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# Harvesting the Value in Diversity

*Examining the effects of diversity beliefs,  
cross-categorization, and superordinate identities  
on the functioning of diverse work groups*

ACADEMISCH PROEFSCHRIFT

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aan de Universiteit van Amsterdam  
op gezag van de Rector Magnificus  
prof. mr. P. F. van der Heijden  
ten overstaan van een door het college voor promoties ingestelde  
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Astrid Carlotta Homan  
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Promotoren:                    prof. dr. C. K. W. de Dreu  
    prof. dr. D. van Knippenberg

Faculteit der Maatschappij- en Gedragwetenschappen

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## VOORWOORD

Tijdens mijn studie communicatiewetenschap aan de Universiteit van Amsterdam werd mijn interesse voor de wetenschap gewekt. Op aanraden van mijn stagebegeleider Barbara van Knippenberg solliciteerde ik op een promotieproject over de effecten van diversiteit in groepen. Ik werd aangenomen en in 2001 begon ik met dit project bij de vakgroep Arbeids- en Organisationspsychologie aan de Universiteit van Amsterdam. In tegenstelling tot wat mensen vaak denken, is promoveren niet iets wat je alleen doet. Het schrijven van een proefschrift doe je misschien voor jezelf, maar zonder een gezellige en inspirerende omgeving zou het een onmogelijke opgave zijn.

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Astrid

Amsterdam, april 2006

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# CONTENTS

<b>Chapter 1</b> .....	<b>7</b>
DIVERSITY: AN INTRODUCTION	
Work Group Diversity and Group Functioning.....	8
<i>Conclusion</i> .....	11
The Categorization-Elaboration Model.....	11
<i>A Focus on Underlying Processes</i> .....	11
<i>The Potential Positive Effects of Diversity: How and When</i> .....	12
<i>Conclusion</i> .....	13
Diversity and Social Categorization.....	14
<i>Cross-Categorization</i> .....	18
<i>Superordinate Identity</i> .....	19
<i>Diversity Beliefs</i> .....	20
The Present Dissertation.....	21
Note.....	25
 <b>Chapter 2</b> .....	 <b>27</b>
INTERACTING DIMENSIONS OF DIVERSITY: CROSS-CATEGORIZATION AND THE FUNCTIONING OF DIVERSE WORK GROUPS	
Work Group Diversity and Group Functioning.....	28
The Present Study.....	31
Method.....	33
Results.....	37
Discussion.....	42
Notes.....	46
 <b>Chapter 3</b> .....	 <b>49</b>
BRIDGING FAULTLINES BY VALUING DIVERSITY: THE EFFECTS OF DIVERSITY BELIEFS ON INFORMATION ELABORATION AND PERFORMANCE IN DIVERSE WORK GROUPS	
Work Group Diversity.....	50
Diversity Beliefs.....	51
The Present Study.....	52
Method.....	54
Results.....	58
Discussion.....	62
Notes.....	67

---

<b>Chapter 4</b> .....	<b>69</b>
FACING DIFFERENCES WITH AN OPEN MIND: THE INFLUENCE OF OPENNESS TO EXPERIENCE AND SALIENCE OF SOCIAL CATEGORIES ON THE PERFORMANCE OF DIVERSE WORK GROUPS	
Work Group Diversity .....	70
Openness to Experience .....	71
Salience of Social Categories.....	72
Openness to Experience and the Salience of Social Categories .....	76
Method .....	77
Results.....	82
Discussion .....	87
Notes .....	96
 <b>Chapter 5</b> .....	 <b>97</b>
GENERAL DISCUSSION	
Summary of the Main Findings .....	97
<i>Salience of Social Categories</i> .....	98
<i>Seeing Value in Diversity</i> .....	98
<i>Interactions Between Category Salience and Seeing Value in Diversity</i> .....	99
Theoretical Implications and Contributions.....	100
<i>Social Category Salience</i> .....	100
<i>Seeing Value in Diversity</i> .....	102
<i>Interactions Between Category Salience and Seeing Value in Diversity</i> .....	104
Practical Implications and Contributions.....	105
<i>Salience of Social Categories</i> .....	105
<i>Seeing Value in Diversity</i> .....	105
<i>Interactions Between Category Salience and Seeing Value in Diversity</i> .....	107
Reflections and Directions for Future Research .....	107
<i>Method and Tasks</i> .....	107
<i>Variables of Interest</i> .....	109
<i>Conclusion</i> .....	111
 <b>Samenvatting</b> .....	 <b>113</b>
<b>References</b> .....	<b>123</b>
<b>Biography</b> .....	<b>139</b>

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## CHAPTER 1

### DIVERSITY: AN INTRODUCTION<sup>1</sup>

Work group diversity is a central aspect of organizational life. It is also a key concern for theory and practice in organizational behavior. Groups in organizations have become more diverse in terms of their demographic composition over the years and will continue to become more diverse in years to come (Jackson, 1991; Triandis, Kurowski, & Gelfand, 1994; Williams & O'Reilly, 1998). Additionally, organizations increasingly make use of cross-functional teams, thereby introducing more functional diversity in work groups. Because work group diversity may have positive as well as negative effects on group performance (e.g., Guzzo & Dickson, 1996; Milliken & Martins, 1996; Williams & O'Reilly, 1998), the question arises which processes underlie the positive and negative effects of diversity and how these processes should be managed in order to maximize team functioning and performance.

The importance of diversity can be illustrated by the enormous amount of popular references to diversity in the workforce. A search for books retrieved June 6, 2005 at amazon.com returns over 90,000 hits for 'diversity training,' including titles like "The diversity training handbook" and "Workplace diversity: A training guide for individuals and organizations." It thus seems that organizations struggle with diversity, and that there is a large demand for books with potential solutions. Of course, also in academia, the interest for diversity is eminent. Over the past 40 years, many researchers from many domains have examined the effects of diversity on group processes and performance (Williams & O'Reilly, 1998). Psychologists, economists, sociologists, anthropologists, education researchers, and organizational scholars have conducted laboratory and field studies examining group performance as a function of group composition in terms of gender, race, age, education, tenure, and personality variables (e.g., Allport, 1954; Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Blau, 1977; Hallinan & Smith, 1985; Harrison, Price, & Bell, 1998; LePine, 2003). As stated above, some authors have argued that diversity, when properly used, can be beneficial for organizations and teams and will ultimately increase team performance. This viewpoint is also known as the "value-in-diversity hypothesis" (Cox, Lobel, & McLeod, 1991). However, other researchers have reported evidence that diversity is



detrimental to group functioning (e.g., Brewer, 1979; Guzzo & Dickson, 1996; Jehn, Northcraft, & Neale, 1999; Messick & Mackie, 1989; Triandis et al., 1994). Based on this research it appears that diversity is a "double-edged sword, increasing the opportunity for creativity as well as the likelihood that group members will be dissatisfied and fail to identify with the group" (Milliken & Martins, 1996, p. 403).

