counterbalanced). The Majority Ingroup (MI) group consisted of 7 managers from their own university (including themselves) and 3 managers from the neighboring university. The Majority Outgroup (MO) group consisted of 3 managers from their own university (including themselves) and 7 managers from the neighboring university.

We checked the group composition manipulation with four items, in the MI group and MO group separately. Participants were asked to indicate how many of the members of their own subgroup (including themselves) they expected to 'stick to the current production level' and how many they expected to 'reduce the production'. They also indicated how many of the members of the other subgroup they expected to 'stick' and how many they expected to 'reduce'. All participants comprehended that the 10-p. group consisted of 7 ingroup members and 3 outgroup members in condition MI (Majority Ingroup), and that the 10-p. group consisted of 3 ingroup members and 7 outgroup members in condition MO (Majority Outgroup).

Faultline (de)activation (between subjects).

Half of the participants were informed that at the end of the experiment the level of cooperation of the in-subgroup members (the managers from their own university) would be compared to that of the out-subgroup members (the managers from the other university) (faultline activation – subordinate goal). The other half of the participants were told that the level of cooperation of the 10-p. groups in which they participated would be compared to that of the other 10-p. groups in the simulation (faultline deactivation – superordinate goal) (cf. De Cremer & Van Vugt, 1999).

A Pearson chi-square test indicated that the manipulation of faultline (de)activation was successful (χ^2 [1, n = 145] = 78.02, $p < .001$). Participants in the faultline activation condition correctly reported that the subgroups would be compared after the task. Participants in the faultline deactivation condition correctly indicated that the 10-p. groups would be compared[14].

Measures

After the manipulation of group composition (MI or MO) and faultline (de)activation, participants were requested to fill out their private answers to a series of questions. To assess *choice behavior*, they decided whether they would 'stick to their present production level' or 'reduce their present production level'.

They also indicated how many of the participants from their own subgroup and the other subgroup they expected to 'stick' and how many they expected to 'reduce' in this 10-p. group. These items measured *actual expectations* of other group members' cooperative behavior and checked respondents' comprehension of the group composition. Due to the phrasing of the questions, participants' responses included their own choices in each of the two groups. Consequently, we first corrected the original responses of participants who made cooperative choices themselves toward the MI group and/or toward the MO group. For example, when a participant acted cooperatively (i.e. indicated that he would reduce his own production), and indicated that he expected 5 out of 7 in- subgroup members to cooperate in the MI group, then participant's expected number of co-operators was corrected from 5 to 4; so he expected 4 in-subgroup members other than himself to cooperate. Because cooperative expectation was measured on a different scale in MI (seven in-subgroup members) than in MO (three in-subgroup members), proportions of cooperation were calculated, e.g. if a

[14] Twenty participants erroneously reported on the manipulation check of faultline (de)activation, indicating that they did not comprehend whether (sub)groups were to be compared. Consequently, these cases were excluded from further analyses. There was no difference in the main pattern of results between the total sample (n = 145) and the final sample (n = 125).

participant expected 4 other in-subgroup members to cooperate, then the expected proportion of cooperation was calculated as 4/6 in-subgroup members (= .67).

As a means to assess *understanding of the pay-off matrix,* participants were requested to indicate the profits (in million Euros) to be earned by those in the 10-p. group who 'stuck' and the profits to be earned by those who 'reduced'.

After completion of all questions, participants were requested to proceed to the next page of the booklet. There they filled out their private answers to the same series of questions (choice behavior, cooperative expectations, comprehension of the pay-off matrix,), now for the MO group (or the MI group), depending on which condition they were first presented with (counterbalanced). Finally, all participants were asked to indicate their gender and age. They also read a paragraph on 'guarantee of anonymity'.

In the *post-experimental questionnaire,* identification with the in-subgroup and out-subgroup members was measured with three items on a 5-point scale (Derks, van Laar, & Ellemers, 2009): '*I identify with L participants ', 'I feel connected with L participants', 'I am concerned with L participants'* (for the in-subgroup) (α = .88); and *' I identify with R participants', 'I feel connected with R participants', 'I am concerned with R participants'* (for the out-subgroup) (α = .93)[15]. The same scale was adapted to measure identification with the MI group and the MO group: *'I identify with the 10-p. group of 7 L and 3 R participants'* (sample item for the MI group) (α = .87); *'I identify with the 10-p. group of 3 L and 7 R participants'* (sample item for the MO group) (α = .88).

Debriefing

After completion of the post-experimental questionnaire participants were requested to place the booklet back into the envelope. All of the participants were collectively debriefed by means of a lecture and a report on some of the results.

[15] L participants' refers to ingroup subgroup members from participants' own university; 'R participants' refers to outgroup subgroup members from the other university.

Procedure of data analysis

To test the hypotheses we used two data-analytic approaches. First, to test Hypothesis 1 and 2, we used the Generalized Estimating Equations (GEE) procedure (Liang & Zeger, 1986) that treated the repeated (non)cooperative choices of individual participants in the crossed-groups social dilemma game as the units of analysis. As an extension of the Generalized Linear Model (logistic regression), this procedure allows for the analysis of repeated measurements of binary ('reduce production' or 'stick to production') response variables, with correction for the non-independence of data. Data are assumed to be dependent within subjects and independent between subjects. The hypotheses were tested by the Wald statistic that has a Chi-square distribution and results were reported in probabilities of cooperation in the MI- and MO group separately.

Second, to understand how participants responded differently to group composition under faultline (de)activation, we analyzed participants' choice patterns - based on their repeated choices in MI and MO respectively (C-C, C-D, D-C, D-D)[16] - with a Chi-square analysis. C-C and D-D choice patterns indicated consistent cooperation and defection, respectively, in both MI and MO. C-D patterns indicated cooperation only when in-subgroup members were in the majority (MI), not when out-subgroup members were in the majority (MO). D-C patterns indicated cooperation only when out-subgroup members were in the majority (MO), not when in-subgroup members were in the majority (MI).

ANALYSES AND RESULTS

Order effect. The counterbalanced order of presenting the MI group (7-3) and MO group (3-7) did not yield a different pattern of results ($Wald\ \chi^2_{(1)} = .22$, $p < .64$). Cooperation probabilities were very similar in the MI-MO order (.51) as in the MO-MI order (.54).

[16] C denoting a Cooperative choice ("limit production") and D denoting a Defective choice ("stick to the current production level")

Hypothesis 1: Subgroup composition. As predicted, there was a main effect of subgroup composition on cooperation (B = 1.09, $Wald\ \chi^2_{(1)}$ = 19.66, $p < .001$), indicating that participants were significantly more likely to make a cooperative choice in a MI group (.66) than in a MO group (.40), i.e. difference of 26%[17].

Hypothesis 2: Interaction Subgroup composition x Faultline (de)activation. There was a significant interaction effect of subgroup composition and faultline (de)activation on cooperation (B = .60, $Wald\ \chi^2_{(3)}$ = 4.09, $p < .05$), indicating that the effect of subgroup composition was different in the faultline activation condition than in the faultline deactivation condition. Under faultline activation, participants were more likely to make a cooperative choice in the MI group (.73) than in the MO group (.36), with a difference of 37% between both groups (Table 3.1)[18]. Under faultline deactivation, participants were also more likely to make a cooperative choice in the MI group (.59) than in the MO group (.44), but the difference in cooperation rate was significantly less: 15%. Thus, whether the participants' in-subgroup was in the majority or the minority had less impact on their choice to cooperate in the faultline deactivation condition[19]. Consequently, Hypothesis 2 was also supported by the data.

[17] For the ease of interpretation the magnitude of all effects are reported in probabilities instead of Odds ratios (Exp (B)).
[18] The probabilities obtained from the GEE analyses are calculated via the accumulated frequencies of participants' cooperative choices in the MI and MO group. To obtain the probability of cooperation in the MI group under faultline activation the frequencies of C-C and C-D choices are summed / frequency of all pps. under faultline activation = .73. To obtain the probability of cooperation in the MO group under faultline activation the frequencies of C-C and D-C choices are summed / frequency of all pps. under faultline activation = .36.
[19] These results are based on a (non-linear) transformation of the logOdds ratios into estimated marginal means (expected probabilities). A significant interaction effect in GEE logistic regression analysis indicates that the difference in logOdds between the conditions is significant. To double-check whether this significance also held for the estimated marginal means, a GEE linear regression analysis was performed yielding the same results.

Table 3.1. Probabilities of cooperation in the MI group and in the MO group for faultline activation and deactivation (n = 125)

	MI	MO
Faultline activation	.73	.36
Faultline deactivation	.59	.44
Group Composition (main effect)	.66	.40

To understand how participants responded differently to subgroup composition under faultline activation and deactivation, we performed a Chi square analysis on their choice patterns. This analysis allowed us to compare the frequencies of repeated choices in the MI- and MO group (Table 3.2). Choice patterns (MI-MO) were generated by placing participants' choice in the MI group before that in the MO group. There was no significant interaction effect of order with group composition and faultline (de)activation ($B = .49$, $Wald\ \chi^2_{(1)} = .25$, $p < .62$). Consequently, this recoding strategy could be reliably executed. Results showed that choice patterns differed significantly between both conditions ($\chi^2_{(3)} = 6.06$, $p < .05$).

Table 3.2. Choice patterns for faultline activation and deactivation (n = 125)

	C-C	C-D	D-C	D-D
Faultline activation	26.6%	46.9%	9.4%	17.2%
Faultline deactivation	**32.8%**	**26.2%**	11.5%	**29.5%**

Under faultline deactivation there were less C-D patterns (- 20.7%) and more C-C patterns (+ 6.2%), than under faultline activation. In other words, being primed with a

superordinate goal resulted in less conditional cooperation (cooperation only if the in-subgroup formed a majority) with the heterogeneous group (C-D), to the benefit of cooperation with both heterogeneous groups (C-C). However, comparing the frequency of D-D choice patterns between both conditions also showed more D-D patterns in the faultline deactivation condition (+ 12.3%). So, although overall cooperation rates (C-C) were significantly higher and C-D patterns significantly lower, faultline deactivation also resulted in more overall defection (D-D) patterns.

Additional measures

(Sub)group identification. Participants identified more with in-subgroup members than with out-subgroup members, and this was true under both faultline activation (M = 3.44, SD = 1.00 vs. M = 1.90, SD = .95) ($t_{(63)}$ = 9.05, p < .0001) and faultline deactivation (M = 3.45, SD = .98 vs. M = 2.16, SD = .94) ($t_{(60)}$ = 6.83, p < .0001). Group members also identified more with the MI group than with the MO group, both under faultline activation (M = 3.43, SD = .87 vs. M = 2.67, SD = .95) ($t_{(63)}$ = 5.50, p < .0001) and faultline deactivation (M = 3.33, SD = .78 vs. M = 2.81, SD = .81) ($t_{(60)}$ = 3.98, p < .0001).

Cooperative expectations. Participants expected more cooperation of other in-subgroup members in the MI group (M = .45, SD = .26) than in the MO group (M = .37, SD = .35) ($t_{(119)}$ = 2.14, p < .05). Under faultline deactivation, did participants expect more in-subgroup members to cooperate in the MO group (M = .42, SD = .36) than under faultline activation (M = .31, SD = .33 ; $t_{(118)}$ = 1.71, p < .08).

Choice patterns in faultline deactivation.

We conducted a multivariate analysis of variance in the faultline deactivation condition, with post-hoc pairwise comparisons of participants' identification levels and cooperative expectations in C-C vs. C-D patterns and in C-C vs. D-D patterns. This allowed us to explore the underlying perceptions of participants choosing for these specific choice

patterns in faultline deactivation. Results showed a significant difference in perceptions between participants with a C-C pattern (n = 36), a C-D pattern (n = 46), and a D-D pattern (n = 29) (F (14, 206) = 2.55, $p < .002$).

C-C vs. C-D patterns. Post-hoc analyses indicated that participants with a C-C pattern identified more with the out-subgroup (M_{diff} = .46, SE = .20, $p < .09$), identified less with the in-subgroup (M_{diff} = -.55, SE = .21, $p < .04$), identified less with the MI group (M_{diff} = -.37, SE = .18, $p < .14$), expected more cooperation of out-subgroup members in the MI group (M_{diff} = .14, SE = .08, $p < .20$), and expected more cooperation of in-subgroup members in the MO group (M_{diff} = .09, SE = .01, *ns*), compared to participants with a C-D pattern.

C-C vs. D-D patterns. Post-hoc analyses indicated that participants with a D-D pattern identified less with the out-subgroup (M_{diff} = -.57, SE = .23, $p < .05$), and identified less with the in-subgroup (M_{diff} = -.25, SE = .24, ns), compared to participants with a C-C pattern. They expected less cooperation of out-subgroup members (M_{diff} = -.22, SE = .08, $p < .05$) and in-subgroup members (M_{diff} = -.11, SE = .07, *ns*) in the MI group, and they expected less cooperation of out-subgroup members (M_{diff} = -.09, SE = .04, $p < .05$) and in-subgroup members (M_{diff} = -.04, SE = .09, *ns*) in the MO group, compared to participants with a C-C pattern.

DISCUSSION

In this study, we addressed several research gaps. Firstly, most faultline research addresses the alignment of demographic characteristics and its impact on the formation of subgroups and team outcomes. However, there is a call to further investigation on faultlines composed of non-demographic attributes, such as geographic work location (e.g. Polzer et al., 2006), and workgroup members' origin in factional groups (Li & Hambrick, 2005). Although

faultlines can inhibit team processes, such as cooperative decision-making, to date the research on management of team faultlines remains scarce (Rico et al., 2012).

Secondly, faultline and strategy literature recently introduced the conceptualization of alliances as social dilemmas causing tension between cooperation and competition (Li & Hambrick, 2005; Zeng & Chen, 2003). However, to date there is little investigation on how cooperation can be achieved and sustained in newly composed workgroups, although lack of cooperation is a main cause of the relatively high failure rate (Arino & de la Torre, 1988; Doz, 1996; Park & Russo, 1996; Teece, 1992; Ulrich & Van Dick, 2007; Yan & Zeng, 1999). Past research has focused mainly on the enhancement of cooperation at an organizational level, but little attention has been devoted to the implications for employees on the work floor being confronted with conflicts of interests in newly composed workgroups.

Thirdly, although the effects of group composition and subgroups are well-documented in diversity and faultline literature, these findings have to our knowledge not yet been implicated on cooperative decision-making in social dilemmas. Previous social dilemma research already showed that the presence of equal-sized subgroups resulted in decreasing contributions to the group (Polzer et al., 1999; Polzer, 2004; Wit & Kerr, 2002). However, the link between the composition of subgroups and contributions to the group has to date not been investigated.

Finally, this study answers the call for research that investigates the effect of a superordinate goal when stronger faultlines are activated (Rico et al., 2012).

The results of Study 1 confirmed the hypotheses on subgroup composition and faultline deactivation. In line with H1, participants cooperated more in the 10-p. group with a majority of in-subgroup members (MI group) than in the MO group, with a minority of in-subgroup members. This finding showed the strong tendency for parochial cooperation and group members' sensitivity for subgroup composition, also found in earlier research by De

Pauw et al. (2013). Participants' identification with the in-subgroup was stronger than with the out-subgroup, and they identified more with the MI group than with the MO group. Also, they expected more cooperation of other in-subgroup members in the MI group than in the MO group. These results indicate that the effect of group composition on cooperative choice in the heterogeneous groups might be related to the difference in identification and expectations about other (sub)group members' cooperation in the MI and MO groups (see mediation analysis reported after Study 2). The presence of distinct subgroups in the faultline-based group instigated inter-subgroup biases and subgroup categorization processes (Carton & Cummings, 2012). This led group members to identify more with their in-subgroup than with the full group, and to attend more to their own subgroup's interests than to the other subgroup's interests, and to the interests of the group in which their contributions came mostly to the benefit of their own in-subgroup (cf. Tajfel & Turner, 1986; Turner, 1987). Subgroup processes did not only have an impact on participants' identification levels, but also affected their expectations about other (sub)group members' cooperation. Participants' behavior was related to these expectations, which is in line with goal expectation theory (Pruitt, 1983; Pruitt & Kimmel, 1977) and prior social dilemma research: when group members expect cooperation of others, they will also cooperate themselves (Dawes, McTavish, & Shaklee, 1977; Messick et al., 1983; Schroeder, Jensen, Reed, Sullivan, & Schwab, 1983; van Lange & Liebrand, 1989; Wade-Benzoni et al., 1996).

In line with H2, faultline deactivation via a superordinate goal for the 10-p. group attenuated participants' sensitivity for subgroup composition. Group members showed less tendency to cooperate only when the in-subgroup formed a majority (C-D choice pattern) and contributed more to both 10-p. groups (C-C pattern), despite the distinct subgroup composition. Under faultline deactivation, did participants expect more in-subgroup members to cooperate in the MO group, than under faultline activation. We conducted additional

analyses on participants' choice patterns in the faultline deactivation condition to compare identification levels and cooperative expectations between these groups of participants. Results showed that participants with a C-C pattern displayed stronger identification with the out-subgroup and with the MO group, and lower identification with the in-subgroup and with the MI group, compared to participants with a C-D choice pattern. Also, participants with a C-C pattern expected more cooperation from in-subgroup members in the MO group and from out-subgroup members in the MI group, compared to those with a C-D pattern. So, the stronger identification with the out-subgroup and with MO group and more expected cooperation from group members when they form a minority subgroup, might have caused the lower frequency in C-D patterns and the higher frequency in C-C patterns under faultline deactivation.

However, there were also more group members displaying consistent defection (D-D) under faultline deactivation. A comparison of participants' perceptions in C-C and D-D choice patterns learned that participants with a D-D choice pattern identified less with in-subgroup, out-subgroup, and MO group, and expected less cooperation from subgroup members in both the MI- and MO group, compared to participants with a C-C pattern. Prior research show that a superordinate goal could reduce subgroup categorization in a faultline-based group (Rico et al., 2012). In case of our study, faultline deactivation with the superordinate goal might have resulted in a process of *decategorization* (Gaertner & Dovidio, 2000) for participants with a D-D choice. Due to the strong reduction in salience of subgroup distinctions, they categorized themselves at an individual level - not on a group level, as members of the 10-p. groups - and perceived themselves and other group members as individuals (Hewstone, Rubin, & Willis, 2002). In line with this decategorization, individuals attended to their self-interest and decided not to cooperate in none of the two 10-p. groups.

This explanation of decategorization fits in most with our results that showed a clear drop in identification with both the subgroups and with the 10-p. groups.

In light of the findings in Study 1, we aimed to replicate these results in a second experiment with similar design. This to establish the reliability of our findings and to gain more insight into the mechanisms of group identification and cooperative expectations underlying the effects of group composition and faultline (de)activation.

STUDY 2

METHOD

Sample

Participants were 157 undergraduate students, enrolled in a 'Business administration skills' course at a Western-European university. The sample consisted of both men (51%), and women (49%) with an average age of 20.6 years (*SD* = 1.34). Participants were economics / engineering / informational sciences students, again relatively unfamiliar to one another. They volunteered to engage in the experiment and received course credit for their participation. Participants were gathered in a lecture hall and - after being seated - they received an envelope with experimental instructions in a booklet. From then on participants were not allowed to talk to each other. They were seated far enough from one another to prevent them seeing each other's materials and decisions.

Procedure

The CSD vignette, the manipulations of subgroup composition and faultline (de)activation, were similar to the ones used in Study 1.

The *subgroup composition manipulation* was assessed using the same four items as in Study 1. Again, all participants comprehended that the 10-p. group consisted of 7 in-subgroup members and 3 out-subgroup members in condition MI (Majority Ingroup), and that the 10-p.

group consisted of 3 in-subgroup members and 7 out-subgroup members in condition MO (Majority Outgroup).

A Pearson chi-square test showed that the *manipulation of faultline (de)activation* was successful (χ^2 [1, n = 157] = 103.58, $p < .001$). Participants in the faultline activation condition correctly indicated that the subgroups would be compared after the task. Participants in the faultline deactivation condition correctly reported that the 10p.-groups would be compared[20].

As an additional check on the faultline (de)activation manipulation, participants rated in the post-experimental questionnaire four one-item measures on a 5-point Likert scale: *"In my 10-p. groups, the L and R participants formed one group"*, *"My 10-p. groups split up into subgroups of L and R participants"*, *"The L and R participants all had a common goal: the best result for the 10-p. groups"*, and *"The L and R participants each had their own subgroup goal: the best result for their own subgroup".* The former two questions measured the extent to which participants perceived a faultline in their 10-p. groups and the latter two questions measured the perceived goal structure for their (sub)group (superordinate vs. subordinate goal). In the faultline deactivation condition, participants rated their 10-p. groups as one group of participants more ($M = 2.90$, $SD = 1.52$), than did participants in the faultline activation condition ($M = 2.30$, $SD = 1.31$, F (1, 155) = 6.87, $p < .01$). In the faultline activation condition, participants rated their 10-p. groups as consisting of two subgroups more ($M = 3.76$, $SD = 1.28$), than did participants in the faultline deactivation condition ($M = 2.87$, $SD = 1.47$, F (1, 155) = 11.12, $p < .001$). In the same line, in the faultline deactivation condition, participants rated the presence of a superordinate goal for the group as more likely ($M = 3.63$, $SD = 1.39$), than participants in the faultline activation condition ($M = 2.49$, $SD = 1.39$, F (1, 155) = 8.39, $p < .01$). In the faultline activation condition, participants rated the

[20] Fourteen participants erroneously reported on the manipulation check of faultline (de)activation, indicating that they did not comprehend whether (sub)groups were to be compared. Consequently, these cases were excluded from further analyses. There was no difference in the main pattern of results between the total sample (n = 157) and the final sample (n = 143).

presence of a subordinate goal for the subgroup as more likely (M = 3.63, SD = 1.39), than participants in the faultline deactivation condition (M = 2.76, SD = 1.43, F (1, 155) = 21.49, p < .0001). These results confirmed that the manipulation of faultline (de)activation was successful.

Measures

After the manipulation of group composition (MI or MO) and faultline (de)activation, participants were requested to fill out their private answers to a series of questions. Similar to Study 1, the following variables were measured: choice behavior, cooperative expectations, comprehension of the pay-off matrix, identification with the in-subgroup, with the out-subgroup, with the MI group, and with the MO group.

Test of hypotheses

Hypotheses were tested with the Generalized Estimating Equations (GEE) procedure to check overall cooperation rates in the MI- and MO group, under faultline activation and deactivation. A Chi-square analysis of participants' choice patterns was conducted to understand how participants responded differently to group composition under faultline (de)activation.

ANALYSES AND RESULTS

Order. The counterbalanced order of presenting the MI group (7-3) and MO group (3-7) did not yield a different pattern of results ($Wald\ \chi^2_{(1)}$ = .46, p < .50). Cooperation probabilities were very similar in the MI-MO order (.46) as in the MO-MI order (.51).

Hypothesis 1: Subgroup Composition. There was a significant main effect of subgroup composition on cooperation ($Wald\ \chi^2_{(1)}$ = 48.11, p < .0001), indicating that, overall,

participants made significantly more cooperative choices in the MI group (.66) than in the MO group (.31), i.e. a difference of 35%. Hypothesis 1 was supported by the data.

Hypothesis 2: Interaction Subgroup composition x Faultline (de)activation. There was a significant interaction effect of subgroup composition and faultline (de)activation on cooperation (B = .18, $Wald\ \chi^2_{(3)}$ = 3.92, p < .05), indicating that the effect of subgroup composition was different in the faultline activation condition than in the faultline deactivation condition (Table 3.3).

Table 3.3. Probabilities of cooperation in the MI group and in the MO group for faultline activation and deactivation (n = 143)

	MI	MO
Faultline activation	.70	.26
Faultline deactivation	.62	.36
Subgroup Composition (main effect)	.66	.31

Under faultline activation, participants made more cooperative choices towards the MI group (.70) than towards the MO group (.26), with a difference of 44% (Table 3.3). Under faultline deactivation, participants also made more cooperative choices towards the MI group (.62) than towards the MO group (.36), but the difference in cooperation rate between the groups was significantly smaller: 26%. Participants in the faultline deactivation condition thus made less distinction between the MI- and MO group for their cooperation, than

participants in the faultline activation condition[21]. Consequently, Hypothesis 2 was also supported by the data.

To understand how participants responded differently to subgroup composition under faultline (de)activation, we performed a Chi square analysis on their choice patterns. This analysis allowed to compare the frequencies of repeated choices in the MI- and MO group for both conditions (Table 3.4). Choice patterns (MI-MO) were generated by placing participants' choice in the MI group before that in the MO group. There was no significant interaction effect of order with group composition and faultline (de)activation (B = .20 *Wald* $\chi^2_{(1)} = 1.22$, $p < .27$). Consequently, this recoding strategy could be reliably executed.

Table 3.4. Choice patterns for faultline activation and deactivation (n = 143)

	C-C	C-D	D-C	D-D
Faultline activation	26.1%	46.4%	2.9%	24.6%
Faultline deactivation	**32.4%**	**29.7%**	4.1%	**33.8%**

Under faultline deactivation, participants showed less C-D choices (- 16.7%), more cooperation with both groups (C-C) (+ 6.3%), and more D-D patterns (+ 9.2%). Although there was less conditional cooperation (C-D) and more consistent cooperation (C-C), faultline deactivation thus also resulted in more overall defection (D-D) patterns ($\chi^2_{(3)} = 3.73$, $p < .15$).

Additional measures

(Sub)group identification. Participants identified more with in-subgroup members than with out-subgroup members (α = .93), and this was true under both faultline activation

[21] These results are based on a (non-linear) transformation of the logOdds ratios into estimated marginal means (expected probabilities). A significant interaction effect in GEE logistic regression analysis indicates that the difference in logOdds between the conditions is significant. To double-check whether this significance also holds for the estimated marginal means, a GEE linear regression analysis was performed yielding the same results.

(M = 3.62, SD = .95 vs. M = 1.78, SD = .82) ($t_{(78)}$ = 14.03, p < .0001) and faultline deactivation (M = 3.48, SD = .87 vs. M = 2.11, SD = .88) ($t_{(60)}$ = 6.83, p < .0001). They also identified more with the MI group (α = .84) than with the MO group (α = .86), and this was true under both faultline activation (M = 3.43, SD = .93 vs. M = 2.59, SD = .88) ($t_{(78)}$ = 6.98, p < .0001) and faultline deactivation (M = 3.29, SD = .96 vs. M = 2.58, SD = .89) ($t_{(77)}$ = 6.50, p < .0001).

Cooperative expectations. Participants expected more in-subgroup members to cooperate in the MI group (M = .59, SD = .32), than in the MO group (M = .26, SD = .35) ($t_{(154)}$ = 10.54, p < .0001). Similarly, participants expected more out-subgroup members to cooperate in the MO group (M = .54, SD = .33) than in the MI group (M = .35, SD = .35) ($t_{(154)}$ = 5.69, p < .0001). Under faultline deactivation, did participants expect more out-subgroup members to cooperate in the MI group (M = .41, SD = .34), than did participants under faultline activation (M = .30, SD = .36) ($t_{(153)}$ = 2.02, p < .05). Under faultline deactivation, did participants also expect more in-subgroup members to cooperate in the MO group (M = .32, SD = .34), than under faultline activation (M = .20, SD = .30) ($t_{(153)}$ = 2.25, p < .05).

Choice patterns in faultline deactivation.

We conducted a multivariate analysis of variance in the faultline deactivation condition, with post-hoc pairwise comparisons of participants' identification levels and cooperative expectations in C-C vs. C-D patterns and in C-C vs. D-D patterns. This allowed us to explore the underlying perceptions of participants choosing for these specific choice patterns in faultline deactivation. Results showed a significant difference in perceptions between participants with a C-C pattern (n = 24), a C-D pattern (n = 22), and a D-D pattern (n = 25) (F (20, 252) = 10.96, p < .0001).

C-C vs. C-D patterns. Post-hoc analyses indicated that participants with a C-C pattern identified more with the out-subgroup (M_{diff} = .62, *SE* = .17, $p < .01$) and the MO group (M_{diff} = .43, *SE* = .18, $p < .05$), and identified less with the in-subgroup (M_{diff} = -.54, *SE* = .19, $p < .05$) and the MI group (M_{diff} = -.39, *SE* = .19, $p < .11$), compared to participants with a C-D pattern. They expected more cooperation of out-subgroup members in the MI group (M_{diff} = .35, *SE* = .06, $p < .0001$), and more cooperation of in-subgroup members (M_{diff} = .42, *SE* = .06, $p < .0001$) and of out-subgroup members (M_{diff} = .12, *SE* = .06, $p < .13$) in the MO group, compared to participants with a C-D pattern.

C-C vs. D-D patterns. Post-hoc analyses indicated that participants with a D-D pattern identified less with the out-subgroup (M_{diff} = -.40, *SE* = .18, $p < .08$), identified less with the in-subgroup (M_{diff} = -.18, *SE* = .20, *ns*), identified less with the MI group (M_{diff} = -.61, *SE* = .20, $p < .01$), and identified less with the MO group (M_{diff} = -.44, *SE* = .19, $p < .08$), compared to participants with a C-C pattern. They expected less cooperation of out-subgroup members (M_{diff} = -.44, *SE* = .06, $p < .0001$) and of in-subgroup members (M_{diff} = -.40, *SE* = .06, $p < .0001$) in the MI group, and they expected less cooperation of in-subgroup members (M_{diff} = -.29, *SD* = .06, $p < .0001$) and of out-subgroup members (M_{diff} = -.42, *SE* = .06, $p < .0001$) in the MO group, compared to participants with a C-C pattern.

Exploratory Mediation Analysis

Simple mediation. To gain more insight into the relationships between group composition, group identification, cooperative expectations about in-subgroup and out-subgroup members, and choice behavior, we conducted an exploratory mediation analysis. Current statistical techniques do not allow yet to conduct the analysis with clustered data (time in individual) and a binary outcome variable in the model. Consequently, we analyzed the effects of the first group composition in which participants made their choice, in either the MI group or the MO group. This procedure eliminated the repeatedness from the design

which allowed to test for mediation effects with the PROCESS procedure of Hayes (2013). Group composition at Time 1 (MI or MO), and Choice at Time 1 (cooperation or defection) were defined as the predictor and outcome variable respectively. The variables 'identification with the MI group', 'identification with the MO group', 'cooperative expectations about in-subgroup members', and 'cooperative expectations of out-subgroup members' were included as parallel mediators in the model. Indirect effects were calculated as the products of the estimates (*ab*) of the effect of the factor on the mediator (*a*), and the effect of the mediator on the dependent variable (*b*). Whether the indirect effects were significant was determined via the bootstrapping confidence intervals.

In case of small sample size, bootstrapping confidence intervals are likely to be biased and the power to detect effects significantly drops (Hayes, 2013). Because the sample size of both Study 1 and Study 2 was relatively small (n = 125 and n = 143) to estimate the mediation effects, and given the fact that the results of both studies were very similar, we combined both samples to estimate the mediation effects.

From a simple mediation analysis, group composition indirectly influenced cooperative choice through its effects on identification with the MI group, on identification with the MO group, and on cooperative expectations about in-subgroup and out-subgroup members. Participants in the MI group showed stronger group identification (a_1 = .69, p < .0001), expected more cooperation from in-subgroup members (a_2 = .22, p < .0001), and expected less cooperation from out-subgroup members (a_3 = -6.69, p < .31). And participants who identified more with their group (b_1 = .54, p < .001), who expected more cooperation from in-subgroup members (b_2 = 2.12, p < .0001) and more cooperation from out-subgroup members (b_3 = .95, p < .05), all showed more cooperation with their group. The bias-corrected bootstrap confidence intervals for the indirect effects based on 5000 bootstrap samples did not include zero (for ab_1 = .37: .17 to .61; for ab_2 = .46: .25 to .67; for ab_3 = -

6.31: -48.56 to -1.09 respectively), so there was evidence of the indirect effect of group composition on cooperative choice through group identification and cooperative expectations about in-subgroup and out-subgroup members.

GENERAL DISCUSSION

During organizational change processes new heterogeneous (factional) workgroups are formed with employees originating from prior separated groups. This situation gives rise to subgroups divided by a strong faultline, with group members originating from the same organization/department as the focal employee (in-subgroup), or originating from the other organization/department (out-subgroup). These subgroups form a majority or minority representation in the heterogeneous workgroup, depending on the number of members they constitute of.

This research set out to investigate how group members deal with the crossed-groups social dilemma that arises in this context: act in their self-interest or act in the interests of the heterogeneous workgroup? In line with H1, results showed that group members displayed parochial cooperation, contributing more to the group consisting of a majority of in-subgroup members, and less when the group consisted of a minority of in-subgroup members. This sensitivity for subgroup composition could be attenuated by deactivating the faultline that separated both subgroups. When presented with a superordinate goal, group members showed less conditional cooperation (C-D) to the benefit of consistent cooperation in workgroups (C-C), but also to the advantage of more consistent defection (D-D) (H2). Results were replicated in a second experimental study.

Subgroup composition

Overall, group members perceived the 10-p. groups to consist of two distinct subgroups, separated by a strong faultline. Group members clearly used their *(sub)group*

identification as a reference point for decision behavior in the 10-p. groups (see Brewer, 1979; Brewer & Schneider, 1990; Messick & Brewer, 1983), cooperating more with the MI group than with the MO group. They categorized themselves more as members of their own subgroup: identification with the in-subgroup was consistently stronger than with the out-subgroup. In parallel, members affiliated themselves more strongly with the 10-p. group that consisted of a majority of in-subgroup members (MI group), than when in-subgroup members were in the minority (MO group). These findings are reflective of inter-subgroup bias with group members showing more concern for, and affiliation with the own subgroup, and the group in which their subgroup was nested as a majority. In line with prior research, the process of identification was related to individual cooperation rates in the crossed-groups social dilemma, in line with prior research. Several social dilemma studies showed that members who strongly identified with their group invested more in public goods dilemmas and exercised greater restraint in resource dilemmas than low-identifying group members, both in experimental and field studies (Brewer & Kramer, 1986; Dawes & Messick, 2000; Kramer, 1991; Kramer & Brewer, 1984; Kramer & Goldman, 1995; Kramer, Pommerenke, & Newton, 1993; Van Vugt & De Cremer, 1999; Wit & Wilke, 1990). Strong social identification incites individuals to assign more weight to their (sub)group's interests, avoids social loafing and stimulates cooperative behavior toward the (sub)group (Rabinovich & Morten, 2011; Wit & Kerr, 2002).

In the same line, our studies showed that members *expected* their fellow ingroup subgroup members to cooperate more in the MI group than in the MO group. Members who identified with the (sub)group perceived other group members to be more identical to themselves, displaying similar preferences as themselves, in line with social identity theory (Taijfel & Turner, 1979; Turner, 1987). Based on goal expectation theory (Pruitt & Kimmel, 1977), group members acted in line with their expectations of what those other subgroup

members would do. They expected of other in-subgroup members more cooperation in the MI group, and also for themselves displayed overall higher cooperation levels in the MI group. Results of both studies also indicated that participants expected out-subgroup members to cooperate more in the MO group than in the MI group. Together with the expectation of more cooperative behavior of in-subgroup members in the MI group, this is indication for the presence of an implicit subgroup-serving norm among members: cooperate more if the own subgroup represents a (numerical) majority in the group. Group members' strong identification with in-subgroup members could have activated this implicit norm (Biel & Thogersen, 2007; Pillutla & Chen, 1999).

The exploratory mediation analysis conducted on the first choice participants made confirmed that group identification and cooperative expectations of in-subgroup and out-subgroup members in parallel mediated the effect of group composition on cooperative choice. This technique (Hayes, 2013) was used because to date no procedure has yet been developed to execute a mediation analysis on clustered data with a binary outcome variable. Limitation is that for this analysis we needed to eliminate the repeatedness from the design, changing group composition from a within-subjects factor into a between-subjects factor. Also, because group identification and cooperative expectations were both measured after participants' choices, we cannot make firm causal claims. However, measuring these variables after the manipulations and before choice, could have confounded the manipulations and the measurement could have acted as a manipulation itself. So, the order in which the mediators were measured was carefully chosen.

Faultline (de)activation

When primed with a superordinate goal (faultline deactivation), group members made less distinction between the MI and MO group and showed more C-C and D-D choices. Faultline deactivation – minimizing the salience of activated faultlines in teams (Van der

Kamp et al., 2012) – seemed to be capable of shifting group members away cooperation from conditional cooperation (cooperating only when in-subgroup members are in the majority (MI)). Introducing a superordinate goal for the 10-p. group transformed group members' cognitive representation of the inter-group interaction from one involving two separate groups (in-subgroup and out-subgroup) - with each their own subgroup goals - to one involving a single, common ingroup, with a common goal (Gaertner et al., 1993; Wildschut et al., 2003). Results showed that participants in effect perceived a different goal structure under faultline deactivation, reporting the presence of one common goal for the group to be more likely than a subordinate goal for the separate subgroups. In the faultline activation condition subgroup goals were more salient among participants. Also, participants considered group members to form one group more in the faultline deactivation condition than in the faultline activation condition. So, although recategorization did not reduce the differences between group members per se, the perceived salience of subgroups was reduced (Homan et al., 2008).