Unfortunately, research on the positive and negative effects of work group diversity has largely developed in separate research traditions and an integrative theoretical framework to understand both the positive and the negative effects of diversity on group performance is missing (Guzzo & Dickson, 1996; Kozlowski & Bell, 2003; Williams & O'Reilly, 1998). Indeed, even though contemporary models of diversity seem able to explain the positive or negative effects of diversity as they occur, they are less able to predict *when* they will occur. As a case in point, meta-analyses have been unable to consistently link diversity to performance (Bowers, Pharmed, & Salas, 2000; Webber & Donahue, 2001; also see Wood, 1987).

To advance our understanding of the effects of work group diversity on group performance, van Knippenberg, De Dreu, and Homan (2004) introduced a model of the processes underlying the positive and negative effects of diversity. This new model opens up new directions in research on diversity and group performance. Some of the theoretical considerations underlying this model formed the starting point of the present dissertation, in which I wanted to test some important and new ideas on how to realize the potential of diversity within groups. I will argue and show that some of the widespread ideas in diversity research, namely that (a) elaboration processes are always hindered by category salience and (b) groups should be homogeneous on all dimensions except task-relevant ones, are not necessarily true. In doing this I will examine two important moderators that may determine when diversity will increase or decrease performance. In this introduction, I will start with a brief review of the state of the art in diversity research and will try to indicate voids in the literature on diversity up till now. Then I will introduce the central ideas of this dissertation and discuss how I tested these ideas by giving a brief overview of the empirical chapters.

### **Work Group Diversity and Group Functioning**

Diversity refers to differences between individuals on any attribute that may lead to *the perception that another person is different from the self* (e.g., Jackson, 1991; Triandis et al., 1994; Williams & O'Reilly, 1998). In principle, diversity

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thus refers to an almost infinite number of dimensions, from age to nationality, from religious background to functional background, from task skills to relational skills, and from political preference to sexual preference. In practice, however, diversity research has mainly focused on gender, age, race/ethnicity, tenure, educational background, and functional background (Milliken & Martins, 1996; Williams & O'Reilly, 1998). A number of researchers have proposed that the most important difference underlying diversity dimensions is that between *social category diversity* – differences in readily detectable attributes such as sex, age, and ethnicity – and *informational/functional diversity* – differences in less visible underlying attributes that are more job-related, like functional and educational background (Jackson, 1991; Jehn et al., 1999; Milliken & Martins, 1996; Tsui, Egan, & O'Reilly, 1992).

In a comprehensive review of the literature, Williams and O'Reilly (1998) identified two main traditions in research in work group diversity and performance: The *social categorization* perspective and the *information/decision making* perspective. The social categorization perspective holds that similarities and differences are used as a basis for categorizing the self and others into groups. The resulting categorizations distinguish one's own ingroup from one or more outgroups. People tend to like and trust ingroup members more than outgroup members and so tend generally to favor ingroups over outgroups (Brewer, 1979; Tajfel & Turner, 1986; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Consistent with research on similarity/attraction (Williams & O'Reilly, 1998), this means that work group members are more positively inclined towards their group and the people in it to the extent that fellow group members are similar rather than dissimilar to the self. Moreover, categorization processes may promote subgroup categorization (i.e., create "us" and "them" distinctions within the group), and give rise to problematic inter-subgroup relations. As a result, members of heterogeneous teams may indeed experience more relationship conflict (Jehn et al. 1999; Pelled, Eisenhardt, & Xin, 1999), have lower commitment (Riordan & Shore, 1997; Tsui et al., 1992), experience lower group cohesion (O'Reilly, Caldwell, & Barnett, 1989), are more likely to turn over (Wagner, Pfeffer, & O'Reilly, 1984), and be less satisfied than members of homogeneous teams (Wharton & Baron, 1991). Furthermore, diversity has been shown to negatively affect team climate (e.g., Alagna, Reddy, & Collins, 1982; Chatman, Polzer, Barsade, & Neale, 1998; Tsui & O'Reilly, 1989) as well as overall group functioning (e.g., Ancona & Caldwell, 1992; Gruenfeld, Mannix, Williams, & Neale, 1996; Harrison et al., 1998; Simons, 1995; Triandis, Hall, & Ewen, 1965). Together, these processes are proposed to result in higher

overall group performance when groups are homogenous rather than heterogeneous (for evidence, see Jehn et al., 1999; Murnighan & Conlon, 1991; Simons, Pelled, & Smith, 1999).

The information/decision making perspective arrives at quite different predictions, and holds that diverse groups should outperform homogeneous groups. The idea is that diverse groups are more likely to possess a broader range of task-relevant knowledge, skills, and abilities that are distinct and non-redundant, and to have different opinions and perspectives on the task at hand. This not only gives diverse groups a larger pool of resources, but may also have other beneficial effects. The need to reconcile conflicting viewpoints may force the group to more thoroughly process task-relevant information, and may prevent the group from opting too easily for a course of action on which there seems to be consensus. In addition, exposure to diverging and potentially surprising perspectives may lead to more creative and innovative ideas and solutions (Ancona & Caldwell, 1992; Bantel & Jackson, 1989; De Dreu & West, 2001). Corroborating this analysis, some studies found an association of diversity with increased task conflict (Jehn et al., 1999; Pelled et al., 1999) and higher performance and innovation (Bantel & Jackson, 1989; Cox et al., 1991; Jehn et al., 1999).

In an attempt to integrate these diverging perspectives and reconcile the inconsistent findings obtained in previous investigations, van Knippenberg, De Dreu et al. (2004) argued that different processes underlying the effects of diversity should be taken into account. Social categorization theories (originating from a social identity approach; see Hogg & Abrams, 1988; Tajfel & Turner, 1986; Turner, 1985; Turner et al., 1987) predict that categorizations are more likely to be used to the extent that category markers are readily detectable, such as in the case of differences in sex and race (Fiske, 1998; cf. surface-level diversity; Harrison et al., 1998). Moreover, categorizations that are more cognitively accessible (e.g., well-learned categorizations such as sex, age, and ethnicity) are more likely to be used (van Knippenberg & Dijksterhuis, 2000). Accordingly, one may argue that subgroup categorization processes should be more likely to occur for readily observable diversity characteristics such as sex and ethnicity (i.e., social category diversity; cf. surface-level diversity, Harrison et al., 1998) than for more "hidden" dimensions of diversity such as functional or educational background (cf. deep-level diversity; Harrison et al., 1998). The positive effects of diversity, in contrast, may be argued to be more strongly linked to differences in information, expertise, viewpoints, and so forth than to readily observable attributes that are less task-related.