Additional analyses comparing participants' perceptions between C-C and C-D choice patterns in the faultline deactivation condition, clearly showed that both identification processes and cooperative expectations influenced participants' choices to cooperate or not. Future research should look closer into the perceptual and motivational mechanisms underlying the distinct choice patterns in faultline deactivation, compared to faultline activation. Based on the discontinuity effect studies (Wildschut et al., 2003; Wildschut & Insko, 2007), future research could also investigate two mechanisms as viable pathways for explaining the distinct levels of cooperation under a subordinate and superordinate goal in crossed-groups social dilemmas. The *distrust, or fear* explanation states that the anticipation of interacting with another subgroup activates an outgroup schema, consisting of learned beliefs and expectations that inter-subgroup interactions are competitive (Insko & Schopler,

1998; Pemberton, Insko, & Schopler, 1996)[22]. The *social support, or greed* explanation underlines that subgroup members can provide mutual support for the competitive pursuit of immediate self-interest, and that such social support is unavailable to individuals (Insko et al., 1990; Schopler et al., 1993; Wildschut, Insko, & Gaertner, 2002). Social support can reduce the normative constraints on the competitive behavior of other group members.

Although recategorization via a superordinate goal resulted in less C-D patterns and more C-C patterns, it also resulted in *more D-D patterns*. Under faultline deactivation, more group members decided to defect in both 10-p. groups, compared to faultline activation. Prior research showed that faultline deactivation can lead to *identity threat* (Pearsall, Ellis, & Evans, 2008). Establishing a superordinate goal and categorization can undermine the distinctiveness of the subgroups, producing a threat to the integrity of members' separate subgroup identities and their need for subgroup distinctiveness. As a result, group members could maintain relatively high or even increased levels of inter-subgroup bias (Brown & Wade, 1987; Hornsey & Hogg, 2000; Jetten, Spears, & Manstead, 1997). Group members feel that their subgroup identity is not accounted for in the workgroup and counteract with non-cooperative behavior in the workgroup. However, faultline deactivation with the superordinate goal can also result in a process of *decategorization* (Gaertner & Dividio, 2000) for participants with a D-D choice. Due to the strong reduction in salience of subgroup distinctions, they categorize themselves at an individual level - not on a group level, as members of the 10-p. groups - and perceive themselves and other group members as individuals (Hewstone et al., 2002). Individuals then attend to their self-interest and decided not to cooperate in both 10-p. groups.

A comparison of participants' perceptions in C-C and D-D choice patterns learned that in the D-D choice pattern, participants identified less with the in-subgroup, the out-

[22] Note the similarity of this hypothesis with the social identity literature on inter-group bias.

subgroup, the MI group and the MO group, and expected less cooperation from subgroup members in both the MI- and MO group, compared to participants with a C-C pattern. The significant drop in identification and the pessimistic expectation of other group members' cooperation points to decategorization as explanation for the more frequent D-D patterns under faultline deactivation.

Superordinate recategorization alone is thus not always the optimal strategy to promote inter-subgroup harmony and cooperation (Dovidio et al., 1998; González & Brown, 2003). Maintaining the *salience of subgroups* within a recategorized superordinate group might avoid identity threat and decategorization and the increase in inter-subgroup bias (Crisp, Stone, & Hall, 2006), leading to more cooperation in heterogeneous workgroups (Dovidio, et al., 1998). Subgroup identities may even enhance cooperation with the workgroup (between subgroups), because they acknowledge the distinctiveness of the subgroup, compared to other subgroups (cf. Barreto & Ellemers, 2002; Eggins, Haslam, & Reynolds, 2002; Haslam, Eggins, & Reynolds, 2003; Hornsey & Hogg, 2000; Rabinovich & Morten, 2011). In sum, respecting group members' subgroup identification and distinctiveness, while simultaneously recognizing aspects of commonality with the out-subgroup can be particularly valuable and beneficial to increase cooperation levels with the workgroup (cf. Dovidio et al., 1998).

Nevertheless does the establishment of functional inter-subgroup processes remain difficult, because often positive and negative effects are jointly promoted (Carton & Cummings, 2012; van Knippenberg & Schippers, 2007). Too much focus on subgroup identities may override the positive effects of recategorization and too little can further increase inter-subgroup bias. This dynamic is also reflected in the results of our two studies: faultline deactivation minimized the salience of subgroup differences, resulting in more

consistent cooperation. On the other hand, were cooperation levels toward both 10-p. groups simultaneously lower with overall defection towards both faultline-based groups

Clearly, we need to create the conditions for superordinate goals to work, depending on the specific context in which (sub)groups are interacting (Crisp, Turner, & Hewstone, 2010). The benefits of superordinate goals might be achieved better when they are combined with other managerial strategies (see also Rico et al., 2012). A viable avenue to explore in future research is the role of *leadership* in the effectiveness of faultline deactivation on cooperation levels in heterogeneous groups. Team leaders are continuously challenged by situations in which social identification - based conflicts can occur, due to faultlines that cross a group's structure (Chrobot-Mason et al., 2009). The presence of a leader in heterogeneous groups might reduce outgroup schemas (Hogg, van Knippenberg, & Rast, 2012; Pittinsky & Simon, 2007) and establish trust in the (cooperative) intentions of other subgroup members. Articulating a vision for long term cooperation as the only viable option for all (sub)group members to tackle the crossed-groups social dilemma, might be a powerful means to simultaneously strengthen superordinate categorization. A leader supervising group members' cooperation might instill more assurance that under his management members from the outgroup subgroup will also cooperate, which considerably lowers the risk for group members to be the 'sucker' rather than the 'savior. Prior social dilemma research already established a strong consensus that people are more willing to contribute when greed or fear is minimized (Zeng & Chen , 2003).

Managerial implications

Group heterogeneity and the presence of subgroups, due to a (strong) faultline, presents members with a crossed-groups social dilemma and poses some challenges for team management. We propose a threefold strategy to deal with faultlines and their effects on cooperation and (sub)group conflict.

First, a team leader could assess the presence of (dormant) faultlines and the chances of them being activated. This involves gauging the objective demographic characteristics and individual attributes of team members, see if and how they align, and assess the contextual factors that might determine activation of faultlines (e.g. subgroup identification, status, intra-team trust, leadership). This should be a continuous process throughout group development, because the salience of subgroups and their identities might decrease or increase as the group matures, requiring flexible interventions.

Second, based on this assessment, managers could try to prevent faultline activation, using specific strategies in the initial phases of (sub)group development. In groups where a strong faultline arises this may be next-to impossible and in some cases undesirable. A team leader could avoid, however, that additional faultlines - based on other demographic characteristics - get stacked on top of this strong faultline, further increasing the faultline gap between subgroups.

Third, in the presence of activated faultlines, several interventions could be advanced to tackle the potential harmful effects on (sub)group processes and performance. A team leader could work on inter-subgroup biases by stimulating positive contacts between members of distinct subgroups, as a personalization strategy to move beyond subgroup differences. Bringing subgroups together and establishing common goals should unfold with respect for subgroup distinctiveness and identities, and demographic and subgroup related group tasks should be avoided via for example the cross-cutting of work roles (Rico et al., 2012). Team leaders should also mind subgroup size ensuring that minorities' opinions and interpretations are as much respected and taken into account as those of majority subgroups.

Limitations and future research

Besides its theoretical and practical implications, our study is limited in several ways, inspiring avenues for future research. First, this study investigated cooperative decision-

making in a strong faultline group with two distinct subgroups, based on social category diversity. In organizational teams a variety of faultlines might arise based on *other (demographic) characteristics* such as educational background, gender, organizational tenure,… Prior research showed that alternative faultline bases were differentially associated with team outcomes (Bezrukova, Jehn, Zanutto, & Thatcher, 2009). Social-category based faultlines were negatively related to team performance and cooperation whereas information-based faultlines were not. So, taking into consideration other faultlines present in these heterogeneous groups might yield different effects on cooperation levels, compared to the social category based faultline alone. Future research should look into the interaction effects of several types of faultlines on cooperation levels in crossed-groups social dilemmas. It could be that for example informational faultlines act as a moderator on the effect of subgroup composition, independently or in addition to social-category based faultlines, activating or deactivating the strong faultline in factional groups.

Second, the presence of the two distinct subgroups, divided by a strong faultline, gave rise to complex inter-subgroup processes. To date there has been limited examination of inter-group processes within teams, more so between teams and organizations (see Zheng & Chen, 2003; McCarter, Mahoney, & Northcraft, 2011; Marks, Zaccaro, & Mathieu, 2000). Faultline deactivation processes, especially with identity based faultlines, are a double-edged sword with frequently both positive and negative effects on cooperation levels. Identifying other *contextual factors* (such as leadership, power structures, subgroup trust, subgroup threat) as faultline deactivators, capable of accentuating positive inter-subgroup processes and avoiding negative inter-subgroup processes is a fruitful avenue for further research (see also Carton & Cummings, 2012).

Third, prior research already showed that the *size and number of subgroups* can impact group processes and outcomes considerably (Harrison & Sin, 2005; Jehn &

Bezrukova, 2010; Menon & Phillips, 2010; O'Leary & Mortensen, 2010; Polzer et al., 2006). Our studies investigated the effects of subgroup (numerical) majority and minority (MI and MO group) on cooperative decision making, keeping the number of subgroups (two) and total group size (10 members) constant. In teams, the number of faultlines will determine the number of subgroups, and the location of the faultline will determine variation in the size of subgroups, varying from equal size to small and large subgroups (Carton & Cummings, 2012). Future studies with the crossed-groups social dilemma may vary the number and size of subgroups by adding more demographic complexity, and adapting group size. This can increase insight in boundary conditions of the group composition effect on cooperation within and between subgroups, also in interaction with potential faultline deactivators.

Finally, the effect of subgroups on team performance and cooperation tends to change over *time* (Jehn & Bezrukova, 2010), and repeated (sub)group interactions might allow members to surmount their stereotypes and categorizations, diminishing the negative effects of faultlines on group processes (e.g. Harrison, Price, Gavin, & Florey, 2002; Jehn et al., 1999). Participants generally cooperate more in a multi-trial game than in a one-trial game as it allows for group members to learn and understand the advantages and disadvantages associated with cooperation and defection (goal expectation theory of Pruitt & Kimmel, 1977) and build trust. Future research might be geared towards the set-up of repeated rounds crossed-groups social dilemma games with (bogus) feedback about (sub)group members' decisions to better capture (sub)group dynamics over time and the mediating mechanisms that are in play. In combination with longitudinal field research in organizations undergoing a merger, an alliance this would allow us to assess over-time effects of faultlines in several phases of the organizational and (sub)group change processes.

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APPENDICES

Appendix 1. Vignette Crossed-Groups Social Dilemma Game

Imagine all ten of you being the manager of one of ten private firms producing product X. In order to increase your profits, you all have just made large private investments to heighten the production capacity of product X. Because all ten of you did so, each in his or her own firm, the total production of X will soon exceed the public demand, resulting in a drop in prizes. You all have to choose between sticking to your present (high) production rate or reducing your production rate to a level under its present capacity. Firms producing at maximum capacity will always earn more profit than those reducing their production rate, irrespective of the number of other managers who decide to do so. However, the more firms that stick to their high production rates, the lower the profits all of you earn on product X: If all ten of you decide to stick to your high production rates, this will yield all of you a lower profit (10 million Euros each) than if all of you decide to reduce your production rates (25 million Euros each). In the table below, you see how profits vary as a function of the decisions made in your 10-person group.

APPENDIX 2. Pay-off matrix of the 10-p. Crossed-Groups Social Dilemma game

Choice configuration			Pay- off for "stick" (x million)	Pay-off for "reduce" (x million)
0 STICK	\	10 REDUCE	---	25
1 STICK	\	9 REDUCE	28	23
2 STICK	\	8 REDUCE	26	21
3 STICK	\	7 REDUCE	24	19
4 STICK	\	6 REDUCE	22	17
5 STICK	\	5 REDUCE	20	15
6 STICK	\	4 REDUCE	18	13
7 STICK	\	3 REDUCE	16	11
8 STICK	\	2 REDUCE	14	9
9 STICK	\	1 REDUCE	12	7
10 STICK	\	0 REDUCE	10	---

CHAPTER 4

Visionary Leader Affiliation and Faultline Deactivation in Crossed-Groups Social Dilemmas

Ann-Sophie DE PAUW, Arjaan P. WIT, & Herman VAN DEN BROECK

ABSTRACT

Despite the increasing prevalence of faultline-based groups in the workforce, and the potential of leadership to capitalize on the positive effects of diversity, to date this connection has remained relatively unexplored. We propose that the presence of a visionary leader allows group members to tackle the crossed-groups social dilemma that arises when an in-subgroup and an out-subgroup are in place. Results indicated that members consistently showed parochial cooperation, i.e., more cooperation toward a group with a majority of in-subgroup members than toward a group with a majority of out-subgroup members. When deactivating the faultline with a superordinate goal, a visionary leader increased members' overall cooperation with the group. Leader affiliation with either subgroup did not have an effect on cooperation levels in the group.

Keywords: Faultlines, In-subgroup, Out-subgroup, Subgroup composition, Subgroup size, Faultline deactivation, Factional group, Superordinate goal, Visionary leadership, Leader affiliation, Group prototypicality, Inter-group leadership, Parochial cooperation, Crossed-groups social dilemma

INTRODUCTION

In our globalized world, teams and workgroups have become more diverse due to increasing internationalization of organizations, in operations and in workforce (Li & Hambrick, 2005; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Zaccaro, Marks, & DeChurch, 2012). Common practice after joint ventures, mergers, and other organizational restructurings, is the formation of new workgroups, consisting of employees originating from different organizations or departments that are now restructured into one. The emergence of these heterogeneous groups poses significant challenges to leadership.

On the one hand will *subgroups* arise, depending on the alignment of the individual differences within the group, also referred to as faultlines (Lau & Murnighan, 1998). Group faultlines frequently result in greater conflict, reduced team cohesion, performance and satisfaction (Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson, Joshi, & Erhardt, 2003; Kerr & Tindale, 2004; Lau & Murnighan, 2005; Thatcher, Jehn, & Zanutto, 2003) and their presence has important implications for inter-subgroup dynamics (Harrison & Klein, 2007; O'Leary & Mortensen, 2010).

Also, bringing together members from two clearly distinct groups into one workgroup acts as a faultline trigger and results in an active faultline already in existence (Hambrick, Li, Xin, & Tsui, 2001). This *faultline* divides the new group (Li & Hambrick, 2005) into two distinct subgroups with group members representing two social entities. They categorize members of their own subgroup as ingroup while viewing the other subgroup as outgroup (Polzer et al., 2006). Employees are faced with a social dilemma because of the inherent tension between cooperation and competition in this new group. Group members now do not only have to decide upon their self-interest, and the group's interest, but will also take their subgroup's interest into account. The social dilemma then embodies the *nested social structure* and interests of the group members (Wit & Kerr, 2002). More specifically, due to

the presence of subgroups, a *crossed-groups social dilemma* arises because members of an in-subgroup and out-subgroup are crossed into one workgroup. Cooperation in this setting is defined as "the willingness of group members to act to the advantage of the workgroup and as such maximize the joint interests of all members of both subgroups" (De Pauw, Wit, & Van den Broeck, 2013). It is of utmost importance to group outcomes and the success of organizational change processes that leaders prevent and deal with subgroup formation and its resulting group conflict (de Wit, Greer, & Jehn, 2012; Jehn & Bezrukova, 2010).

Prior research by De Pauw et al. (2013) showed that members of such groups - with two subgroups divided by a strong faultline - would cooperate more if their in-subgroup was in the majority than when their in-subgroup was in the minority. A promising strategy to decrease this sensitivity for (sub)group composition was to deactivate the faultline via a superordinate goal. Then group members showed more consistent cooperation in these groups. However, other members displayed more defection patterns, as they did not cooperate with either group, consisting of a majority or minority of in-subgroup members. So a superordinate goal in itself might be insufficient to deal with the negative effects of active faultlines and subgroupings. When group members feel that their subgroup's identity - setting them distinctively apart from the workgroup in which this subgroup is nested – is not sufficiently respected, they can counteract and reduce cooperation levels with the workgroup (Brewer, 1991; Ellemers, Spears, & Doosje, 2002; Leonardelli, Pickett, & Brewer, 2010). Clearly, there is a need to identify the conditions under which superordinate goals work best (Crisp, Turner, & Hewstone, 2010). Previous research proposed that the benefits of a superordinate goal might be better achieved when combined with managerial and leadership strategies (Rico, Sànchez-Manzanares, Antino, & Lau 2012), such as visionary leadership.

Aim of this study is to investigate, with the crossed-groups social dilemma paradigm, the impact of a superordinate goal for the faultline-based group in combination with visionary

leadership as a strategy to reduce group members' sensitivity to subgroup composition, to maximize consistent cooperation with the group. In addition, we explore whether the subgroup affiliation of the leader exerts an effect on cooperation levels in the group.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

When two prior separate groups start working together in one workgroup (e.g. in alliance, organizational merger) a strong faultline may arise based on employees' membership of one organization/department or the other (Hambrick et al., 2001). In the newly composed group the basis for a faultline – a crack or a divide – is, by definition, present and gives rise to two distinct in- and out-subgroups. Members do not come to the group as individuals, but rather as representatives from two different social entities (Li & Hambrick, 2005), nested in the group. This (salient) subgroup membership will have an impact on their decision to contribute to the group. Alliance teams are typical examples of such teams that have a *strong faultline*. In joint ventures, the primary salient attribute of parent company affiliations may cause the dormant faultline between subgroups to become activated.

Strong faultlines can increase conflict and distrust across subgroups within the workgroup (Choi & Sy, 2010; Greer & Jehn, 2007; Pearsall, Ellis, & Evans, 2008; Polzer et al., 2006; Zanutto, Bezrukova, & Jehn, 2011), negatively affect group performance and social integration (Harrison, Price, Gavin, & Florey, 2002; Rico, Molleman, Sànchez-Manzanares, & Van der Vegt, 2007) but also result in individual group members attending to the interests of their subgroup only within that workgroup (Lau & Murnighan, 1998; Rico et al., 2012). These consequences are even exacerbated as the strength of the faultline further increases, resulting in more intra-subgroup similarity and more inter-subgroup differences (Thatcher & Patel, 2012).

Subgroup composition

These groups with a strong faultline are not homogeneous – being populated by in-subgroup and out-subgroup members. The presence of subgroups in this case gives rise to a *crossed-groups social dilemma*. Members of ingroup and outgroup are crossed into one new workgroup and in the trade-off between self-interest and group interest, group members will also take the interests of their subgroup - that is now nested in the group - into account. Prior studies (Schopler & Insko, 1992) consistently showed that participants who are members of a subgroup show de facto less concern for the group interest (i.e. are less likely to make the cooperative choice) than participants who act as single individuals (see also Komorita & Lapworth, 1982; McCallum et al., 1985; Rabbie, Visser, & van Oostrum, 1982).