Despite the intuitive plausibility of this argument, previous research has not been able to demonstrate consistent associations between either social category diversity or informational diversity on the one hand and team functioning on the other. Some studies have yielded evidence that social category differences are negatively associated with team functioning (e.g., Alagna et al., 1982), while others revealed positive performance effects of demographic differences (e.g., Cox et al., 1991). Likewise, some research has shown positive effects of informational differences on team functioning (e.g., Jehn et al., 1999), while other studies have found negative performance effects of differences in job-related attributes (e.g., Simons et al., 1999). Moreover, recent meta-analyses by Bowers et al. (2000) and Webber and Donahue (2001) failed to support the proposition that diversity type moderates the effects of diversity on performance.

#### *Conclusion*

There is a considerable body of empirical research on the effects of diversity in organizational teams and laboratory groups. These studies have provided substantial evidence that variations in group composition can have important effects on group functioning. However, this research still has difficulties to predict precisely how and when differences lead to negative or positive outcomes. It is important to understand in more detail how different types of diversity affect group processes and performance, and this is difficult based on the theoretical frameworks described above. Therefore, it is important to shift the attention beyond the idea that diversity has direct effects on work group outcomes and to focus on the mediating and moderating processes that affect the relationship between diversity and team functioning. In the following sections I will discuss some new insights in diversity research and I will introduce a theoretical framework that is better capable of predicting and describing the effects of diversity in teams. First, I will discuss how a focus on underlying processes will help us in predicting the positive and negative effects of diversity. Second, I will argue that the potential positive effects of diversity are a result of the thorough elaboration of task-relevant information. Finally, I will propose that diversity will therefore be especially conducive to performance in tasks with an informational decision-making component in which elaboration of information is necessary to perform well.

### **The Categorization-Elaboration Model**

#### *A Focus on Underlying Processes*

Previous research and theory thus have not been able to adequately

account for the positive and negative effects diversity in work groups can have, or to integrate the social categorization and information/decision making perspective in a satisfactory way. By reconceptualizing and integrating information/decision making and social categorization perspectives on work group diversity and performance, van Knippenberg, De Dreu et al., (2004) tried to address this problem. Their Categorization-Elaboration Model also points to important mediator and moderator variables that have typically been ignored in diversity research. Instead of merely focusing on different diversity dimensions and/or different effects of diversity, we focus on the underlying *processes* by which diversity has its effects on team functioning. Building on the information/decision making perspective, it is proposed that diversity within a group is positively related to the *elaboration of task-relevant information and perspectives* within the group – that is, to group members' exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task. Consistent with the social categorization perspective in diversity research, it is proposed that the extent to which differences between group members engender social categorization is largely dependent on the salience of social categories. Integrating the information/decision making and social categorization perspectives, van Knippenberg, De Dreu et al. (2004) proposed that elaboration and social categorization processes interact, in such a way that the intergroup biases that may result from social categorization disrupt elaboration of task-relevant information and perspectives.

*The Potential Positive Effects of Diversity: How and When*

Part of the potential advantage of diverse groups over homogeneous groups lies in the greater pool of task-relevant information and expertise diverse groups may have at their disposal. As stated above, the processes engendered by diversity are the key to realizing diversity's potential, because it is not the availability of information per se, but the use of this information in group task performance that lies at the basis of diverse groups' potentially superior performance. Accordingly, van Knippenberg, De Dreu et al. (2004) propose that *elaboration of task-relevant information* is the primary process underlying the positive effects of diversity on performance. Building on the conceptualization of groups as information processors (Hinsz, Tindale, & Vollrath, 1997), elaboration is defined as the exchange of information and perspectives, individual-level processing of the information and perspectives, feeding back the results of this individual-level processing into the group, and discussion and integration of its implications. It is this elaboration, then, that may lead diverse groups to outperform more homogeneous groups. Consider,



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for example, a hospital that relies on cross-functional teams consisting of surgeons, radiologists, anesthetists and surgical nurses to perform surgery. High quality performance requires that team members use their own expertise to inform the other team members about the different issues involved in the specific surgery (e.g., how long the operation will take, what kind of surgical instruments are needed, where the fracture is), carefully process the information, opinions, and perspectives introduced by other team members to understand the implications for their own area of medical expertise, feed these implications back to the team, and provide the best possible care for the patient through an integration of the different perspectives.

A focus on elaboration of task-relevant information as the primary process underlying the positive effects of diversity implies that in order for the team to perform well it is necessary for the team members to elaborate upon their diverse perspectives. The potential positive effects of diversity are more likely to come out when performance requires information processing, creative and innovative idea generation, problem solving, and/or high quality decision making. Therefore, performance on complex and non-routine information processing tasks should especially benefit from diversity. Indeed, such tasks may be expected to encourage more elaborate information processing in the first place (Stewart & Barrick, 2000; Van De Ven, Delbecq, & Koenig, 1976), which sets the stage for the potentially positive effects of diversity of information and perspectives. In contrast, there would seem to be little reason to expect that simple and routine tasks (e.g., repetitive production tasks) typically invite extensive information processing. In fact, elaboration of task information in routine tasks could even have counterproductive effects, because it may result in abandoning otherwise reasonable work procedures (De Dreu & Weingart, 2003a; Schwenk, 1990). Sustaining this reasoning, Jehn et al. (1999) found that informational diversity was positively related to performance when task complexity was high rather than low. Along similar lines, the meta-analysis by Bowers et al. (2000) suggests that diverse groups may outperform homogeneous groups on difficult tasks, whereas homogeneous groups might in fact outperform diverse groups on more simple tasks.

### *Conclusion*

A focus on underlying processes in predicting effects of diversity can help to explain and predict the seemingly inconsistent effects of diversity. Diversity can either elicit subgroup categorization processes, which may deteriorate team functioning, or elicit information elaboration processes, which may enhance team functioning. The potential positive effects of diversity are thus driven by a

thorough elaboration of task-relevant information. Whether elaboration of information will indeed increase performance is, to a large extent, dependent on the type of task that diverse groups are executing. Tasks that require elaboration of information are more likely to benefit from informational diversity. Because the center of attention of the present dissertation is on harvesting the potential positive effects of diversity, I decided to focus on complex, non-routine tasks that require information processing, high quality decision making, and/or creative and innovative idea generation in all reported experiments. Of course, performance and team functioning of groups working on these kinds of tasks are also vulnerable to detrimental group processes resulting from subgroup categorization. The task conditions created in all experiments could therefore potentially benefit as well as harm team functioning.

In the following section I will take a closer look at the interaction between social categorization and information elaboration processes, and I will introduce a key issue in predicting the effects of diversity, namely that social categorization processes may disrupt the potential positive effects of diversity when they hinder the elaboration of task relevant information. Below I will discuss how category salience may elicit subgroup categorization and intergroup bias, followed by an overview of faultline theory. Then I will propose some important moderators in predicting whether social category salience will indeed hinder information elaboration.

### **Diversity and Social Categorization**

Within diverse teams subgroup categorization might elicit intragroup processes that disrupt elaboration of information. Whether diverse groups will experience subgroup categorization processes is determined by the salience of social categories within the group. Among other things, the salience of subgroups is influenced by the *comparative fit* of the subgroup-categorization (Oakes, Haslam, & Turner, 1994; Turner et al., 1987). The comparative fit of a categorization refers to the extent to which the categorization provides a good reflection of similarities and differences between people. The more a categorization results in high within-category similarity and high between-category differences, the higher its comparative fit, the more likely the categorization is to be salient, and the more people will be inclined to perceive the group as consisting of subgroups (i.e., subgroup categorization; Brewer, 2000; Brewer & Gaertner, 2001; Hewstone, Rubin, & Willis, 2002). Think about, for example, transnational teams in which members come from several

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different countries. Consistent with the principle of comparative fit, Earley and Mosakowski (2000) argued that in a team consisting of many different nationalities, categorization would not be easy, if at all possible, whereas in teams consisting of two nationalities nationality would be more salient. Therefore, categorization in same-nationality subgroups would be easier in teams consisting of two nationalities than in teams consisting of many nationalities (also see Lau & Murnighan, 1998). Their results indeed showed that teams consisting of people of only two nationalities reported more subgroup categorization on perceptual-attitudinal measures than teams incorporating several different nationalities and homogeneous teams. Below, I will first describe how an alignment of multiple diversity dimensions increases subgroup salience. I will then focus on how the salience of social categories might be decreased and propose that the presence of salient social categories does not always result in detrimental group processes.

The notion of comparative fit has recently been given more attention in organizational research in terms of *faultline* theory. Teams are often diverse on more than one dimension, and these differences can relate to each other in different ways. When those differences are highly correlated with each other, comparative fit is high and this increases the salience of social categories. Consistent with the social categorization perspective, it has been proposed that the more differences converge with each other the more groups will experience the negative effects of diversity (i.e., when the team has a diversity faultline; e.g., Brewer, 1995; Bezrukova, Jehn, Zanutto, & Thatcher, 2005; Jehn, Bezrukova, & Thatcher, in press; Lau & Murnighan, 1998; Jehn, 1999; Pelled et al., 1999; Thatcher, Jehn, & Zanutto, 2003). Along similar lines, Hambrick, Li, Xin, and Tsui (2001) argue that "compositional gaps" that occur along multiple demographic dimensions in joint venture management teams may negatively influence group functioning. Support for this idea is provided by a study by Lau and Murnighan (2005) in which they found that student groups with strong faultlines experienced lower group satisfaction, psychological safety, and group learning. Also, Dyck and Starke (1999) show that underlying the formation of breakaway organizations (i.e., groups that leave existing organizations to form new organizations) are processes that strengthen subgroups, which result from increased alignment of subgroup members. Additionally, Phillips, Mannix, Neale, and Gruenfeld (2004) found that when informational differences were aligned with social category differences, four-person groups reported less information elaboration. Based on the above studies it could thus be concluded that alignment of multiple diversity



dimensions always has negative effects on group functioning.

However, several authors have recently starting to question the idea that an alignment of diversity characteristics is necessarily a bad thing. For example, Jehn et al. (in press) propose that the type of faultline is important when predicting the effects. They distinguish between information-based faultlines and social-category faultlines, and predict that these different types of faultlines will have different effects on several outcome variables. In a first examination of the differential effects of these different types of faultlines, Bezrukova et al. (2005) found that information-based faultlines are related to high levels of individual performance outcomes while social-category faultlines are related to low levels of individual performance outcomes.

Although this recent focus on potential positive effects of faultlines (see also Gibson & Vermeulen, 2003) indicates that alignment of diversity dimensions is not necessarily detrimental, the prevailing conclusion in the field still seems to be that teams must be homogeneous on dimensions other than informational ones to be able to harvest the potential positive effects of informational diversity (see also Jehn et al., 1999; Gruenfeld et al., 1996; Thatcher et al., 2003; Triandis et al., 1994). In the present dissertation I will challenge this idea and I will show that the existence of faultlines (or salient subgroups) within teams does not have to hinder group processes as long as (1) it is possible to decrease the salience of the subgroups, and/or (2) the group members have a positive outlook on diversity in their group.

To decrease the salience of subgroups, research has distinguished a number of potential ways in which that can be accomplished (e.g., Brewer & Brown, 1998). Based on the work on the contact hypothesis (Allport, 1954), which refers to reducing tension between groups by bringing them in contact with each other, social categorization theory emphasizes the role of cognitive representations of the contact situation as critical in determining the outcome of intergroup interactions. Based on this general idea, several different models of intergroup contact have been developed, each with somewhat different hypotheses on what constitutes effective contact experiences. Brewer and Miller (1984) give a broad overview of four of these models. The first model is called the personalization model, and proposes a *decategorization* strategy which is based on the idea that contact will be most effective if interactions are person-based rather than category-based (e.g., Brewer & Miller, 1984). Thus, to lower ingroup-outgroup distinctions, people should be individuated. A second model proposes a *dual identity* contact situation, in which people identify with their subgroups and the superordinate group at the same time (e.g., Hewstone &

Brown, 1986). This situation is proposed to fulfill the need for positive social identity in the intergroup contact situation. A third model is based on a *recategorization* strategy. This common ingroup identity model proposes that one should structure the contact situation so as to focus on superordinate category identification, which encompasses both the ingroup and the outgroup (e.g., Gaertner, Mann, Murrell, & Dovidio, 1989).

Although these models can all be effective potentially under appropriate conditions, they also lead to potentially unstable solutions to the problems of intergroup biases (Brewer & Brown, 1998). They are all based on hierarchical representations of category identities, in which the individual identity is nested within more conclusive, superordinate social identities. The effectiveness of these models, therefore, depends on the presence of a strong common goal that creates positive interdependence between the groups. When the superordinate identity is a large collective, it may be difficult to maintain the common identification as contexts change. An alternative and potentially better solution is to replace these hierarchical representations of multiple category identities with *cross-cutting* categorizations. When two or more categories cross-cut each other, any differentiation in terms of the original categories will be reduced because of the simultaneous operation of between-category and within-category on both dimensions (Doise, 1978). As *cross-categorization* was proposed to be the most fruitful approach, I decided to focus on this model as a way to reduce the salience of categories or potential subgroups in diverse teams. However, I was also interested in incorporating a model in which these hierarchical representations are present to see whether this could have positive effects on performance in diverse teams. Therefore, I did incorporate a study in which a *superordinate identity* was stressed and I proposed that this would also lower subgroup salience in diverse groups.