The presence of subgroups and heterogeneity in group composition instigates *inter-subgroup processes* within the workgroup (Carton & Cummings, 2012). Group members have 'the systematic tendency to evaluate one's own membership subgroup or its members more favorably than a non-membership subgroup' (Hewstone, Rubin, & Willis, 2002, p. 576). Obviously, this stereotyping or inter-subgroup bias (Gaertner et al., 2000; Taifel, 1982; Taifel & Turner, 1979) may result in less cooperation of individuals across subgroups, compared to within their subgroup, and thus less contribution to the group interests, versus the subgroup and individual interests (Wit & Kerr, 2002). Subgroup biases lead people to favor and trust in-subgroup members more than out-subgroup members, and to identify more with their in-subgroup than with the full group (Tajfel & Turner, 1986). Because the group is inherently divided in two subgroups, in-subgroup and out-subgroup categorizations will arise (Alderfer, 1987; Taijfel, 1982). In the same realm, there is a well-known tendency for people to be drawn to, like, and trust others like themselves, and to avoid, distrust, and dislike others who are dissimilar (e.g., Tsui & O'Reilly, 1989). More so, group members often settle inter-group conflict with self-sacrifice to contribute to ingroup welfare (ingroup love), and to harm

competing outgroups (outgroup hate) (Bornstein, 2003; Halevy, Bornstein, & Sagiv, 2008; De Dreu et al., 2010). Clearly, members are likely to prioritize their own subgroup's interests over the other subgroup's interests and over the interests of the group, in which their subgroup is nested.

Subgroup size

When a new workgroup is formed usually subgroups are of unequal size, especially when these groups are getting large (Lau & Murnighan, 1998). This group then contains a majority and a minority of (sub)group members aligning on several characteristics (Carton & Cummings, 2012; O'Leary & Mortensen, 2010). When these (sub)group members decide to contribute to the group, this benefits not only members of the individual's in-subgroup but also members of the out-subgroup. So, either a larger number of in-subgroup members than out-subgroup members profit from an individual's cooperation, or a larger number of out-subgroup members than in-subgroup members profit from it. Findings with respect to whether variation in the size of subgroups is better (Harrison & Sin, 2005; Jehn & Bezrukova, 2010; Menon & Phillips, 2010; Phillips, Mannix, Neale, & Gruenfeld, 2004) or worse (Gigone & Hastie, 1993; Janis, 1982; Mannix, 1993; O'Leary & Mortensen, 2010; Stasser & Titus, 1985) for group outcomes, than when there is low variation in subgroup size are contradictory (Carton & Cummings, 2012). Nevertheless, *relative subgroup size*, as a potential antecedent of status (Ebenbach & Keltner, 1998; Guinote, 2004; Ng, 1982), may have a significant impact on cooperation levels toward the group. Subgroups that have numerically more members (majority subgroups) tend to have higher status (Guinote, Judd, & Brauer, 2002), defined as "the prominence, respect, and influence individuals enjoy in the eyes of others" (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006, p. 1094; for other definitions see also Fiske, 2010; Magee & Galinsky, 2008). So, a member of a majority subgroup, nested in the newly composed group, will be in a high-status position (compared to

the minority subgroup) and might contribute more to the group in order to confirm the subgroup's status and identity (Ellemers & Scheepers, 2005; Sachdev & Bourhis, 1991). Even more so, if this majority subgroup is populated by ingroup members, originating from the same organization/department and more similar to him, and subgroup identification will be stronger (Tajfel & Turner, 1986; Turner, 1987). Consequently, the member will navigate toward this majority subgroup and most likely contribute more to the workgroup in which this subgroup is nested (in MI). On the other hand, when members are part of the low-status minority subgroup (in MO), they are likely to feel threatened. They can react adversely to the fact that the high-status out-subgroup, being in the majority, will have greater influence (Terry, 2003; van Leeuwen, van Knippenberg, & Ellemers, 2003)

In a crossed-groups social dilemma, combining in- and out-subgroups, cooperation with the workgroup always comes to the benefit of both subgroups. However, in one case the in-subgroup will be in the majority, and in another the out-subgroup will be in the majority. Given members' preference to place subgroup interests above group interests, the prioritizing of the in-subgroup's interests over those of the out-subgroup, and the high status of majority subgroups compared to minority subgroups, we hypothesize:

H1: Subgroup composition has a significant effect on cooperation in a faultline- based group. Group members cooperate more if the majority of their group consists of in-subgroup members (MI), than if the majority of their group consists of out-subgroup members (MO) (parochial cooperation).

Faultline deactivation and superordinate goal

For group leaders and their organizations it is desirable to increase employees' cooperation levels in all groups, regardless of their composition. Because strong faultlines divide these workgroups into separate subgroups and cause dysfunctional group processes

(Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson et al., 2003; van Knippenberg & Schippers, 2007), the question is how to attenuate the negative effects of these faultlines. The process of faultline deactivation minimizes the salience of activated faultlines in teams and groups (Van der Kamp, Tjemkes, & Jehn, 2012). Prior research shows that a superordinate goal can reduce the salience of subgroup differences and stimulate some group members to make equally high contributions toward groups, regardless of group composition (De Pauw et al., 2013). This superordinate goal, however, can also evoke decategorization processes (Gaertner & Dovidio, 2000) and an identity threat (Branscombe, Ellemers, Spears, & Doosje, 1999; Breakwell, 1983; Hornsey & Hogg, 2000; Jehn & Bezrukova, 2010; Jetten, Spears, & Manstead, 1997), reflected in consistently lower cooperation rates of (sub)group members.

A useful solution to counteract these negative effects of faultline deactivation along identity-based faultlines is *maintaining salience of the subgroups* within the group. This strategy respects group members' own subgroup identification and distinctiveness, while recognizing aspects of commonality with the out-subgroup and reducing inter-subgroup bias (Crisp, Stone, & Hall, 2006; Dovidio, Gaertner & Validzic, 1998) However, maintaining subgroup salience is also a delicate balance: too much focus on subgroup identities can override the positive effects of the superordinate goal, too little can result in less cooperation with the group.

We propose combining faultline deactivation via a superordinate goal, with visionary leadership, to deal with the potential identity threat and decategorization, associated with the superordinate goal. This intervention may allow to capitalize on the positive effects of a superordinate goal in faultline-based groups (De Pauw et al., 2013). Research on the effectiveness of different managerial and leadership strategies to deal with identity-based group faultlines, is scarce to date, although it has been advanced as a promising avenue worth exploring (Kunze & Bruch, 2010; Rico et al., 2012). In the following passage we will

describe the importance of visionary leadership in particular, to increase cooperation levels in a heterogeneous faultline-based group.

Visionary leadership

Leadership can be described as "a relationship in which some people are able to persuade others to embrace values, attitudes and goals, and to exert effort on behalf of those values, attitudes and goals" (Hogg et al., 2006). As a process of social influence in groups, it involves mobilizing individuals to achieve a collective goal (Chemers, 2001), and plays a key role in enabling individual and organizational performance (Bass, 1990). Effective leadership involves developing and maintaining group cohesiveness (Dobbins & Zaccaro, 1986; Weinberg & McDermott, 2002) and is critical to deal with the increased diversity of groups to realize the potential added value it brings (Chen & Van Velsor, 1996; DiTomaso & Hooijberg, 1996; Homan & Jehn, 2010; Huo, Molina, Sawahata, & Deang, 2005; Keraney & Gebert, 2009; Somech, 2006).

In mixed-motive situations - such as the conflict of interests for members of faultline-based groups - choosing to cooperate with the group involves an orientation that focuses on the future consequences of the immediate choice, be it a proximate or distant inter-personal/inter-group event (Insko et al., 1998; Insko et al., 2001; Kelley & Thibaut, 1978). If group members decide to abstain from cooperation in the factional group, however, this is driven by a short-term orientation that focuses on the immediate consequences for one's own side. To maximize outcomes on the short term, the optimal choice is the non-cooperative one because this will lead to higher payoffs. However, in the prospect of interacting repeatedly with members of the opposing subgroup, it is important to maximize outcomes across a number of interactions. In this situation, the strategy of competition will not maximize outcomes and individuals can be motivated to move away from mutual competition to cooperation (Insko et al., 1998). Several studies already demonstrated the positive impact of

leadership on cooperation with the group in social dilemmas (e.g. De Cremer & van Knippenberg, 2002; Mulder & Nelissen, 2010; Pinter et al., 2007; Stouten, De Cremer, & Van Dijk, 2005; Van Vugt & De Cremer, 1999). Leaders can increase cooperation by encouraging group members to contribute their time and/or finances to the group and by supervising and regulating the provision of common resources. A leader that envisions repeated interactions in the future can induce a long-term perspective ('shadow of the future'), and - from the stand-point of maximizing outcomes - motivate group members to shift away from their self-interest and subgroup-interest to the interests of the group (cfr. Axelrod, 1984; Kelley, 1984, 1997; Rapoport, 1967).

Visionary leadership creates and articulates idealized, value-based, future-oriented images that shape the behaviors of follower group members (e.g., Greer, Homan, De Hoogh, & Den Hartog, 2012; Griffin, Parker, & Mason, 2010; Rafferty & Griffin, 2004; Shamir, Zakay, Breinin, & Popper, 1998; Stam, van Knippenberg, & Wisse, 2010). This type of leadership - as a central component of transformational and charismatic leadership theories - is associated with clear and shared goals (Schippers, Den Hartog, Koopman, & van Knippenberg, 2008) and has positive effects on team states, processes, and performance (Bono & Judge, 2003; Waldman, Ramirez, House, & Puranam, 2001). Vision can mobilize group members to invest in the group, and to act on behalf of the group (Bass, 2008; Ellemers, De Gilder, & Haslam, 2004; Reicher, Haslam, & Hopkins, 2005; Shamir, House, & Arthur, 1993). A leader with a vision for the future of the group and its members, emphasizing the importance of cooperation in light of further interactions and the establishment of a long-term relationship, has potential to extend the 'shadow of the future' (cf. Axelrod, 1984; Axelrod & Dion, 1988; Insko et al., 1998; Joireman, Kamdar, Daniels, & Duell, 2006) and could significantly reduce inter-subgroup bias. The leader's transformational vision acts as a goal that motivates effort towards the future expressed in

this vision and stimulates inter-subgroup cooperation in the faultline-based group (cf. Berson, Shamir, Avolio, & Popper, 2001; Shamir et al., 1993; Zeng & Chen, 2003)

Consequently, we hypothesize:

H2: A leader with a vision for the future of the group will increase cooperation with the faultline-based group, regardless of its (sub)group composition.

Visionary leadership and heterogeneous groups

The visionary leader of a faultline-based group will have to address the separate *subgroups* of ingroup- and outgroup members. In this context, leadership needs to encourage cooperation across subgroups, and prevent conflict and other negative inter-subgroup processes, to increase cooperation with the faultline-based group as a whole (Hogg, van Knippenberg, & Rast, 2012). To gain insight into how leaders deal with the presence of subgroups and motivate members in diverse groups to tackle the conflicts of interest, we build upon inter-group leadership, faultline, and diversity literature. Although, to date, research has had limited attention for leadership across (sub)groups (Pittinsky & Simon, 2007) and the connection between group faultlines and leadership (Kunze & Bruch, 2010; Rico et al. 2012), prior studies offer some direction.

Transformational leadership has been found to increase the positive effects of age-based faultlines (Kunze & Bruch, 2010), of functional diversity (Somech, 2006), of educational background diversity (Shin & Zhou, 2007) on for example team performance (Kearney & Gebert, 2009). This type of leadership has the potential to craft a new collective identity (Conger, Kanungo, & Menon, 2000; Halevy, Berson, & Galinsky, 2011; Kunze & Bruch, 2010; Pittinsky & Simon, 2007) by introducing shared factors (Gaertner et al., 1993).

Other research shows that a leader who did not categorize group members into subgroups had more impact if he also displayed visionary behaviors; and visionary leadership

was more effective if the leader showed no subgroup categorization tendency (Greer et al., 2012). De Pauw and colleagues (2013) confirmed the potential of a superordinate goal to overcome the negative effects of (sub)group composition in faultline-based groups, where minimizing subgroup categorizations could result in increased cooperation levels. However, on its own this was not an optimal strategy to promote inter-subgroup harmony (Dovidio et al., 1998) as it also resulted in a fair amount of group members to abstain from cooperation with the group. Combining both lines of research, we propose that a visionary leader who deactivates the faultline via a superordinate goal - and thus minimizes subgroup categorization tendencies – has clear potential to increase cooperation levels and to minimize defection patterns in a faultline-based group. By treating all group members alike in one social category, regardless of their subgroup affiliation, the leader's vision for the future of the group and the importance of cooperation will resonate more strongly. Also, envisioning a long-term collaboration between members of the subgroups can counteract the potential identity threat and decategorization, associated with recategorization via the superordinate goal. We hypothesize:

H3A: A visionary leader who deactivates the faultline via a superordinate goal for the faultline-based group will reduce group members' sensitivity to (sub)group composition of the group. This type of leader can maximize consistent cooperation and minimize consistent defection with the faultline-based group.

Leader affiliation

The leader of a faultline-based group most frequently originates from the one or the other membership subgroup, which is common practice after change processes, such as mergers, joint ventures (see Li & Hambrick, 2005; Zeng & Chen, 2003). As such, the leader

is affiliated more closely to one subgroup than to the other, which can impact his potential to increase cooperation levels in this group (Hogg et al., 2012).

A vast amount of leadership research has focused on the effects of the individual leader's characteristics on cooperation (Yukl, 2002). However, leadership is embedded in the social systems or groups (Chemers, 2001; Hall & Lord, 1995; Haslam & Platow, 2001; Lord, Brown, Harvey, & Hall, 2001; Pawar & Eastman, 1997), as the leader himself is most often also a (sub)group member. Consequently, characteristics of the leader as a (sub)group member can influence leadership effectiveness (De Cremer & Van Vugt, 2002; van Knippenberg & Hogg, 2003).

The *social identity theory of leadership* (Hogg, 2001; Hogg & van Knippenberg, 2003; van Knippenberg & Hogg, 2003; van Knippenberg et al., 2004) emphasizes the interaction between individuals' (sub)group identification and the leader's effectiveness in engaging members to contribute time, energy, effort, and resources to interdependent tasks and actions that benefit the group and organization. Individual perception of a common identity with the leader is crucial for the leader's effectiveness in mobilizing individual efforts toward collective goals (Ellemers et al., 2004). For (sub)group members who strongly identify with their (sub)group, leadership endorsement, perceptions of leadership effectiveness, and actual leadership effectiveness are strongly influenced by how (sub)group prototypical the leader is perceived to be (Hogg et al., 2006). This *prototypicality* implies that the leader is representative of the (sub)group's identity and acts according to the (sub)group norm (Hains, Hogg, & Duck, 1997; Hogg, Hains, & Mason, 1998). (Sub)group members will often favor leaders who display (sub)group prototypical characteristics ahead of those who display qualities that are simply stereotypical of leaders in general (De Cremer, van Dijke, & Mayer, 2010; Haslam, Reicher, & Platow, 2011).

Because leaders whose *origins lie within the in-subgroup* tend to be perceived as more prototypical (for this subgroup) than those whose origins lie in an out-subgroup, it follows that they are more strongly endorsed than leaders with out-subgroup origins (Bruins, Ellemers, & De Gilder, 1999; van Knippenberg & Hogg, 2003; Van Vugt & De Cremer, 1999). When the leader is affiliated with members' own subgroup, they believe him to safeguard their subgroup's interests as "one of us" (Duck & Fielding, 2003; van Knippenberg et al., 2000). This type of leader will be more effective in getting his vision for the faultline-based group across, influencing inter-subgroup dynamics, and increasing cooperation levels toward the group (Halevy et al., 2011; Hogg & van Knippenberg, 2003; Hogg et al., 2012).

We hypothesize:

H3B: A visionary leader who deactivates the faultline via a superordinate goal for the faultline-based group will increase cooperation of subgroup members toward the group more if he is affiliated with the same subgroup as those members, compared to a visionary leader who deactivates the faultline via a superordinate goal and originates from the other subgroup.

METHOD

Sample

Participants were 320 undergraduate students enrolled in a 'Business administration skills' course at a Western-European university. The sample consisted of 56% men, and 44% women with an average age of 20.7 years (*SD* = 1.40). Participants were relatively unfamiliar to one another. They volunteered to engage in the experiment and received course credit for their participation. Participants were gathered in a lecture hall and - after being seated - they received an envelope with experimental instructions in a booklet[23]. From then on participants

[23] We thank Jasmijn Verbrigghe and Lore Van Gorp for their assistance with data-collection

were not allowed to talk to each other. They were seated far enough from one another to prevent that their answers, marked in the booklet, could be seen by fellow participants.

CSD vignette

Participants read in a booklet the instructions of a 10-person Crossed-groups Social Dilemma (CSD) scenario (De Pauw et al., 2013) (Appendix 1). As a manager, participants had to decide – just as the 9 other managers in their group - to either 'limit production' of their factory (cooperation) to avoid overproduction or to 'stick to their current production level' (defection), which would result in overproduction if the other managers decided similarly. Firms producing at maximum capacity would always earn more profit than those reducing their production rate, irrespective of the number of other managers who decided to do so. However, the more managers stuck to their high production rates, the lower the profits all of them earned. If all ten managers decided to stick to their current production rates, this would yield all of them a lower profit (10 million Euros each) than if all of them decided to reduce their production rates (25 million Euros each). After private reading of the instructions and inspection of the pay-off matrix (Appendix 2), which was explained by examples of two choice configurations (3 stick to production \ 7 reduce production and 7 stick \ 3 reduce, respectively), participants received information on the groups of managers in which they had to make their choice.

Manipulations

Subgroup Composition (within subjects)

Participants were informed they had to make their choice in two differently composed 10-p. groups, where the managers in each case were students of their own university (in-subgroup members) and students from another neighboring university (out-subgroup members). In one 10-p. group, managers from the own university were in the majority. In the other 10-p. group, managers of the neighboring university were in the majority. Participants

first read the instructions of one of the two experimental within-SS conditions (counterbalanced). The Majority Ingroup (MI) group consisted of 7 managers from their own university (including themselves) and 3 managers from the neighboring university. The Majority Outgroup (MO) group consisted of 3 managers from their own university (including themselves) and 7 managers from the neighboring university.

Leadership (between subjects)

In the *control condition*, participants were told that the level of cooperation of the 10-p. groups in which they participated would be compared with that of the other 10-p. groups in the simulation. In this condition participants thus received a superordinate goal prime (faultline deactivation) (cf. De Pauw et al., 2013).

In the two *leadership conditions*, all participants received a prime on *visionary leadership*. They were informed that the leader believed it to be important that all managers successfully cooperated in the 10-p. groups, irrespective of their affiliations. This with the purpose of installing a long-term collaboration in the 10-p groups. These participants also received the superordinate goal prime (the leader would compare the results of the 10-p. groups). In other words, the presence of a superordinate goal was treated as a constant variable in the experiment (in all conditions the faultline was deactivated via a superordinate goal). The difference in effects between the leadership conditions *versus* the control condition thus could be properly attributed to the effects of visionary leadership instead of the superordinate goal, which did not differ across experimental conditions.