Concerning the outlook on diversity, numerous authors have stressed that the way people feel about diversity and differences within their team is very important in predicting the effects of diversity (e.g., Cox, 1993; Ely & Thomas, 2001; Hostager & De Meuse, 2002; Jackson et al., 1992; Jehn & Bezrukova, 2004; Kossek & Zonia, 1993; Mor Barak, Cherin, & Berkman, 1998; Paulus, Nakui, Parthasarathy, & Baruah, 2004; Strauss, Connerley, & Ammermann, 2003; van Knippenberg & Haslam, 2003). I decided to focus on this potential moderator for two reasons. First, the effects of diversity beliefs on the performance of diverse teams have not been examined in an experimental setting which provides the opportunity to look at the causal chain of events. Second, the idea that it is possible to improve the functioning of diverse teams by providing

team members with a positive attitude toward diversity does not only promise a positive outlook on diversity, it also potentially generates numerous practical implications which are fairly easy incorporated in more organizational settings. Therefore, I will argue that salience of subgroups does not have to be reduced in order to eliminate the potential negative effects of subgroup categorization as long as teams have favorable *diversity beliefs*. Below, I will discuss the three potential moderators in more detail, starting with the focus on decreasing the salience of subgroups.

#### *Cross-Categorization*

Within social psychological research the effects of comparative fit have mainly been demonstrated in research on cross-categorization, which refers to the fact that different dimensions of diversity may interact in determining the salience of social categorizations (Brewer, 1995). When people differ on more than one dimension (i.e., are members of multiple social groups), differences may either converge (i.e., be correlated) or cross-cut each other (i.e., be unrelated). When differences converge (e.g., all the male members of a work group are relatively young, while all the female members are relatively old), social categorization (i.e., younger men vs. older women) is more likely than when differences along the dimensions cross-cut each other (e.g., Marcus-Newhall, Miller, Holtz, & Brewer, 1993; Oakes, Turner, & Haslam, 1991). The basis assumption of cross-categorization is that overlapping memberships reduce the psychological distances between ingroup and outgroup. One would predict, therefore, that when diversity dimensions are cross-cut within teams, potential positive effects of diversity are more likely to occur.

Although authors have recently proposed that cross-categorization might be a way to harvest the beneficial effects of diversity (Bezrukova et al., 2005; Jehn et al., in press; Phillips et al., 2004), the effects of cross-categorization on functioning in diverse teams have not yet been empirically tested. In the present dissertation I predicted that diversity on a salient social category dimension does not have to hinder the potential positive effects of informational diversity, as long as these two diversity dimension cross-cut each other. Additionally, I predicted that potential positive effects of informational differences are not only passively hindered by subgroup categorization processes, but that informational differences can also play an important role in these processes. When aligned with social category differences, informational differences play an active part in the formation of the faultline (i.e., in making the social categories salient) resulting in deteriorated group functioning. When informational differences are crossed with social category differences, the

salience of the social categories will diminish resulting in enhanced team functioning.

### *Superordinate Identity*

When group members are induced to recategorize the aggregate as a superordinate group, the one-group representation replaces the former subgroup boundaries with a single, inclusive superordinate boundary (Gaertner et al., 1989). This decreases the salience of the subgroups by making the superordinate identity salient (e.g., Brown & Turner, 1981; Doise, 1978; Turner, 1981). One way of making the superordinate identity salient is by emphasizing intragroup cooperation. Sherif, Harvey, White, Hood, and Sherif (1961) already showed the importance of cooperation for reducing intergroup bias. In their Robbers Cave experiment, two groups of boys were first brought into competition with each other. The only way to overcome the resulting negative intergroup biases was by creating intergroup cooperation. Brewer and Miller (1984; see also Marcus-Newhall et al., 1993) proposed that cooperative interaction focuses group members' attention to each other's personal attributes, resulting in the development of more differentiated, personalized and positive impressions of (former) outgroup members. Therefore, when groups are made cooperatively interdependent, the intergroup boundary may degrade and transform members' perception of the group from two separate subgroups to one social entity (Gaertner et al., 1999; Gaertner et al., 1989).

Intergroup cooperation might be achieved by convincing people to work together, but organizations also have formalized instruments by which groups can be stimulated to work together. One of those instruments is reward structure, which can be a useful tool in influencing group behavior (Lawler & Cohen, 1992). Reward structure can be used to influence categorization processes by emphasizing collaboration between group members on different levels. In line with this, Gaertner et al. (1999) discuss common fate as one possible way to decrease intergroup bias. In their study, two three-person subgroups worked together to find a solution to a problem. In the common fate condition, all six participants put their name in one envelope for a lottery. The opportunity to win a monetary reward for one subgroup was thus linked to the other subgroup. In the no-common-fate condition, the three persons from one subgroup put their name in one envelope, and the three persons from the other subgroup put their names in another envelope. In this way, the opportunity to win a monetary reward was not linked to the other subgroup. The first type of reward mitigated intergroup bias by providing the team with a common goal (i.e., a superordinate identity) and this lowered intergroup bias. Bettencourt,

Brewer, Croak, and Miller (1992) also manipulated reward structure to overcome intergroup bias and found that superordinate reward structures decreased inter-subgroup bias within heterogeneous teams. Salient social categories can thus be made less salient by stressing cooperation within the group, so within diverse teams this is a possible way of preventing social categorization processes. Again, although the effects of cooperation on intergroup bias have been proven, an empirical test of the influence of stressing a superordinate identity in diverse teams on team functioning has not yet been performed.

#### *Diversity Beliefs*

Above, I first focused on the reduction of comparative fit and described two ways in which the salience of social categories can be lowered. However, I will argue that lowering subgroup salience is not the only way to obtain the potential positive effects of diversity. One important moderator of the relationship between subgroup categorization and negative intergroup processes, which has been largely overlooked so far within diversity research, concerns beliefs toward diversity. It is proposed that heterogeneous groups – even groups with a strong diversity faultline – can outperform homogeneous groups as long they believe that diversity is good for their group. People, groups, and organizations may differ in their views about diversity, and positive beliefs toward diversity are critical in reaching the value in diversity, because they might help to overcome the negative processes resulting from subgroup categorization (Kossek & Zonia, 1993).

Diversity beliefs inform responses to actual work group composition, and lead people to respond more favorably to work group diversity the more they believe in the value of diversity for work group functioning (van Knippenberg, Haslam, & Platow, 2004). Ely and Thomas (2001) argued that the impact of cultural diversity on group functioning would be affected by the group's "diversity perspective," that is, the group members' normative beliefs and expectations about cultural diversity and its role in their work group. When diversity is seen as potentially valuable for the group, diversity is more likely to benefit performance than when diversity is seen as something that ought to be there to make the group a fair representation of the diverse population or when diversity is just used to gain access to diverse markets and constituencies (cf. Jehn & Bezrukova, 2004). Unfortunately, most research on diversity attitudes, beliefs, and climate has been non-empirical or concerned with questionnaire development (e.g., Cox, 1993; Ely & Thomas, 2001; Hostager & De Meuse, 2002; Jackson et al., 1992; Kossek & Zonia, 1993; Mor Barak et al.,

1998; Paulus et al., 2004; Strauss et al., 2003). In the present dissertation I will argue and show that even under strong faultline conditions, groups will function well as long as the group members believe in the value of diversity.

In the theoretical framework above, I distinguished two important issues within diverse groups: (1) the salience of social categories and social categorization processes, and (2) the relationship between social categorization processes and group functioning. Up till now, the implications of these issues have not been given adequate research attention in the diversity field. The center of attention of a lot of diversity research has been on the potential negative effects of diversity, like subgroup categorization, low satisfaction, low performance, turnover behavior, and conflicts. By focusing on these two issues, I tried to come up with ways in which the potential *positive* effects of diversity might be harvested. Salient social categories do not always have to result in subgroup categorization, and even when they do, social categorization does not necessarily produce detrimental group processes. Not only can salient diversity categories be made less salient by cross-categorization or common fate, they may not even be a problem in the first place as long as people value the fact that the team is diverse. Summarizing, the main contribution of my dissertation is the focus on the potential positive effects of diversity and the ways in which these positive outcomes can be achieved. In the following section I will discuss the experiments that were conducted to examine these ideas.

### **The Present Dissertation**

Years of research on the role of diversity on team functioning have left some important voids and underinvestigated areas. In the present dissertation, I examine a few of the essential moderators and mediators underlying the effects of diversity in teams. This is not only relevant from a theoretical perspective, but also from a practical perspective. Given that diversity is unavoidable nowadays, it seems of the uttermost importance to understand how and when diversity influences team performance. Additionally, the fact that diversity has the potential to actually *improve* team functioning (i.e., the "value-in-diversity" hypothesis; e.g., Cox et al., 1991; Williams & O'Reilly, 1998) also asks for a better and more thorough understanding of how diverse teams might reach their potential. The central question that constitutes the thread running through the dissertation is therefore the following: *How can the potential positive effects of diversity be harvested?*

In the chapters that follow I report three empirical studies designed to address this question. The potential positive effects of diversity were argued to



arise from information elaboration processes within diverse teams, and it is social categorization processes that may disturb this elaboration of task relevant information. The first issue I wanted to explore, therefore, is the relationship between salient social categories and social categorization. I wanted to take a closer look at how the salience of social categories could be influenced by focusing on cross-categorization and common fate. The second issue that was investigated is the relation between social categorization and negative group processes. Although research in intergroup relations identifies subgroup categorization as the root cause of problematic intergroup attitudes and behavior, subgroup categorization is not the same as intergroup bias. Intergroup bias refers to more favorable perceptions of, and attitudes and behavior towards ingroup than outgroup (Brewer, 1979), whereas subgroup categorization merely refers to the perceptual grouping of people (Turner et al., 1987). This distinction between social categorization and intergroup bias is important, because the potentially negative effects of diversity identified in the social categorization perspective are obviously linked to intergroup bias and not to social categorization per se (e.g., low interpersonal liking and group cohesion, relational conflicts, low identification with and commitment to the group, low satisfaction, and high turnover; Williams & O'Reilly, 1998). Diversity research has more or less ignored the distinction between categorization and bias, but growing evidence suggests that it is valuable to distinguish between factors underlying categorization per se and factors underlying intergroup biases in diversity research (Brewer & Brown, 1998; Brown & Gaertner, 2001; van Knippenberg, 2003). Acknowledging this important distinction I proposed that social categorization does not always have to result in negative intergroup processes, but that this relationship is, among other things, moderated by diversity beliefs. It was argued that when teams have a positive attitude toward diversity, salient categories would not result in deteriorated group functioning, but rather improve performance. These two issues were closer examined in three experiments reported in the next three chapters.

In Chapter 2, an experiment is reported in which I wanted to show how the interplay between informational and social-category diversity can account for the inconsistent effects of informational diversity in previous research. Using a task that required information elaboration, teams were made diverse on a salient social category dimension and/or an informational dimension. Within groups that were diverse on a salient social category dimension, informational diversity was proposed to either enhance the salience of

subgroups or lower the salience of subgroups, depending on the relationship between the two diversity dimensions. It was hypothesized that groups in which diversity dimensions were crossed would experience better team functioning than teams in which diversity dimension were aligned. Additionally, these teams were compared to teams that were homogeneous on one or both of the diversity dimensions.

In Chapter 3, it is argued that diversity beliefs can be helpful in circumventing the potential negative intergroup processes in faultline teams. Research in persuasive communication has proposed that intergroup biases disrupt elaboration of others' communications. Intergroup biases make people trust in ingroup members more than outgroup members and regard ingroup members as more valid sources of information (Brewer, 1979; Turner et al., 1987). As a result, communications from ingroup members are more likely to be attended to and elaborated upon than communications from outgroup members (Mackie, Worth, & Asuncion, 1990; van Knippenberg, 1999; van Knippenberg & Wilke, 1992; also see Clark & Maass, 1988). Because the elaboration of task-relevant information is proposed to underlie the positive effects of work group diversity, it may thus be proposed that intergroup biases elicited by diversity interfere with diversity's potential to elicit elaboration of task-relevant information. Therefore, in this Chapter a study is reported that was designed to test the moderating effect of diversity beliefs on the relationship between diversity and team performance. It was argued that even under faultline conditions, teams would be able to perform well as long as they were convinced of the value in diversity. In this experiment, this idea was tested by manipulating diversity beliefs and informational diversity in teams that were diverse on a salient social category dimension. Also, we investigated the mediating effect of information processing in this context.