To investigate the effect of *leader affiliation*, half of all participants in the leadership conditions were told that the visionary leader originated from their own university (in-subgroup affiliation), and the other half was told that the leader originated from the other university (out-subgroup affiliation). The difference in effects *between* the leadership

conditions could be attributed to leader affiliation, because visionary leadership and superordinate goal did not differ across both experimental conditions.

In sum, all participants received the superordinate goal prime; participants in both leadership conditions were primed with visionary leadership, but in one condition this leader had an in-subgroup affiliation, and in the other condition the leader had an out-subgroup affiliation.

Measures

After the manipulation of subgroup composition and leadership, participants were requested to fill out their private answers to a series of questions. To assess *choice behavior*, they decided whether they would 'stick to their present production level' or 'reduce their present production level'.

They also indicated how many of the participants from their own subgroup and the other subgroup they expected to 'stick' and how many they expected to 'reduce' in this 10-p. group. These items measured *actual expectations* of group members' cooperative behavior and checked respondents' comprehension of the group composition. Due to the phrasing of the questions, participants' responses included their own choices in each of the two groups. Consequently, we first corrected the original responses of participants who made cooperative choices themselves toward the MI group and/or toward the MO group. For example, when a participant acted cooperatively (i.e. indicated that he would reduce his own production), and indicated that he expected 5 out of 7 in-subgroup members to cooperate in the MI group, that participant's expected number of co-operators was corrected from 5 to 4; so he expected 4 in-subgroup members other than himself to cooperate. Because cooperative expectation was measured on a different scale in the MI group (seven in-subgroup members) than in the MO group (three in-subgroup members), proportions of cooperation were calculated; e.g. if a

participant expected 4 other in-subgroup members to cooperate, then the expected proportion of cooperation was calculated as 4/6 in-subgroup members (= .67).

As a means to assess *understanding of the pay-off matrix,* participants were requested to indicate the profits (in million euros) to be earned by those in the 10-p. group who 'stuck' and the profits to be earned by those who 'reduced'.

After completion of all questions, participants were requested to proceed to the next page of the booklet. There they filled out their private answers to the same series of questions (choice behavior, cooperative expectations, pay-off matrix), now for the MO group (or the MI group), depending on which condition they were first presented with (counterbalanced). Finally, all participants were asked to indicate their gender and age. They also read a paragraph on 'guarantee of anonymity'.

In the *post-experimental questionnaire,* identification with in-subgroup and with out-subgroup members was measured with three items on a 5-point scale (Derks, van Laar, & Ellemers, 2009): '*I identify with L participants ', 'I feel connected with L participants', 'I am concerned with L participants'* (for the in-subgroup) (α = .90); and *' I identify with R participants', 'I feel connected with R participants', 'I am concerned with R participants'* (for the out-subgroup) (α = .92)[24]. The same scale was adapted to measure identification with the MI group and with the MO group: *'I identify with the 10-p. group of 7 L and 3 R participants'* (sample item for the MI group) (α = .88); *'I identify with the 10-p. group of 3 L and 7 R participants'* (sample item for the MO group) (α = .88).

Perception of the leader's concern with subgroup interests, was measured with two items on a 5-point scale: *'I expect the leader of my 10-p. groups to safeguard the interests of the L participants', 'I expect the leader of my 10-p. groups to safeguard the interests of the R participants'* respectively.

[24] L participants' refers to in-subgroup members from participants' own university; 'R participants' refers to out-subgroup members from the other university.

Identification with the leader was measured with one item on a 5-point scale: *'I feel connected with the leader of my 10-p. groups.'*

Inter-subgroup bias between in-subgroup members and out-subgroup members was measured with two items: *'I expect L participants to mainly attend to their personal interests'* and *'I expect L participants to mainly attend to the collective interests'* (for in-subgroup members); *'I expect R participants to mainly attend to their personal interests'* and *'I expect R participants to mainly attend to the collective interests'* (for out-subgroup members).

Debriefing

After completion of the post-experimental questionnaire participants were requested to place the booklet back into the envelope. All of the participants were collectively debriefed by means of a lecture and a report on some of the results.

Procedure of data analysis

To test the hypotheses we used two data-analytic approaches. First, to test Hypothesis 1, 2, and 3, we used the Generalized Estimating Equations (GEE) procedure (Liang & Zeger, 1986) that treated the repeated (non-)cooperative choices of individual participants in the crossed-groups social dilemma game as the units of analysis. As an extension of the Generalized Linear Model (logistic regression), this procedure allows for the analysis of repeated measurements of binary ('reduce production' or 'stick to production') response variables, with correction for the non-independence of data. Data are assumed to be dependent within subjects and independent between subjects. The hypotheses were tested by the Wald statistic that has a Chi-square distribution and results were reported in probabilities of cooperation in the MI- and MO group separately.

Second, to understand how participants responded differently to subgroup composition under a visionary leader, we analyzed participants' choice patterns - based on

their repeated choices in MI and MO respectively (C-C, C-D, D-C, D-D)[25] - with a Chi-square analysis. C-C and D-D choice patterns indicated consistent cooperation and defection, respectively, in both MI and MO. C-D patterns indicated cooperation only when in-subgroup members were in the majority (MI), not when out-subgroup members were in the majority (MO). D-C patterns indicated cooperation only when out-subgroup members were in the majority (MO), not when in-subgroup members were in the majority (MI).

ANALYSES AND RESULTS

Manipulation checks.

We checked the group composition manipulation with four items, in the MI group and MO group separately. Participants were asked to indicate how many of the members of their own subgroup (including themselves) they expected to 'stick to the current production level' and how many they expected to 'reduce the production'. They also indicated how many of the members of the other subgroup they expected to 'stick' and how many they expected to 'reduce'. All participants comprehended that the 10-p. group consisted of 7 in-subgroup members and 3 out-subgroup members in condition MI (Majority Ingroup), and that the 10-p. group consisted of 3 in-subgroup members and 7 out-subgroup members in condition MO (Majority Outgroup).

A Pearson chi-square test showed that the manipulation of *leader affiliation* was successful (χ^2 [1, n = 173] = 82.91, $p < .001$). Participants correctly indicated in the visionary in-subgroup leader condition that the leader originated from their own institute. Participants in the visionary out-subgroup leader condition reported the leader to originate from the other institute[26].

[25] C denoting a Cooperative choice ('limit production') and D denoting a Defective choice ('stick to the current production')
[26] In a pilot study (n = 158) we measured the extent to which group members perceived their *leader to be prototypical* for the MI group and for the MO group, with 2 items (α = .89) on a 5-point scale (e.g. *"The leader of this group has a lot in common with the group members"*). Participants perceived the ingroup leader to be more prototypical for the MI group (*M* =

Cooperative choice behavior.

Order effect. The counterbalanced order of presenting the MI group (7-3) and MO group (3-7) did not yield a different pattern of results (B = -.20, *Wald* χ^2 = 1.25, p < .26). Cooperation probabilities were very similar in the MI-MO order (.39) as in the MO-MI order (.44).

Hypothesis 1: Subgroup composition. As predicted, there was a strong main effect of subgroup composition on cooperation (B = .90, *Wald* $\chi^2_{(1)}$ = 35.79, p < .001), indicating that in the MI group (.55) participants made significantly more cooperative choices than in the MO group (.33), i.e. difference of 22%[27].

Hypothesis 2: Visionary leadership. There was a main effect of leadership on cooperation (*Wald* $\chi^2_{(2)}$ = 5.91, p < .05), in which both visionary leadership conditions yielded more cooperation in participants than the control (superordinate goal) condition (.35). Participants made significantly more cooperative choices under a visionary in-subgroup leader (.48) (B = .54, *Wald* $\chi^2_{(1)}$ = 3.79, p < .05) and under a visionary out-subgroup leader (.47) (B = .56, *Wald* $\chi^2_{(1)}$ = 4.96, p < .03). Hypothesis 2 was thus confirmed. Whether the leader of the group was affiliated with the in-subgroup (visionary in-subgroup leader) or the out-subgroup (visionary out-subgroup leader) had no effect on the cooperation rates (B = .018, *Wald* $\chi^2_{(1)}$ = .005, p < .94).

Hypothesis 3: Interaction Subgroup composition x Leader affiliation. Participants made more cooperative choices toward the MI group than toward the MO group, but this did not differ across the conditions (*Wald* $\chi^2_{(2)}$ = 1.99, p < .36) (Table 4.1).

3.38, SD = .85) than the outgroup leader (M = 2.53, SD = .93, $F_{(1, 156)}$ = 36.65, p < .001). They indicated the outgroup leader to be more prototypical for the MO group (M = 3.21, SD = .92) than the ingroup leader (M = 2.54, SD = .68 , $F_{(1, 156)}$ = 26.47, p < .001).
In this pilot study we also explored the extent to which *leader vision* was clear to the group members, with one item (*"The group leader wants to make cooperation successful in both 10-p. groups with the prospect of a long-term collaboration").* In both leadership conditions, scores were high and there was no significant difference in ratings under the ingroup leader (M = 4.29, SD = .80) and the outgroup leader (M = 4.09, SD = .74 , $F_{(1, 156)}$ = 1.18, p < .11).

[27] For the ease of interpretation the magnitude of all effects are reported in probabilities instead of Odds ratios (Exp (B)).

Table 4.1. Probabilities of cooperation in the MI group and the MO group under a visionary in-subgroup leader and a visionary out-subgroup leader, compared to the control condition (n = 253)

	MI	MO
Control (superordinate goal)	.46	.24
Visionary in-subgroup leader	.61	.35
Visionary out-subgroup leader	.55	.40

As a first step in testing Hypothesis H3A, we compared cooperation levels in the visionary in-subgroup leader condition and the visionary out-subgroup leader condition both to the control condition (superordinate goal). Results showed that the difference in cooperation toward MI and MO was fairly equal in the visionary in-subgroup leader condition (.26) and control condition (.22) (B = .04, $Wald\ \chi^2_{(1)}$ = .19, p < .66)[28]. There was also no significant difference in cooperation toward MI and MO between the visionary out-subgroup leader condition (.15) and the control (.22) condition (B = - .07, $Wald\ \chi^2_{(1)}$ = .69, p < .47),

As a first step in testing Hypothesis H3B, we compared cooperation levels in the visionary in-subgroup leader condition (.26) to the visionary out-subgroup leader condition (.15). These conditions were not significantly different from one another (B = .11, $Wald\ \chi^2_{(1)}$ = 1.73, p < .18).

A second step in testing H3A and H3B was to perform an analysis of the choice patterns to understand the impact of leadership on group members' decisions to cooperate in

[28] The probabilities obtained from the GEE analyses are calculated via the accumulated frequencies of participants' cooperative choices in the MI and MO group. To obtain the probability of cooperation in the MI group under a visionary in-subgroup leader the frequencies of C-C and C-D choices are summed / frequency of all pps. under a visionary leader = .61. To obtain the probability of cooperation in the MO group under a visionary in-subgroup leader the frequencies of C-C and D-C choices are summed / frequency of all pps. under a visionary leader = .35.

both MI- and MO groups. Choice patterns (MI-MO) were generated by placing participants' choice in the MI group before that in the MO group. There was no significant interaction effect of order with group composition and leadership (B = - .31, $Wald\ \chi^2_{(1)}$ = .17, p < .68). Consequently, this recoding strategy could be reliably executed. Table 4.2 shows the frequencies of all choice patterns per experimental condition.

Table 4.2. Choice patterns for visionary in-subgroup leadership, visionary out-subgroup leadership, and the control condition (n = 253)

	C-C	C-D	D-C	D-D
Control (superordinate goal)	16.3%	30%	7.5%	46.3%
Visionary in-subgroup leader	**27.4%**	33.7%	7.4%	**31.6%**
Visionary out-subgroup Leader	**33.3%**	**21.8%**	6.4%	**38.5%**

In the *control condition,* most participants did not cooperate with either MI or MO (D-D = 46.3%) or cooperated only with the MI group (C-D = 30%). When a *visionary in-subgroup leader* was introduced, participants showed more cooperation with both MI and MO (C-C) (+ 11.1%), less defection toward both groups (D-D) (- 14.7%), and a similar level of C-D choices (+ 3.7%), compared to the control condition ($\chi^2_{(3)}$ = 5.04, p < .08). The presence of a *visionary out-subgroup leader* resulted in more C-C choices (+17%), less D-D choices (-7.8%), and less C-D choices (-8.2%), compared to the control condition ($\chi^2_{(3)}$ = 6.25, p < .05).

In sum, Hypothesis H3A was partly confirmed: visionary leadership did not reduce group members' sensitivity to subgroup composition, but it did increase consistent

cooperation (C-C), and it did reduce consistent defection (D-D). There was no significant difference in choice patterns between the visionary in-subgroup leader and the visionary out-subgroup leader ($\chi^2_{(3)} = 3.22$, $p < .20$). Hypothesis H3B was not confirmed.

Additional measures

(Sub)group identification.

Participants identified more with in-subgroup members than with out-subgroup members, and this was true in the control condition ($M = 3.34$, $SD = .99$ vs. $M = 1.98$, $SD = .64$) ($t_{(79)} = 11.47$, $p < .0001$), under a visionary in-subgroup leader ($M = 3.66$, $SD = .86$ vs. $M = 2.22$, $SD = .84$) ($t_{(94)} = 12.01$, $p < .0001$) and under a visionary out-subgroup leader ($M = 3.61$, $SD = .77$ vs. $M = 2.15$, $SD = .76$) ($t_{(76)} = 12.64$, $p < .0001$). Group members also identified more with the MI group than with the MO group, in the control condition ($M = 3.08$, $SD = .93$ vs. $M = 2.40$, $SD = .88$) ($t_{(63)} = 6.54$, $p < .0001$), under a visionary in-subgroup leader ($M = 3.49$, $SD = .80$ vs. $M = 2.53$, $SD = .77$) ($t_{(94)} = 10.47$, $p < .0001$), and under a visionary out-subgroup leader ($M = 3.31$, $SD = .86$ vs. $M = 2.53$, $SD = .80$) ($t_{(77)} = 6.80$, $p < .0001$).

Identification with the in-subgroup differed across the experimental conditions ($F_{(2, 250)} = 2.76$, $p < .06$): Identification with the in-subgroup was stronger under a visionary in-subgroup leader than in the control condition ($M_{diff} = .30$, $SE = .13$, $p < .05$), and stronger under a visionary out-subgroup leader than in the control condition ($M_{diff} = .25$, $SE = .14$, $p < .07$).

Identification with the out-subgroup also differed across the experimental conditions ($F_{(2, 250)} = 2.12$, $p < .12$): Identification with the out-subgroup was stronger under a visionary in-subgroup leader than in the control condition ($M_{diff} = .24$, $SE = .12$, $p < .05$), but not significantly stronger under a visionary out-subgroup leader than in the control condition ($M_{diff} = .15$, $SE = .12$, $p < .21$).

Identification with the MI group differed across the experimental conditions ($F_{(2, 250)} = 4.21$, $p < .01$): Identification with the MI group was stronger under a visionary in-subgroup leader than in the control condition ($M_{diff} = .38$, $SE = .13$, $p < .01$), but not significantly stronger under a visionary out-subgroup leader than in the control condition ($M_{diff} = .20$, $SE = .14$, $p < .15$). Identification with the MO group did not differ significantly across the experimental conditions ($F_{(2, 250)} = .51$, $p < .60$).

Cooperative expectations.

In the MI group participants expected more in-subgroup members to cooperate ($M = .59$, $SD = .31$) than in the MO group ($M = .34$, $SD = .36$; $t_{(244)} = 10.54$, $p < .0001$). Similarly, in the MO group did participants expect more out-subgroup members to cooperate ($M = .56$, $SD = .29$) than in the MI group ($M = .39$, $SD = .34$; $t_{(244)} = 5.69$, $p < .0001$).

Expectations about other in-subgroup members' cooperation in the MI group did not differ significantly across the experimental conditions ($F_{(2,250)} = 1.21$, $p < .30$), neither did expectations about other in-subgroup members' cooperation in the MO group ($F_{(2,250)} = .75$, $p < .47$), or expectations about out-subgroup members' cooperation in the MI group ($F_{(2,250)} = 1.93$, $p < .15$), or expectations about out-subgroup members' cooperation in the MO group ($F_{(2,250)} = .34$, $p < .71$).

Leader's concern for subgroup interests.

Participants expected a visionary in-subgroup leader to be more concerned with the interests of the in-subgroup ($M = 3.20$, $SD = 1.01$) than a visionary out-subgroup leader ($M = 2.82$, $SD = .96$, $F_{(1,171)} = 6.33$, $p < .01$). Similarly, they expected a visionary out-subgroup leader to be more concerned with the interests of the out-subgroup ($M = 3.42$, $SD = .97$), than a visionary in-subgroup leader ($M = 2.65$, $SD = .78$; $F_{(1, 171)} = 25.43$, $p < .0001$).

Leader identification.

Participants' identification with the leader was somewhat higher under a visionary in-subgroup leader (M = 2.88, SD = .94) than under a visionary out-subgroup leader (M = 2.63, SD = .99; $F_{(1, 171)}$ = 3.00, p < .09), but not significantly.

Inter-subgroup bias: members' concern for personal and collective interests (Table 4.3).

Expectations about other in-subgroup members' concern for collective interests differed across the experimental conditions ($F_{(2, 252)}$ = 3.55, p < .05): Participants expected other in-subgroup members to attend more to collective interests under a visionary in-subgroup leader (MD = .38, SE = .14, p < .01), and under a visionary out-subgroup leader (MD = .22, SE = .15, p < .14), compared to the control condition.

Expectations about other in-subgroup members' concern for personal interests also differed across the experimental conditions ($F_{(2, 252)}$ = 7.44, p < .001): Participants expected other in-subgroup members to attend less to personal interests under a visionary in-subgroup leader (MD = -.59, SE = .16, p < .0001) and under a visionary out-subgroup leader (MD = -.46, SE = .17, p < .01), compared to the control condition.

Expectations about out-subgroup members' concern for collective interests differed across the experimental conditions, though non-significantly ($F_{(2, 252)}$ = 1.46, p < .24): Participants expected out-subgroup members to attend more to collective interests under a visionary in-subgroup leader (MD = .23, SE = .15, p < .13), and under a visionary out-subgroup leader (MD = .23, SE = .16, p < .15) compared to the control condition.

Expectations about out-subgroup members' concern for personal interests differed across the experimental conditions, though non-significantly ($F_{(2, 252)}$ = 1.95, p < .15): Participants expected out-subgroup members to attend less to personal interests under a visionary in-subgroup leader (MD = -.18, SE = .15, p < .25) and under a visionary out-subgroup leader (MD = -.32, SE = .16, p < .05), compared to the control condition.