In Chapter 4, the ideas tested in Chapter 2 and 3 were integrated and extended in a different experimental paradigm. The reported experiment combines the focus on category salience with diversity beliefs. In this study, social category salience was not only experimentally influenced by converging or crossing dimensions, but also by providing the teams with a strong superordinate identity. By manipulating reward structure, the existing social category diversity was reinforced, crossed, or ignored. In the team common fate condition, team members needed to cooperate in order to obtain a monetary reward (team reward condition), in the pair common fate condition subgroups were dependent upon each other (pair reward condition). The pair reward was either converged with the existing social category diversity, or crossed with the



existing social category diversity. It was predicted that diverse teams would do better in the team common fate condition and in the crossed pair common fate condition than in the faultline condition (partially replicating Experiment 1). Additionally, inspired by the notion of diversity beliefs, we focused on another factor that might render people more open and favorable toward diversity, namely the teams' level of openness to experience. It was hypothesized that diverse teams high on openness to experience would perform better than diverse teams low on openness to experience (replicating Experiment 2), but only when diversity was salient. The effects of positive beliefs concerning diversity were thus predicted to arise in the cross-categorization and faultline condition, but not in the superordinate identity condition, because diversity is made less salient in teams in which a strong superordinate identity is induced. This implies that diversity attitudes will have less influence because people will be less aware of being a member of a diverse group. Diversity beliefs will thus impact teams in which differences are salient, not teams in which the similarities are salient.

Finally, Chapter 5 advances an integrative framework that can account for the empirical results presented in Chapter 2 to 4. Based on the experiments I will discuss what can be concluded about the central question of this dissertation: *How can the potential positive effects of diversity be harvested?*. Chapter 5 also provides a discussion of the contributions and limitations of the present dissertation and outlines a number of avenues for future research.

**Note**

<sup>1</sup> Parts of this introduction were adapted from van Knippenberg, De Dreu, and Homan (2004).



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## CHAPTER 2

### INTERACTING DIMENSIONS OF DIVERSITY: CROSS-CATEGORIZATION AND THE FUNCTIONING OF DIVERSE WORK GROUPS

*Based on Homan, van Knippenberg, Van Kleef, & De Dreu (2006b)*

Work group diversity is a central aspect of organizational life. It influences important aspects of team functioning, such as information processing, team climate, satisfaction, and conflict (Milliken & Martins, 1996; Williams & O'Reilly, 1998). One type of diversity that has the potential to enhance team functioning is informational diversity – differences in knowledge, perspectives, and ideas (Jehn, Northcraft, & Neale, 1999; van Knippenberg & Haslam, 2003). More in particular, it has been argued that informational diversity stimulates group members to thoroughly elaborate task-relevant information and to use this information as input in their decision-making process (van Knippenberg, De Dreu, & Homan, 2004). Unfortunately, however, groups often experience difficulties exploiting the potential of diverse perspectives and information (Bowers, Pharmed, & Salas, 2000; Webber & Donahue, 2001).

For informational differences to be put to use, groups have to be willing to exchange and elaborate upon information of all group members. However, informationally diverse groups are often also diverse on other, more salient dimensions of diversity, such as gender, ethnicity, and personality. These salient social categories may give rise to subgroup categorization – especially when multiple salient categories converge – leading to increased conflicts and a negative team climate, and hindering the elaboration of task-relevant information (e.g., Earley & Mosakowski, 2000; Thatcher, Jehn, & Zanutto, 2003). It has been proposed, therefore, that the positive effects of informational diversity can only be harvested when groups are homogeneous on other diversity dimensions (e.g., Gruenfeld, Mannix, Williams, & Neale, 1996; Jehn et al., 1999; also see Triandis, Kurowski, & Gelfand, 1994). Extending this work, we argue that even groups whose members are diverse on other dimensions (e.g., gender, personality) may profit from informational diversity. We propose that the combination of informational diversity and other dimensions of diversity may either deteriorate or enhance group functioning, depending on

how the two interact. Specifically, we argue that *cross-categorization* of different diversity dimensions may contribute to enhanced group functioning by decreasing conflict and enhancing information elaboration.

We begin with a review of previous research on the effects of diversity on group functioning. We then focus on the notion of salience of social categories to introduce faultline theory and the concept of cross-categorization, and discuss how crossing diversity dimensions may positively influence group dynamics. Subsequently we apply these notions to understand how the effects of informational diversity on group functioning may be contingent on the relationship between informational diversity and other dimensions of diversity, and report the results of an experiment testing hypotheses derived from this analysis.

### **Work Group Diversity and Group Functioning**

Diversity refers to differences between individuals on any attribute that may lead to *the perception that another person is different from the self* (e.g., Jackson, 1991; Triandis et al., 1994; Williams & O'Reilly, 1998). As stated above, diversity may have important effects on group functioning. Below we outline two competing perspectives that have been advanced to further understanding of the relation between group diversity and group functioning: the information/decision-making perspective and the social categorization perspective (Williams & O'Reilly, 1998).

According to the information/decision-making perspective *informational diversity* can enhance the elaboration of task-relevant information and perspectives within the group – that is, the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task (see e.g., van Knippenberg et al., 2004). Informational diversity can be defined as "differences in knowledge basis and perspectives that members bring to the group" (Jehn et al., 1999, p. 743), and has also been referred to as functional diversity or knowledge diversity (e.g., Pelled, Eisenhardt, & Xin, 1999; Phillips, Mannix, Neale, & Gruenfeld, 2004). The potential positive effect of informational diversity thus lies in the thorough and elaborate processing of the diverse information, especially for tasks that require the combination and integration of different perspectives and ideas. Informational diversity may indeed stimulate error detection (e.g., Davis, 1969), information processing (e.g., Phillips et al., 2004), group problem solving (e.g., Tjosvold & Poon, 1998), and group effectiveness (e.g., Gruenfeld et al., 1996). Thus, the existence of diverse perspectives within a work group can potentially lead to enhanced

team functioning through information elaboration.

The social categorization perspective gives rise to a different prediction. Within diverse teams, subgroup categorization can create "us-them" distinctions, and these distinctions can in turn lead to intergroup bias, such as in-group favoritism or prejudice (Brewer & Brown, 1998; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Members of heterogeneous groups may indeed experience more relationship conflict and be less satisfied than members of homogeneous groups (e.g., Jehn et al. 1999; Pelled et al., 1999; Wharton & Baron, 1991). Furthermore, diversity has been shown to negatively affect team climate (e.g., Alagna, Reddy, & Collins, 1982; Chatman, Polzer, Barsade, & Neale, 1998; Tsui & O'Reilly, 1989) as well as overall group functioning (e.g., Ancona & Caldwell, 1992; Gruenfeld et al., 1996; Harrison, Price, & Bell, 1998; Simons, 1995; Triandis, Hall, & Ewen, 1965). Diversity can thus undermine group functioning by stimulating subgroup categorization, which may become manifest in increased conflict, bad team climate, decreased satisfaction, and suboptimal group functioning.

Integrating these two perspectives, van Knippenberg et al. (2004) proposed that in diverse groups subgroup categorization processes and information elaboration processes interact to determine group functioning. When subgroup categorization occurs, they argue, information elaboration is hindered, and group functioning deteriorated. However, subgroup categorization and concomitant intergroup bias do not necessarily always occur within diverse groups. Whether diverse groups experience subgroup categorization processes is determined by the salience of social categories within the group.