Table 4.3. Means and Standard Deviations of concern for personal and collective interests expected from in-subgroup and out-subgroup members in the three experimental conditions

	Control (superordinate goal)		Visionary in-subgroup leader		Visionary out-subgroup leader	
In-subgroup	*M*	*SD*	*M*	*SD*	*M*	*SD*
Personal interests	3.49	1.03	2.89	1.12	3.04	.97
Collective interests	2.66	.94	3.04	.97	2.88	.90
Out-subgroup	*M*	*SD*	*M*	*SD*	*M*	*SD*
Personal interests	3.52	1.03	3.35	1.02	3.21	.98
Collective interests	2.54	.93	2.77	1.07	2.78	.98

Exploratory Mediation Analysis

Simple mediation: Group composition. To gain more insight into the relationships between group composition, group identification, cooperative expectations of in-subgroup and out-subgroup, and choice behavior, we conducted an exploratory mediation analysis. Current statistical techniques do not allow yet to conduct the analysis with clustered data (time in individual) and a binary outcome variable in the model. Consequently, we analyzed the effects of the first group composition in which participants made their choice, in either the MI group or the MO group. This procedure eliminated the repeatedness from the design which allowed to test for mediation effects with the PROCESS procedure of Hayes (2013). Group composition at Time 1 (MI or MO), and Choice at Time 1 (cooperation or defection) were defined as the predictor and outcome variable respectively. The variables 'identification with the MI group', 'identification with the MO group', 'cooperative expectations of in-subgroup members', and 'cooperative expectations of out-subgroup members' were included

as parallel mediators in the model. Indirect effects were calculated as the products of the estimates (*ab*) of the effect of the factor on the mediator (*a*), and the effect of the mediator on the dependent variable (*b*). Whether the indirect effects were significant was determined via the bootstrapping confidence intervals.

Results from the simple mediation analysis showed that group composition indirectly influenced cooperative choice through its effects on identification with the MI group, on identification with the MO group, and on cooperative expectations about in-subgroup and out-subgroup members. In the MI group participants showed stronger group identification (a_1 = .79, p < .0001), they expected more cooperation of in-subgroup members (a_2 = .18, p < .0001), and they expected less cooperation of out-subgroup members (a_3 = -.17, p < .0001). Participants who identified more strongly with their group (b_1 = .48, p < .01), who expected more cooperation of in-subgroup members (b_2 = 2.72, p < .0001) and more cooperation of out-subgroup members (b_3 = 1.23, p < .01), all showed more cooperation towards their group. The bias-corrected bootstrap confidence intervals for the indirect effects based on 5000 bootstrap samples did not include zero, which indicated significance of the effects (for ab_1 = .38: .71 to .14; for ab_2 = .50: .76 to .28; for ab_3 = .21: .07 to .41 respectively).

Simple mediation: Visionary leadership. To test whether the effect of visionary leadership on choice related either to group identification, to cooperative expectations, or to both we conducted another simple mediation analysis, comparing the control condition to the (visionary) leadership conditions. To control for the effect of group composition, this variable was included in the model as a covariate. The simple mediation analysis showed that leader vision indirectly influenced cooperative choice through its effect on identification with the MI group, and on identification with the MO group, but not through its effect on cooperative expectations of in-subgroup and out-subgroup members. Participants showed stronger identification with the 10-p. group under a visionary leader, compared to the control

condition (a_1 = .28, p < .05), but they did not expect significantly more cooperation from in-subgroup members (a_2 = .05, p < .33), or significantly more cooperation from out-subgroup members (a_3 = .04, p < .35) under a visionary leader. Participants who identified more with their 10-p. group (b_1 = .44, p < .05), who expected more cooperation from in-subgroup members (b_2 = 2.73, p < .0001) and more cooperation from out-subgroup members (b_3 = 1.22, p < .05), all showed more cooperation with their 10-p. group. The bias-corrected bootstrap confidence intervals for the indirect effects based on 5000 bootstrap samples did not include zero for group identification, which indicated significance of the indirect effect of leader vision via group identification only (for ab_1 = .12: .02 to .31; for ab_2 = .13: .09 to .33; for ab_3 = -.05: -.02 to -.17 respectively).

GENERAL DISCUSSION

This study integrated findings from faultline and diversity literature (e.g. Lau & Murnighan, 1998; Jehn & Bezrukova, 2010) with theory on charismatic and visionary leadership (e.g. Bass, 2008), inter-group leadership (e.g. Pittinsky & Simon, 2007), and social identity processes in leadership (e.g. Hogg, 2001; Hogg & van Knippenberg, 2003; Haslam, Reicher, & Platow, 2011) to investigate the effects of visionary leadership and leader affiliation on group members' cooperation levels in a faultline-based group. To date, research on group faultlines and leadership is scarce, although the presence of a leader can determine whether diversity positively or negatively affects team functioning (Joshi & Roh, 2009; van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007). Also, the impact of leadership on cooperation in nested- and crossed-groups social dilemmas has remained unexplored, despite the theoretical underpinnings for its effects. Our study is one of the first that provides a test of the effects of visionary leadership and leader affiliation on cooperation

levels in a faultline-based group, where group members need to deal with a crossed-groups social dilemma due to subgroupings.

Results indicated that group members showed parochial cooperation, i.e., more cooperation toward a heterogeneous group with a majority of in-subgroup members than toward a heterogeneous group with a majority of out-subgroup members. Visionary leadership combined with a superordinate goal for the group increased members' overall cooperation with the group, over and above faultline deactivation with a superordinate goal. Moreover, a visionary leader could, to a certain extent, attenuate the negative effects associated with recategorization via a superordinate goal. Leader affiliation with either subgroup did not have an effect on cooperation levels in the factional group.

Subgroup composition

In line with previous research by De Pauw and colleagues (2013), we replicated the effect of subgroup composition on cooperation in a faultline-based group. Again, identification levels were driving group members' decisions to cooperate or not. Stronger identification with the in-subgroup and the MI group (in which this subgroup was nested as a majority), compared to the out-subgroup and the MO group, indicated (sub)group favoritism (Hewstone et al., 2002; Turner, 1987). Also, according to goal expectation theory (Pruitt & Kimmel, 1977), group members acted in line with their expectations of what others would do. The expectation that members of the in-subgroup would cooperate more in the MI (Majority Ingroup) group than in the MO (Majority Outgroup) group, and the majority presence of in-subgroup members with whom they identified more strongly in the MI group were related to higher cooperation levels in the MI group than in the MO group. Results of the exploratory mediation analysis confirmed the significant indirect effect of group composition on cooperative choice, both via group identification and cooperative expectations.

Visionary leadership

In heterogeneous groups with a strong faultline, the presence of inter(sub)group bias is mainly associated with this faultline splitting up the group in an in-subgroup and an out-subgroup (Li & Hambrick, 2005). Several solutions to address the negative effects of subgroupings have been proposed in previous research, linked to faultline deactivation to minimize the salience of the activated faultline in the group (e.g. Carton & Cummings, 2012; Van der Kamp et al., 2012). The introduction of a superordinate goal for the faultline-based group could minimize group members' sensitivity for the subgroup composition, resulting in more consistent cooperation (De Pauw et al., 2013). However, this process also resulted in a significant amount of group members consistently not cooperating (D-D choice pattern), mainly due to decategorization processes. The current study showed that the introduction of a visionary leader could significantly reduce identity threat and inter-subgroup bias, associated with the presence of a superordinate goal.

First, under a visionary leader, group members expected other members of the group to increase their concern for the collective interests and to attach less importance to their personal interests. They expected this shift of both in-subgroup and out-subgroup members, in similar levels. Second, under a visionary leader, group members' identification levels with the in-subgroup, with the out-subgroup, and with the MI group all rose significantly. So, participants showed less bias between in-subgroup and out-subgroup members, expected more concern overall for the collective interests of the group, and showed stronger identification with the group under a visionary leader. Also, group members showed more cooperation in the faultline-based group under a visionary leader. Consequently, the presence of a visionary leader can be considered as a context that allowed the superordinate goal to thrive better (cf. Crisp et al., 2010). The finding that the visionary leader promoted stronger identification with the group, was in line with previous research (Kark, Shamir, & Chen, 1993) and showed the potential of a visionary leader to enhance feelings of identification,

connection, and involvement with other group members, independent of their affiliation (see also Reicher et al., 2005; Shamir et al., 1993).

An exploratory mediation analysis confirmed the indirect effect of visionary leadership on cooperative choice, however only for group identification, and not for cooperative expectations. In sum, a visionary leader increased identification with the group, made participants expect from other group members more concern for collective interests and less concern for personal interests, and increased cooperation levels with the group.

The fact that group members less sharply distinguished their concern for personal and group interests (cf. De Cremer & Van Vugt, 1999; De Cremer & Van Dijk, 2002; Kramer & Brewer, 1984; Polzer, 2004; Taifel & Turner, 1986; Turner, 1982; Turner et al., 1987; Wit & Kerr, 2002), indicated that the effects of visionary leadership could be explained by the *goal transformation* mechanism. In line with prior research, where a superordinate goal for the group - in the absence of a visionary leader - did impact identification with the group (De Pauw et al., 2013), these findings bring reason to bear that a superordinate goal only – not supported by a leadership vision – indeed is insufficiently powerful to motivate members of a faultline-based group to act cooperatively beyond their subgroupings.

Although cooperation levels in the faultline-based groups were significantly higher under a visionary leader than in the control condition, still a fair amount of group members showed cooperation only when their in-subgroup was in the majority. Also, identification levels with the MO group were not significantly stronger under a visionary leader. Visionary leadership, in combination with a superordinate goal, thus could not entirely desensitize members for (sub)group composition to the extent that parochial cooperation levels reduced significantly. Group members were triggered more by the (sub)group composition than by the leader's vision for the future of the group. Prior research, where transformational leaders were perceived to emphasize vague and distant goals (Shamir et al., 1993), could explain why

some group members did not act in line with this (long-term) vision. Followers may be more affected by a visionary leader if they have beneficiary contacts that expose them to the concrete effects of the leader's vision (Grant & Berry, 2012; Grant et al., 2007). Also, to enhance inter(sub)group relationships in faultline-based groups, promoting positive inter(sub)group contact is essential (Allport, 1954; Polzer et al., 2006), preferably combined with group members working together on a superordinate goal to decrease inter(sub)group bias (Gaertner et al., 2000; Sherif et al., 1961). Consequently, our study provided a conservative test of the impact of visionary leadership in faultline-based groups.

A fruitful avenue for future research would be to test in a follow-up vignette study or lab experiment the effects of leader vision - in combination with faultline (de)activation via a superordinate goal - by comparing cooperation levels in the faultline-based group under a visionary leader to those under another type of leader (for example transactional leadership), or to cooperation levels under a leader with no vision. Measuring cooperative behavior as a (Likert-) scaled outcome variable – rather than as a binary categorical variable – will increase power to estimate this three-way interaction. Data are then analyzed with the repeated-measures ANOVA procedure, instead of with the Generalized Estimating Equations procedure. The design of this study allows to investigate the specific effect of leader vision and relate it to cooperation levels in the faultline-based group.

In a next phase, we could investigate leader vision in a *field experimental* setting, where group members relate to a leader in position, have inter(sub)group contacts and potentially observe the vision's effects on beneficiaries. Followers will be more affected by a leader's vision if they have beneficiary contacts that expose them to the concrete effects of the leader's vision (Grant, 2012; Grant et al., 2007). And, to enhance inter(sub)group relationships in faultline-based groups, promoting positive inter(sub)group contact is essential (Allport, 1954; Polzer et al., 2006), preferably combined with group members working

together on a superordinate goal to decrease inter(sub)group bias (Gaertner et al., 2000; Sherif, Harvey, White, Hood, & Sherif, 1961).

However, a certain 'threshold' level of parochialism and in-subgroup favoritism is most likely very difficult or even impossible to overcome. Some employees will be more resistant to recategorization and to cooperation with the faultline-based group, which requires them to act beyond subgroupings. To a certain extent, it might even be desirable to maintain people's primary (sub)group identification (Wit & Kerr, 2002) – with its associated (sub)group processes of bias and ingroup love - because identification with and belonging to a (sub)group is an essential psychological process for motivation at work (Ashforth, Harrison, & Corley, 2008; Ellemers et al., 2004).

Leader affiliation

Visionary leadership increased cooperation levels in a faultline-based group significantly, but the subgroup affiliation of this leader had no distinct impact. Cooperation levels were very similar in groups with a visionary leader with in-subgroup affiliation or out-subgroup affiliation. Nevertheless did group members themselves anticipate there to be differences in cooperation, based on the visionary leader's affiliation: Subgroup members would cooperate more under a leader that was affiliated to their own subgroup. And the visionary leader would attend more to the interests of the subgroup with which he is affiliated. To mobilize individual efforts toward collective goals, group members' perception of a *common identity* with their leader is crucial (Ellemers et al., 2004). Our study showed that members felt equally connected to their visionary leader, regardless of his affiliation.

Also, although under a visionary leader identification with the groups increased, there was no difference in these identification levels between a visionary leader affiliated with the in-subgroup or the out-subgroup. These results were in line with prior findings where the

leader's *vision dominated his representativeness*. Compared to representative leaders, visionary leaders could inspire greater willingness to participate in collective action (Bono & Ilies, 2006), and group members tended to endorse a visionary but unrepresentative leader more than a representative but non-visionary leader (Halevy et al., 2011).

We expected less cooperation under a visionary out-subgroup leader, but this leader could equally reassure group members with his concern for the superordinate group, a prerequisite for positive inter(sub)group relations and cooperation (Duck & Fielding, 1999, 2003; Jetten, Duck, Terry, & O'Brien, 2002). Both visionary in-subgroup and out-subgroup leaders emphasized the importance of cooperation for a long-term collaboration, regardless of group members' affiliation. The effect of a leader's affiliation in the presence of subgroups might thus be contingent on the *content of the leader's vision*. If the vision shows concern for the whole group – further minimizing the salience of subgroups – this might reduce the effect of subgroup affiliation, whereas a vision reflecting preoccupation with the subgroup interests most likely increases the impact of subgroup affiliation.

The effect of leader subgroup affiliation might also depend on the *status of the subgroups* in the faultline-based group. Prior studies showed that low-status groups were more concerned with a leader's premerger group affiliation than high-status groups (Jetten et al., 2002). Consequently, an in-subgroup affiliated leader might be more effective to increase cooperation of in-subgroup members toward the MO group (where the in-subgroup is a lower status group), whereas the leader's out-subgroup affiliation might better address the concerns of out-subgroup members in the MI group (where the out-subgroup is a lower status group). On the other hand, when the leader would stress equality of the subgroups - assuaging concerns of ingroup favoritism – members might be less preoccupied by the leader's subgroup affiliation (Jetten et al., 2002). Future research would benefit from the investigation of these different contingencies between leader vision, affiliation, and subgroup composition

to increase our understanding of effective inter(sub)group leadership in faultline-based groups.

Nevertheless, when introducing a subgroup affiliated leader in a faultline-based group, this leader will always remain more representative for one subgroup than for the other, unless he has mutual affiliations with both subgroups. A *boundary-spanning leader*, because of his strong links and significant interactions with both in-subgroup and out-subgroup members, may have the ability to transform subgroup interest and detrimental competition between subgroups into collaboration and cooperation that optimizes inter-subgroup performance (Hogg et al., 2012). Duck and Fielding (1999) found that nomination of a leader from one subgroup or the other divided rather than united members of the larger group, promoting identification at the subgroup level rather than at the superordinate group level. In addition, a leader's subgroup affiliation was a hindrance to his effectiveness in leading the superordinate group. Subgroup members perceived leaders who were not aligned with either subgroup in particular to be more fair, more concerned for the interests of the superordinate group, and more impartial in their concern for the interests of the various subgroups.

Managerial relevance

Leaders of faultline-based groups need to deal with (activated) faultlines and subgroupings on a daily basis. During organizational changes and collaborations, such as mergers, alliances, and joint ventures, workgroups arise with members originating from different organizations or departments. Group members are then presented with the trade-off between self-interest, subgroup interests and group interest. The presence of a leader who motivates, supervises, and addresses relational and identity considerations can have a major impact on cooperation levels in these heterogeneous groups. Reducing the salience of subgroups with a superordinate goal can be an effective strategy to increase group cooperation, when combined with visionary leader behaviors. Leaders need to communicate a

clear, future-oriented vision for the group in line with the categorization of members as one group.

However, rhetoric alone may not suffice. Establishing an inter-subgroup relational identity (cf. Hogg et al., 2012) via interactions with both subgroups, addressing mutual concerns, and especially the display of role behavior, may be essential to increase considerations for and cooperation with the larger group. Group members might not feel that strongly about the leader's affiliations with either subgroup, as long as he has a strong vision on the future of the group and the importance of collaborations. When delegating a leader to a newly formed heterogeneous group, management could opt for either an external visionary leader with no subgroup affiliations, an internal visionary leader with subgroup affiliations, or a visionary leader that ties into both subgroups. Future research should investigate whether the latter type of leader is better capable to balance identity concerns – because of his affiliation with both (or more) subgroups - which would allow the leader's vision to capitalize on the positive effects of diversity and maximize cooperation with the faultline-based group.

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APPENDICES

Appendix 1. Vignette Crossed-Groups Social Dilemma Game

"Imagine all ten of you being the manager of one of ten private firms producing product X. In order to increase your profits, you all have just made large private investments to heighten the production capacity of product X. Because all ten of you did so, each in his or her own firm, the total production of X will soon exceed the public demand, resulting in a drop in prizes. You all have to choose between sticking to your present (high) production rate or reducing your production rate to a level under its present capacity. Firms producing at maximum capacity will always earn more profit than those reducing their production rate, irrespective of the number of other managers who decide to do so. However, the more firms that stick to their high production rates, the lower the profits all of you earn on product X: If all ten of you decide to stick to your high production rates, this will yield all of you a lower profit (10 million Euros each) than if all of you decide to reduce your production rates (25 million Euros each). In the table below, you see how profits vary as a function of the decisions made in your 10-person group".

Appendix 2. Pay-off matrix of the 10-p. Crossed-Groups Social Dilemma game

Choice configuration			Pay- off for "stick" (x million)	Pay-off for "reduce" (x million)
0 STICK	\	10 REDUCE	---	25
1 STICK	\	9 REDUCE	28	23
2 STICK	\	8 REDUCE	26	21
3 STICK	\	7 REDUCE	24	19
4 STICK	\	6 REDUCE	22	17
5 STICK	\	5 REDUCE	20	15
6 STICK	\	4 REDUCE	18	13
7 STICK	\	3 REDUCE	16	11
8 STICK	\	2 REDUCE	14	9
9 STICK	\	1 REDUCE	12	7
10 STICK	\	0 REDUCE	10	---

CHAPTER 5

Epilogue

This dissertation set out to investigate antecedents of cooperative decision-making in heterogeneous groups, with subgroups divided by a faultline. In these groups, members have to deal with a crossed-groups social dilemma: they weigh individual, subgroup, and group interests simultaneously when deciding whether or not to contribute to the group.

More specifically, we aimed to realize six *research objectives*. The first was to develop the crossed-groups social dilemma (CSD) game as a suitable experimental tool to study decision-making in a faultline-based heterogeneous group. The second was to investigate with the CSD game the effect of group composition - how the present subgroups relate to each other in the group - on members' decision to cooperate with the group. The third objective aimed to determine the extent to which prosocial and proself members' cooperation levels differed, depending on the group composition. The fourth objective was to study the effect of faultline (de)activation as a way of attenuating the impact of group composition on cooperation levels. The fifth and sixth objective investigated the combined strategy of leadership and faultline deactivation on cooperation levels, focusing on the effect of visionary leadership and the leader's affiliation.

To this end, we conducted five experimental studies that were bundled in three papers. In these studies, we investigated the effects of both individual antecedents (social value orientation) and situational antecedents (faultline (de)activation, visionary leadership, and leader affiliation) of cooperation, in interaction with the composition of the heterogeneous faultline-based group. This concluding chapter discusses how our findings contribute to the social dilemma literature, the faultline literature, and the leadership literature, while identifying fruitful avenues for future research. We also address the methodological

contributions and limitations of the conducted studies. To conclude, we highlight the managerial implications of our findings.

THEORETICAL CONTRIBUTIONS

Contributions to the social dilemma literature

First, although the effects of *group composition* and subgroups are well-documented in diversity and faultline literature, these findings have to our knowledge not yet been related to on *cooperative decision-making in social dilemmas*. Previous social dilemma research already showed that a focus on present subgroups results in decreasing contributions to the group (Polzer, Stewart, & Simmons, 1999; Polzer, 2004; Wit & Kerr, 2002). However, the link between subgroup composition, subgroup size, and cooperation with the group has to date been scarcely investigated.

Second, our research indicates that, in general, members of a heterogeneous group, consisting of two distinct subgroups, prefer to cooperate when this group consisted of a majority of in-subgroup members than when it consisted of a majority of out-subgroup members, which shows preference for the own subgroup. This is in line with prior social dilemma research where group members acted more in the subgroup's interest and less in terms of the group's interest, when they categorized themselves as members of the subgroup (Wit & Kerr, 2002). However, in our research, a significant proportion of (prosocial) participants chose to forfeit self-interest and cooperate with the group (C-C – consistent cooperation), despite strong subgroup identification (and more cooperative expectations of their in-subgroup than of the out-subgroup members). Other participants (proselves) acted selfishly toward the group (D-D consistent defection), and thus placed self-interest above (sub)group interest. These findings complement social dilemma research as they show that the presence of subgroups and

associated *subgroup identification does not necessarily result in less attention for the collective interests in a social dilemma.*

Third, these studies also provided some new insights in the *boundary conditions of social value orientation effects*. From prior research we know that social value orientation will exert its effects mainly in situations of high uncertainty (de Kwaadsteniet, Van Dijk, Wit, & de Cremer, 2006; Roch & Samuelson, 1997). Although the presence of a strong faultline – as a strong situation - usually would allow for little inter-personal differences in people's behavior (Snyder & Ickes, 1985), prosocials acted in line with their tendency to cooperate more whereas proselves acted mostly selfish. These findings add to the literature showing that not all strong situations automatically lead to the suppression of behavior in line with individual social value orientation, but that it might depend on the type of situation. The degree to which prosocials and proselves will be influenced by the strength of the situation or perceive the situation as strong can differ. In prior research, proselves are found to act mostly self-interested in a wide array of contexts, so they are most consistent in their behavior and less influenced by the context. Prosocials, on the other hand, revealed themselves in a context of mixed motives as attending more to their own (sub)group's interests than to the collective interest (Aaldering, Greer, Van Kleef, & De Dreu, 2013). Future research should further investigate in which types of (strong) situations prosocials and proselves might act differently, and how strong they perceive the situation.

Future research

Another viable avenue for future research is to explicitly measure participants' reasons to cooperate in the heterogeneous MI (Majority Ingroup) group and the MO (Majority Outgroup) group, next to group identification and cooperative expectations, to tease out the

motivational mechanism underlying prosocials' and proselves' decisions. This would offer more insight in their motives for consistent cooperation and consistent defection respectively.

Also, the effects of social value orientation in crossed-groups social dilemmas might differ over *time*. In a one-shot game, participant choices are mostly a function of disposition, whereas in an iterated context with repeated rounds, behavior is not only a function of dispositional social motives but more so of other group members' prior behavior (Balliet, Parks, & Joireman, 2009). The effects of SVO on cooperation in a crossed-groups social dilemma may alter over time, based on the feedback (given in between rounds) of others' behavior. Prior research showed that co-operators and individualists assimilated the low level of cooperation of competitive partners, whereas competitor's behavior did not change in response to another competitor (Kelley & Stahelski, 1970; Kuhlman & Marshello, 1975). So, although SVO has been found to be a stable trait over time (Bogaert, Boone, & Declerck, 2008), the presence of competitors in the group - even in a minority - could drastically shift cooperation rates (see also Steinel, De Dreu, Ouwehand, & Ramírez-Marín, 2009) in crossed-groups social dilemmas and may shift prosocials' C-C choices to D-D and C-D choices. Also, the effects of SVO will likely change as the group matures: reactions to other group members' behavior might be different in the initial phase of group formation compared to when employees are more familiar with one another, and gained experience in working together.

Contributions to the faultline literature

First, most faultline research addresses the alignment of demographic characteristics and its impact on the formation of subgroups and team outcomes. However, there is a call to further investigation on *faultlines composed of non-demographic attributes*, such as workgroup members' origin in factional groups (Li & Hambrick, 2005), and geographic work location

(e.g. Polzer, Crisp, Jarvenpaa, & Kim, 2006). Also, although faultlines can inhibit team processes, such as cooperative decision-making, to date the research on *management of team faultlines* has remained scarce (Rico, Sànchez-Manzanares, Antino, & Lau, 2012). Our research showed that the ingroup or outgroup signature of group members – as the basis for a strong faultline – has an impact on their cooperation with the group, with higher cooperation levels in case the in-subgroup is in the majority. Results also indicated that the presence of a leader, who deactivates the faultline and displays a long-term vision for the group, can stimulate members' consistent cooperation and reduce consistent defection. In this way, we addressed both research gaps formulated above.

Second, faultline and strategy literature recently introduced the conceptualization of mergers and alliances as social dilemmas causing tension between cooperation and competition (Li & Hambrick, 2005; Zeng & Chen, 2003). However, to date there is little investigation on how cooperation can be achieved and sustained in newly composed workgroups, although lack of cooperation is a main cause of the relatively high failure rate (Arino & de la Torre, 1988; Doz, 1996; Park & Russo, 1996; Teece, 1992; Ulrich & Van Dick, 2007; Yan & Zeng, 1999). Past research has focused mainly on the *enhancement of cooperation* at an organizational level, but little attention has been devoted to the implications for employees on the work floor being confronted with a conflict of interests in these heterogeneous faultline-based workgroups.

Third, this study answers the call for research that investigates the *effect of a superordinate goal when stronger faultlines are activated* (Rico et al., 2012). We showed that superordinate goal-setting alone is not always the optimal strategy to promote inter-subgroup harmony and cooperation (cf. Dovidio, Gaertner, & Validzic, 1998; González & Brown, 2003). Faultline deactivation with a superordinate goal - in the presence of distinct subgroups - resulted in a

process of decategorization (Gaertner & Dovidio, 2000) for participants who refuted cooperation with the groups. Due to the strong reduction in salience of subgroup distinctions, they categorized themselves at an individual level - not at a group level, as members of the group - and perceived themselves and other group members as individuals (Hewstone, Rubin, & Willis, 2002). Acting upon this decategorization, individuals attended to their self-interest and decided not to cooperate with the groups.

Finally, we gained preliminary insight in the *underlying mechanism* of the group composition effect on cooperation levels in heterogeneous groups. Previous faultline and diversity studies already indicated that the effects of heterogeneous group composition on group- and individual performance and group member satisfaction are determined by the salience of a certain form of diversity (i.e. gender, organizational tenure, pre-merger organization of origin,…) experienced by group members (Harrison, Price, & Bell, 1998; Jehn, Bezrukova, & Thatcher, 2007; Lawrence, 1997). Perceived differences even have a stronger effect on group outcomes than actual differences (Strauss, Barrick, & Connerley, 2001; Turban & Jones, 1988). In our studies, the presence of a strong faultline - splitting up the group in an in-subgroup and out-subgroup subgroup - led to social category diversity. We showed that (sub)group identifications clearly impacted cooperation levels in the heterogeneous group: participants identified more with the group consisting of a majority of in-subgroup members, and also attended more to the interests of this group. However, not only identification processes were determining cooperative choice, but also cooperative expectations about in-subgroup and out-subgroup members. These findings were in line with prior research showing the correlation between expectations about other's behavior and about cooperation in social dilemmas (Dawes, McTavish, & Shaklee, 1977; Messick et al., 1983; Schroeder, Jensen, Reed, Sullivan, & Schwab, 1983; Van Lange & Liebrand, 1989; Wade-Benzoni,

Tenbrunsel, & Bazerman, 1996). Both (sub)group identification and cooperative expectations thus acted as parallel mediators of the group composition effect**.**

Future research

First, this study investigated cooperative decision-making in a strong faultline group with two distinct subgroups, based on social category diversity. In organizational teams, a variety of faultlines might arise based on other demographic characteristics such as educational background, gender, organizational tenure,… Prior research showed that *alternative faultline bases* were differentially associated with team outcomes (Bezrukova, Jehn, Zanutto, & Thatcher, 2009). Social-category based faultlines were negatively related to team performance and cooperation whereas information-based faultlines were not. So, taking into consideration other types of faultlines present in these heterogeneous groups might yield different effects on cooperation levels, compared to the social category based faultline alone. Future research should look into the interaction of several types of faultlines on cooperation levels in crossed-groups social dilemmas. It could be that for example informational faultlines act as a moderator on the effect of group composition, independently or in addition to social-category based faultlines, activating or deactivating the strong faultline in factional groups.

Second, the presence of the two distinct subgroups, divided by a strong faultline, gave rise to complex *inter-subgroup processes*. To date there has been limited examination of inter-group processes within teams, more so between teams and organizations (see Zeng & Chen, 2003; McCarter, Mahoney, & Northcraft, 2011; Marks, Zaccaro, & Mathieu, 2000). Faultline deactivation processes, especially with identity based faultlines, are a double-edged sword with frequently both positive and negative effects on cooperation levels. Identifying other

contextual factors (such as leadership, power structures, subgroup trust, subgroup threat) as faultline deactivators, capable of accentuating positive inter-subgroup processes and avoiding negative inter-subgroup processes is a fruitful avenue for further research (see also Carton & Cummings, 2012).

Third, prior research already showed that the *size and number of subgroups* can impact group processes and outcomes considerably (Harrison & Sin, 2005; Jehn & Bezrukova, 2010; Menon & Phillips, 2010; O'Leary & Mortensen, 2010; Polzer et al., 2006). Our studies investigated the effects of subgroup (numerical) majority and minority (MI and MO group) on cooperative decision making, keeping the number of subgroups (two) and total group size (10 members) constant. In teams, the number of faultlines will determine the number of subgroups, and the location of the faultline will determine variation in the size of subgroups, varying from equal size to small and large subgroups (Carton & Cummings, 2012). Future studies with the crossed-groups social dilemma may vary the number and size of subgroups and adapt group size. This would increase our understanding of boundary conditions of group heterogeneity and faultline (de)activation effects on cooperation within and between subgroups.

Finally, the effect of number and type of subgroups on team performance and cooperation tends to change over *time* (Jehn & Bezrukova, 2010). Repeated (sub)group interactions may allow members to surmount their stereotypes and categorizations, diminishing the effects of faultlines on group processes (e.g. Harrison, Price, Gavin, & Florey, 2002; Jehn, Northcraft, & Neale, 1999). Participants generally cooperate more in a multi-trial game than in a one-trial game as it allows for group members to learn and understand the advantages and disadvantages associated with cooperation and defection (cf. goal expectation theory of Pruitt

& Kimmel, 1977) and build trust. Future research might be geared towards the set-up of repeated rounds crossed-groups social dilemma games with (bogus) feedback about (sub)group members' decisions to better capture (sub)group dynamics over time and the mediating mechanisms that are in play. In combination with longitudinal field research in organizations undergoing a merger, an alliance this would allow to assess over-time effects of faultlines in several phases of the organizational and (sub)group change processes.

Contributions to the leadership literature

For group leaders and their organizations it is desirable to increase employees' cooperation levels in all heterogeneous groups, regardless of their composition. Because strong faultlines divide these workgroups into separate subgroups and cause dysfunctional group processes (Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson, Joshi, Erhardt, 2003; van Knippenberg & Schippers, 2007), the question is how to attenuate the negative effects of these faultlines and how to deal with subgroupings.

Despite the increasing prevalence of faultline-based groups in the workforce, and the potential of leadership to capitalize on the positive effects of diversity, to date *this connection has remained relatively unexplored*. In this dissertation, we integrated findings from faultline and diversity literature (e.g. Lau & Murnighan, 1998; Jehn & Bezrukova, 2010) with theory on charismatic and visionary leadership (e.g. Bass, 2008), inter-group leadership (e.g. Pittinsky & Simon, 2007), and social identity processes in leadership (e.g. Hogg, 2001; Hogg & van Knippenberg, 2003; Haslam, Reicher, & Platow, 2011) to investigate the effects of visionary leadership and leader affiliation on group members' cooperation levels in a faultline-based group.

To date, research has had limited attention for *leadership across subgroups* (Pittinsky & Simon, 2007) and the connection between *group faultlines and leadership* (Kunze & Bruch, 2010; Rico et al., 2012), although the presence of a leader can determine whether diversity positively or negatively affects team functioning (Joshi & Roh, 2009; van Knippenberg et al., 2004; van Knippenberg & Schippers, 2007). Also, the impact of leadership on cooperation in nested- and crossed-groups social dilemmas has remained unexplored.

Our study is one of the first that provides a test of the effects of visionary leadership and leader affiliation on cooperation levels in a heterogeneous faultline-based group, where members need to deal with a crossed-groups social dilemma due to subgroupings. We showed that a visionary leader who deactivates the faultline via a superordinate goal - and thus minimizes subgroup categorization tendencies – has clear potential to increase cooperation levels and to minimize defection patterns in this group. The presence of a visionary leader could be considered as a context that allowed the superordinate goal to thrive better (cf. Crisp, Turner, & Hewstone, 2010). The finding that the visionary leader promoted stronger group identification, was in line with previous research (see Kark, Shamir, & Chen, 1993) and showed the potential of a leader's vision for the future of the group to enhance feelings of identification, connection, and involvement with other group members, regardless of their affiliation (see also Reicher, Haslam, & Hopkins, 2005; Shamir, House, & Arthur, 1993). In this study, the (subgroup) affiliation of the leader had no effect on cooperation levels.

Future research

First, a fruitful avenue for future research would be to investigate in a follow-up vignette study or lab experiment the effects of leader vision - in combination with faultline

(de)activation via a superordinate goal - by comparing cooperation levels in the faultline-based group under a visionary leader to those under another type of leader (for example transactional leadership), or to cooperation levels under a leader with no vision. Measuring cooperative behavior as a (Likert-) scaled outcome variable – rather than as a binary categorical variable – will increase power to estimate this three-way interaction. Data are then analyzed with the repeated-measures ANOVA procedure, instead of with the Generalized Estimating Equations procedure. The design of this study allows to investigate the specific effect of leader vision and relate it to cooperation levels in the faultline-based group.

In a next phase, we could investigate leader vision in a *field experimental* setting, where group members relate to a leader in position, have inter(sub)group contacts and potentially observe the vision's effects on beneficiaries. Followers will be more affected by a leader's vision if they have beneficiary contacts that expose them to the concrete effects of the leader's vision (Grant, 2012; Grant et al., 2007). And, to enhance inter(sub)group relationships in faultline-based groups, promoting positive inter(sub)group contact is essential (Allport, 1954; Polzer et al., 2006), preferably combined with group members working together on a superordinate goal to decrease inter(sub)group bias (Gaertner et al., 2000; Sherif, Harvey, White, Hood, & Sherif, 1961).

Second, future research could investigate the effect of leader subgroup affiliation in relation to the *status of the subgroups*. Prior studies showed that low-status groups were more concerned with a leader's premerger group affiliation than high-status groups. (Jetten, Duck, Terry, & O'Brien, 2002). Consequently, an in-subgroup affiliated leader might be more effective to increase cooperation of in-subgroup members toward the MO group (where the in-subgroup is a lower status group), whereas the leader's out-subgroup affiliation might better address the concerns of out-subgroup members in the MI group (where the out-

subgroup is a lower status group). On the other hand, when the leader would stress equality of the subgroups - assuaging concerns of ingroup favoritism – members might be less preoccupied by the leader's subgroup membership (Jetten et al., 2002). Future research would benefit from the investigation of these different contingencies between leader vision, affiliation, and subgroup composition to improve our understanding of effective inter(sub)group leadership in faultline-based groups.

Third, when introducing a subgroup affiliated leader in a faultline-based group, this leader will always remain more representative for one subgroup than for the other, unless he has mutual affiliations with both subgroups. A *boundary-spanning leader*, because of his strong links and significant interactions with both in-subgroup and out-subgroup members, may have the ability to transform subgroup interest and detrimental competition between subgroups into collaboration and cooperation that optimizes inter-subgroup performance (Hogg, van Knippenberg, & Rast, 2012). Future research should look into the effects of introducing a boundary spanning leader in faultline-based groups.

METHODOLOGICAL CONTRIBUTIONS AND LIMITATIONS

Next to the theoretical contributions, this dissertation made some important methodological contributions as well.

Methodological contributions

First, we developed a new game theoretic paradigm to study cooperative decision-making in heterogeneous groups with subgroups, where members are confronted with conflicts of interest in crossed-groups social dilemmas. Previous games investigated either inter-group cooperation between a separated ingroup and outgroup, or intragroup cooperation with

subgroups nested in a homogeneous group. In the Crossed-Groups Social Dilemma game, we modeled an ingroup subgroup and an outgroup subgroup in a heterogeneous group. This significantly extends the possibilities to simulate and investigate decision-making in diverse groups. Measuring cooperation levels repeatedly in different group compositions generated choice patterns and allowed to determine which composition would yield the most cooperation. To date, the impact of group composition on cooperative decision-making in social dilemmas is scarcely researched.

Second, we conducted five experimental studies, of which two were aimed at replicating the established effects of social value orientation (Paper 1) and faultline (de)activation (Paper 2). As such, we gained a significant total sample size (n = 1418), and we can be confident about the robustness of our findings.

Third, we ensured the reliability and validity of the vignette that was used, in several ways. We checked the involvement and commitment of the participants with an open-ended question, asking them to motivate their choice to limit production or to continue to produce at the same level. The answers to this question also allowed to check participants' understanding on the content of the vignette (cover story). In addition, we included a check on participants' understanding of the pay-off matrix and the group composition. All participants comprehended that the 10-p. group of managers consisted of either 7 in-subgroup managers and 3 out-subgroup managers (in the MI group), or of 3 in-subgroup managers and 7 out-subgroup managers (in the MO group). The few participants that did not comprehend the pay-off matrix were excluded from further analyses. Also, the use of different populations for our studies - with both psychology and economics/business students - and the fact that the obtained results were similar in these populations, strengthened reliability claims.

Methodological limitations

Although this dissertation has made several theoretical and methodological contributions, there are also a number of methodological limitations to be addressed.

The *exploratory mediation analyses* we conducted with the PROCESS procedure of Hayes (2013) were limited in two ways. First, we analyzed the effects of the first group composition in which participants made their choice - in either the MI group or the MO group - on cooperation levels. This procedure eliminated the repeatedness from the design which may yield different results than when we conducted the mediation analysis on group composition as a within-subjects factor. However, because the current statistical techniques do not allow yet to conduct the analysis with clustered data (time in individual) and a binary outcome variable in the model, this procedure was most viable to gain (preliminary) evidence on the relationships between group composition, identification, cooperative expectations, and cooperation. Even more so, this procedure is to be preferred above the causal steps strategy of Baron and Kenny (1986), which shows some significant limitations and is no longer commonly accepted. The most serious criticism relates to the fact that inferences about the indirect effect should be based on an estimate of the indirect effect ab, not on the outcome of a set of hypothesis tests about a and b separately (Hayes, 2013).

Second, group members' identification and cooperative expectations were measured after they had made a cooperative and/or competitive choice. Clearly, these choices might have influenced the reports of participants' perceptions and can be linked to post-hoc justification (Messé & Sivacek, 1979). Also, we should be cautious about making causal inferences since the cause did not precede the effect in time and alternative causal explanations may be in place. Nevertheless, the measurement of perceptions after the choice and not after the manipulation was a deliberate strategy as we wanted to prevent that these explicit measures -

where items were sometimes framed in line with the manipulation - could confound the manipulation or even overrule it.

Another methodological limitation of this research relates to the use of the *experimental game as research method*. On the one hand, experimental games have been very popular research tools for a variety of reasons. They yield precise behavioral measures of the concepts under study, as opposed to questionnaire measures, and are less sensitive to social desirability. They also provide the means to formally describe the type of social interdependence one is interested in and are relatively easy to administer (Pruitt & Kimmel, 1977). On the other hand, the gaming paradigm has been criticized for making too much abstraction of real life situations in which group members usually know each other, are able to exchange information or to communicate about their goals or motives. Also, this method of experimental research mostly uses student samples, which may raise questions about the external validity or generalizability of findings (Nemeth, 1972; Shadish, Cook, & Campbell, 2002; van Lange, Joireman, Parks, & Van Dijk, 2013).

Nevertheless, whether the experimental setting and procedure resemble phenomena that occur in the real world is secondary to "experimental realism", where the experimental setting and procedure capture the intended essence of the constructs of interest (Colquitt, 2008). This realism allows to establish valid causal relationships, which is most important in scientific research, and for which the experimental method is most suitable (Mook, 1983).

In addition, several meta-analyses (Anderson, Lindsay, & Bushman, 1999; Cohen-Carash & Spector, 2001) have shown that there is a high degree of generalizability from the lab to the field. In other words, we may trust that the results of highly controlled experimental studies can be replicated in the field. To reinforce this claim, we believe the most important strategy

is to engage in "a full-cycle approach" to conducting research (Chatman & Flynn, 2005). This research strategy combines observation of naturally occurring phenomena with manipulation-based research settings to establish the power and generality of these phenomena along the way. We cannot automatically assume that field research is better apt to avoid the problems of relying on one methodological approach, or that the results obtained with a field research method are more valid than those from experimental research. Moreover, problems such as social desirability with self-reported questionnaire measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), the measurement of intentions and not actual behavior (Colquitt, 2008), the unmeasured variables problem (James, 1980), and flawed causality inference (Shadish et al., 2002) are typically associated with field research.

Post-doc research

To address the concern with generalizability and the potential limitations of the experimental research method, we also conducted a *field study*, aimed at testing the results from our experiments in the field. We surveyed employees and team leaders (n = 215) in two large healthcare organizations undergoing a merger, giving rise to newly composed teams. We investigated the effect of faultline activation (the extent to which team members perceive subgroups) and faultline strength (the extent of a (demographic) alignment across members within a group) on individual cooperation levels. Cooperation was measured as team members' organizational citizenship behavior toward other team members (OCB-I) and toward their post-merger organization (OCB-O), and as perceived conflict in the team (task, process, and relationship). In the same line of the experimental studies, we studied whether this relationship was moderated by social value orientation, social categorization processes (identification with the subgroups and with the team), and/or leadership type (vision and prototypicality of the leader). We obtained multiple source data as team managers reported on

the outcome measures of organizational citizenship and conflict with the team managers, and team members reported on the predictor variables.

This study was set-up as a longitudinal research project of two waves with a time lag of one year, to learn how the proceeding of the process of merger might have an impact on the relationships under investigation. We collected data for wave 1 during the course of our PhD and will collect the wave 2 data in 2014. The data of wave 1 are currently being analyzed and cannot yet be integrated in this doctoral dissertation.

We will also collect additional data in organizations, by means of a *field experiment*. This procedure has the benefits of random assignment, experimental manipulation, and maintaining levels of experimental control while simultaneously strengthening claims of external validity and the generalizability of results (Cárdenas, 2000; Shadish et al., 2002). Also, expanding the results of an investigation under closely controlled conditions to include interactions between larger groups with more meaningful group identities and boundaries makes it more pertinent to real-world situations.

MANAGERIAL CONTRIBUTIONS

This dissertation contributes not only to theory and methodology, but also to managerial practice. In this section, we discuss a number of managerial contributions and implications, integrated from our three empirical studies.

Composition of workgroups

Insights from the present studies have implications for organizations. Employees who work simultaneously with members of their ingroup and with members of an outgroup are likely more willing to cooperate when their cooperation profits mainly members of their ingroup.

They will cooperate more if their group consists of a majority of in-subgroup members than when it consists of a minority of in-subgroup members (and their cooperation mainly profits out-subgroup members). Similarly, they might cooperate more in groups that merely consist of in-subgroup members than in heterogeneous groups that consist of both ingroup and outgroup members.

Prosocial and proself group members

However, not all employees will act alike when confronted with the same situation: The present results suggest that employees with a prosocial SVO are more willing to show cooperative behavior in heterogeneous groups, not only toward in-subgroup members, but also toward the out-subgroup. Proselves, on the other hand, are much more likely to show less cooperation toward their in-subgroup ánd out-subgroup. For organizations this implies that the same inter-group situation can elicit fundamentally different responses from different employees, depending on their social value orientation.

Clearly, team management will need to be diversified and adapted to (subgroups of) team members, with attention for the composition of the team. A majority of prosocials in the team could be advantageous, because consistent contributors can act as a role model to other members and create an implicit group norm of cooperation (Weber & Murnighan, 2008). However, a minority of proselves can be more persuasive and influential than the co-operators, who tend to be ignored when in the minority. This because group members accord more weight to their messages than to those of co-operators (Steinel et al., 2009). Overall, proselves showed lower cooperation rates and preferred self-interest over cooperation with the group.

A longer-term solution to the cooperation on an organizational level would not only be the search for consistent co-operators displaying organizational citizenship behaviors, but more

so to garner broad support when they do emerge. These team members can effectively catalyze cooperation, even when other group members' inclinations are not prosocial, and often appear to benefit from their cooperative actions (Weber & Murnighan, 2008). Encouraging organizational citizenship behavior of employees will come to the benefit of individuals, teams, and the broader organization, and it carries potential to dissipate the negative effects of heterogeneous group composition.

Dealing with faultlines

Group heterogeneity and the presence of subgroups, due to a (strong) faultline, presents members with a crossed-groups social dilemma and poses some challenges for team management. We propose a threefold strategy to deal with faultlines and their effects on cooperation and (sub)group conflict. First, a team leader could assess the presence of (dormant) faultlines and the chances of them being activated. This involves gauging the objective demographic characteristics and individual attributes of team members, see if and how they align, and assess the contextual factors that might determine activation of faultlines (e.g. subgroup identification, status, intra-team trust, leadership). This should be a continuous process throughout group development, because the salience of subgroups and their identities might decrease or increase as the group matures, requiring flexible interventions.

Second, based on this assessment, managers could try to prevent faultline activation, using specific strategies in the initial phases of (sub)group development. In groups where a strong faultline arises this may be next-to impossible and in some cases undesirable. A team leader could avoid, however, that additional faultlines - based on other demographic characteristics - get stacked on top of this strong faultline, further increasing the faultline gap between subgroups.

Third, in the presence of activated faultlines, several interventions could be advanced to tackle the potential harmful effects on (sub)group processes and performance. A team leader could work on inter-subgroup biases by stimulating positive contacts between members of distinct subgroups, as a personalization strategy to move beyond subgroup differences. Bringing subgroups together and establishing common goals should unfold with respect for subgroup distinctiveness and identities, and demographic and subgroup related group tasks should be avoided via for example the cross-cutting of work roles (Rico et al., 2012). Team leaders should also mind subgroup size, ensuring that minorities' opinions and interpretations are as much respected and taken into account as those of majority subgroups.

Leadership

Leaders of heterogeneous (factional) groups need to deal with activated faultlines and subgroupings on a daily basis. During organizational changes and collaborations, such as mergers, alliances, and joint ventures, workgroups arise with members originating from different organizations or departments. The presence of a leader who motivates, supervises, and addresses relational and identity considerations can have a major impact on cooperation levels in these mixed groups. Reducing the salience of subgroups with a superordinate goal can be an effective strategy to increase group cooperation, when combined with visionary leader behaviors. Leaders need to communicate a clear, future-oriented vision for the group in line with the categorization of members as one group.

But rhetoric alone may not suffice. Establishing an inter-subgroup relational identity (cf. Hogg et al., 2012) via interactions with both subgroups, addressing mutual concerns, and especially the display of role behavior, is essential to increase considerations for and

cooperation with the larger group. Group members might not feel that strongly about the leader's affiliations with either subgroup, as long as he has a strong vision on the future of the group and the importance of collaborations. When delegating a leader to a newly formed factional group, management could opt for either an external visionary leader with no subgroup affiliations, an internal visionary leader with subgroup affiliations, or a visionary leader that ties into both subgroups. The latter one could balance identity concerns, related to the signature of the leader, and allow the leader's vision to capitalize on the positive effects of diversity and maximize cooperation with the factional group.

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SUMMARY

(in Dutch)

Teams worden steeds belangrijker in organisaties, voor besluitvormingsprocessen en productie (Bettenhausen, 1991; Ilgen, Major, Hollenbeck, & Sego, 1993; Kozlowski & Bell, 2003). De krachten verenigen via samenwerking in *teams*, om te komen tot creativiteit en sociale innovatie, levert bovendien een competitief voordeel op (Zaccaro, Marks, & DeChurch, 2012).

Door globalisering en toenemende internationalisering van organisaties, zijn teams nu meer *divers* dan vroeger (Li & Hambrick, 2005; Polzer, Crisp, Jarvenpaa, & Kim, 2006; Zaccaro et al., 2012). Bovendien ontstaan na veranderprocessen - zoals fusies en acquisities, allianties, samenwerkingsverbanden en interne herstructurering – nieuw samengestelde teams, waarbij werknemers uit verschillende organisaties en/of afdelingen nu samen gegroepeerd worden. In deze heterogene teams vormen zich dan (minstens) twee *subgroepen.* Teamleden vertegenwoordigen twee (of meer) sociale entiteiten en categoriseren leden van hun eigen subgroep als *'in-groep'* en beschouwen de andere subgroepsleden als *'out-groep'*.

Verschillende *uitdagingen* ontstaan voor dergelijke heterogene teams. Ten eerste, zijn de aanwezige subgroepen veelal ongelijk in grootte en vormen ze bijgevolg een minderheid of meerderheid (Lau & Murnighan, 1998). Deze samenstelling van het team zal een impact hebben op de motivatie van leden om al dan niet bij te dragen tot (het belang van) hun team. De teamleden worden namelijk geconfronteerd met een *gekruiste-groepen sociaal dilemma*: verder blijven handelen in hun eigen belang of dat van hun vorige team – dat nu slechts een subgroep vormt in het nieuwe team – of handelen in het belang van ieder en bijdragen tot het nieuw samengesteld team? Kiezen voor eigenbelang brengt steeds het meest op voor het individu op de korte termijn, ongeacht wat de andere teamleden beslissen, maar alle teamleden zijn beter af indien iedereen samenwerkt.

Ten tweede, ontstaan er *inter-subgroepprocessen* in het team (Carton & Cummings, 2012): teamleden evalueren hun eigen 'in-subgroep' gunstiger dan de 'out-subgroep' (Gaertner et al., 2000; Hewstone, Rubin, & Willis, 2002), waardoor ze vaak minder zullen bijdragen tot de belangen van het team, in vergelijking met de belangen van hun subgroep en hun individueel belang (Wit & Kerr, 2002).

Organisaties en hun managers staan voor de uitdaging om de leden van deze heterogene (nieuw samengestelde) teams te motiveren om bij te dragen tot het team en zo het sociale dilemma op te lossen. Samenwerking gaat niet enkel ten voordele van het team, maar is ook in het belang van de organisatie in zijn geheel. *Doel van dit doctoraatsonderzoek* is de identificatie van individuele en contextuele antecedenten van samenwerking in dergelijke heterogene (nieuw samengestelde) teams, waar leden – in aanwezigheid van subgroepen – geconfronteerd worden met een gekruiste-groepen sociaal dilemma.

In het *eerste hoofdstuk*, geven we een overzicht van de sociaal dilemma literatuur en bevindingen uit de faultline en diversiteitsliteratuur, om zo het theoretisch kader op te bouwen op het kruispunt van beide onderzoeksdomeinen. We focussen ook op de rol van leiderschap om samenwerking te motiveren in de heterogene (nieuw samengestelde) teams. We definiëren de onderzoeksdoelen van dit doctoraat en lichten de verschillende experimentele studies toe die we hebben uitgevoerd.

In het *tweede hoofdstuk*, beschrijven we de ontwikkeling van het gekruiste-groepen sociaal dilemma (CSD) game. Dit game laat toe om besluitvorming te bestuderen in heterogene (nieuw samengestelde) teams, in aanwezigheid van twee (of meer) subgroepen. In twee

empirische studies valideren we het CSD game en tonen we het effect van groepssamenstelling aan: teamleden werken meer samen indien hun in-subgroep een meerderheid vormt in het team dan wanneer de eigen subgroep in de minderheid is (parochiale samenwerking). Identificatie met de groep en verwachtingen over samenwerking van de andere (sub)groepsleden blijken te fungeren als tussenschakel in deze relaties (mediatie). We bestuderen het effect van sociale waardeoriëntatie als antecedent van samenwerking in heterogene (nieuw-samengestelde) teams. De resultaten tonen dat individuen met een prosociale waardeoriëntatie consistent samenwerken (cooperation), ongeacht de samenstelling van het team, terwijl een proself waardeoriëntatie resulteert in consistent niet-samenwerken (defection).

In het *derde hoofdstuk*, onderzoeken we het effect van *faultline deactivatie* als situationele antecedent van coöperatieve besluitvorming in heterogene (nieuw samengestelde) teams. 'Faultlines' zijn "hypothetische scheidingslijnen die een team opsplitsen in twee (of meer) subgroepen op basis van één of meerdere kenmerken" (Lau & Murnighan, 1998, p. 328), zoals pre-fusie team lidmaatschap. Deze scheidingslijnen resulteren vaak in meer team conflict, verminderde samenhang, performantie, en tevredenheid van het team (Barkema & Shvyrkov, 2007; Choi & Sy, 2010; Jackson, Joshi, & Erhardt, 2003; Kerr & Tindale, 2004; Lau & Murnighan, 2005; Thatcher, Jehn, & Zanutto, 2003). Bijgevolg is het belangrijk om de subgroepsvorming die gepaard gaat met deze scheidingslijnen te voorkomen en de (negatieve) effecten ervan te verminderen. De resultaten van twee empirische studies tonen aan dat faultline deactivatie - via het stellen van een gemeenschappelijk doel voor het team - ervoor zorgt dat teamleden in hun beslissing tot (al dan niet) samenwerken minder beïnvloed worden door de (sub)groepssamenstelling. Er zijn enerzijds meer teamleden die consistent gaan samenwerken, ongeacht de groepssamenstelling, maar er zijn anderzijds ook meer

teamleden die consistent niet samenwerken. Om dit laatste fenomeen te beperken is kan het van belang zijn om het gemeenschappelijk doel voor het team te combineren met andere managementstrategieën, zoals leiderschap.

In het *vierde hoofdstuk*, beschrijven we de impact van een visionaire leider, met een gemeenschappelijk groepsdoel, op samenwerking in heterogene (nieuw samengestelde) teams. Een leider met een lange-termijn visie voor de toekomst van het team kan teamleden mobiliseren om te investeren in het team en om te handelen in het belang van de groep (Bass, 2008; Ellemers, De Gilder, & Haslam, 2004; Reicher, Haslam, & Hopkins, 2005; Shamir, House, & Arthur, 1993). Gezien de heterogene samenstelling van het team met subgroepen, kan de affiliatie van de leider met één van deze subgroepen ook een effect hebben op de samenwerking met het team, waarbij een in-subgroep geaffilieerde leider waarschijnlijk meer invloed heeft dan een out-groep geaffilieerde leider (Bruins, Ellemers, & De Gilder, 1999; Haslam, Reicher, & Platow, 2011; van Knippenberg & Hogg, 2003; Van Vugt & De Cremer, 1999). Uit de resultaten van de empirische studie blijkt dat een visionaire leider de samenwerking in heterogene teams kan verhogen, ongeacht de samenstelling van het team. Bovendien zijn er onder een visionaire leider, in combinatie met het gemeenschappelijke groepsdoel, niet enkel meer consistent samenwerkende teamleden, maar ook minder teamleden die consistent niet samenwerken. De affiliatie van de leider met de in-subgroep of de out-subgroep heeft in deze studie geen impact op de samenwerking van teamleden.

Het *vijfde hoofdstuk* vat de theoretische, methodologische en praktische implicaties van dit doctoraat samen. De uitgevoerde studies leveren een bijdrage aan de literatuur over sociale dilemma's, over faultline en diversiteit, en over leiderschap. We bespreken deze bijdragen en doen suggesties voor toekomstig onderzoek in elk van deze domeinen. Ook de keuze voor de

experimentele methodologie met zijn voor- en nadelen komt uitvoerig aan bod. Tot slot worden de praktische implicaties van de onderzoeksresultaten voor managers en teamleiders die werken in heterogene groepen, in aanwezigheid van subgroepen, toegelicht.

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