#### *Salience of Social Categories*

Among other things, the salience of subgroups is influenced by the *comparative fit* of the subgroup-categorization (Oakes, Haslam, & Turner, 1994; Turner et al., 1987). Comparative fit is a function of the perceived differences within and between categories (i.e., groups), and increases to the extent that group members perceive differences within subgroups to be less than differences between subgroups. For example, comparative fit is high when one subgroup within a team consists of 50-year old males, and the other subgroup consists of 20-year old females (i.e., when age and gender are correlated). Conversely, comparative fit is low when a team consists of 20-year old and 50-year old males and females (i.e., when age and gender are uncorrelated). The higher the comparative fit of possible subgroups within the diverse team, the more people will be inclined to perceive the group as consisting of subgroups

(i.e., subgroup categorization; Brewer, 2000; Brewer & Gaertner, 2001; Earley & Mosakowski, 2000; Hewstone, Rubin, & Willis, 2002). This notion of social category salience has recently been introduced in the diversity literature in the form of faultline theory (e.g., Earley & Mosakowski, 2000; Lau & Murnighan, 1998; Thatcher et al., 2003).

*Faultline theory.* Inevitably, work group members differ on a variety of dimensions, and these differences may be correlated to a greater or lesser degree (e.g., gender differences in a group may be independent of age differences, but gender and age may also covary). It has been proposed that diverse groups will experience negative effects of diversity especially when multiple diversity dimensions converge within the group (i.e., when the group has a diversity faultline; e.g., Jehn, 1999; Pelled et al., 1999; Thatcher et al., 2003). When diversity dimensions converge (i.e., are correlated), comparative fit is higher, and this makes social categories more salient (Doise, 1978; Oakes et al., 1994; Thatcher et al., 2003). Corroborating this idea, Lau and Murnighan (1998) argue that convergence or alignment of multiple diversity characteristics increases the salience of subgroups, resulting in suboptimal communication and deteriorated group functioning. Recently, Lau and Murnighan (2005) indeed showed that strong faultlines resulted in more intragroup conflict, and lower satisfaction than weak faultlines. Along similar lines, Phillips et al. (2004) showed that within four-person groups diverse information was less elaborated upon when it was divided in alignment with the existing subgroups.<sup>1</sup> However, different diversity dimensions do not always converge within groups – they may also cross-cut each other. Although several authors have acknowledged this idea (e.g., Brewer, 1995; Phillips, 2003; Phillips et al., 2004), so far no research has been done to examine the effects of cross-categorization of different diversity dimensions on team functioning.

*Cross-categorization.* Just as comparative fit is increased when different dimensions of diversity converge, comparative fit is *reduced* when diversity dimensions cross-cut each other (Brewer & Brown, 1998; Hewstone et al., 2002). For example, when the male members of a work group are relatively old while the female members are relatively young, subgroup categorization (i.e., older men vs. younger women) is more likely than when differences along the dimensions cross-cut each other. That is, if some men and women are relatively old and some men and women are relatively young, the differences between gender categories and age categories become smaller, because people will have something in common with each other on one of the dimensions. A meta-analysis by Migdal, Hewstone, and Mullen (1998) indeed showed that

convergence of attributes leads to an accentuation of the differences between and the similarities within categories (i.e., high comparative fit), while the crossing of two category dimensions accentuates similarities between the categories and differences within each category (i.e., low comparative fit). Although the beneficial effects of cross-categorization have been demonstrated in a number of studies (e.g., Brown & Turner, 1979; Deschamps, 1977; Marcus-Newhall, Miller, Holtz, & Brewer, 1993), the results are limited to intergroup bias (e.g., stereotyping and resource allocation) in non-interactive, simulated groups, and little is known about the effects of cross-categorization on actual group functioning. The present study aims to fill this void by investigating how cross-categorization affects group functioning in diverse groups.

### **The Present Study**

Previous research has been unable to reliably link informational diversity to group functioning. That is, some studies have found positive effects of informational diversity (e.g., information elaboration; Gruenfeld et al., 1996), whereas other studies report negative effects (e.g., subgroup categorization and intergroup bias; Simons, 1995). We argue that whether informational diversity will lead to subgroup categorization or information processing depends on how the informational diversity dimension relates to other salient diversity dimensions (cf. Gruenfeld et al., 1996; Jehn et al., 1999; Mohammed & Angell, 2004; van Knippenberg et al., 2004). The potential positive effects of informational differences are most likely to be impeded when diverse groups experience a faultline situation (Lau & Murnighan, 1998; Phillips et al., 2004; Thatcher et al., 2003). We propose that when informational diversity *converges* with other salient diversity dimensions, the salience of the subgroup categorization will increase, and intergroup biases will be elicited, hindering the elaboration of information and deteriorating group functioning. Conversely, when informational diversity is *crossed* with other diversity dimensions, this may not only decrease the salience of the social category but also enhance team functioning and promote information elaboration. Extending earlier research, we thus propose that differences on other diversity dimensions need not disrupt the positive effects of informational diversity, but will do so to the extent that informational diversity is correlated with these differences.

This idea was tested in a controlled study with small interactive groups engaged in a decision-making task, in which we manipulated informational diversity and created a potential faultline based on the alignment of other dimensions of diversity. To map the combined effects of informational diversity



and other dimensions of diversity on group processes, we focused on a number of variables that span a wide range of aspects of group functioning, including information elaboration, task and relationship conflict, team climate, and satisfaction. These variables were chosen based on research on the effects of diversity on group processes, which roughly divides the consequences of diversity into three dimensions: task-related processes, relational processes, and individual affective/evaluative responses (e.g., Milliken & Martins, 1996; Williams & O'Reilly, 1998). Task-related processes concern the effects diversity may have on the group's information elaboration and decision making processes. Information elaboration is obviously one of the most crucial variables that may be classified under this header. However, task conflict may also be seen as a task-related effect of diversity (e.g., Jehn et al., 1999; Pelled et al., 1999). Differences in information and viewpoints may give rise to task conflict and dissent, and faced with the need to solve these conflicts and reconcile opposing views, group members may engage in more elaborate information processing (e.g., De Dreu, Harinck, & Van Vianen, 1999; Jehn et al., 1999; Pelled et al., 1999; Tjosvold, 1998).

Beside task-related consequences, diversity may also affect relational processes. In this respect, negative effects of diversity on team climate and relationship conflicts have been reported (cf. Milliken & Martins, 1996). Furthermore, a recent meta-analysis by De Dreu and Weingart (2003b) indicates that task conflict is often negatively (rather than positively) related to team functioning and affective outcomes. Given that conflict in general is inherently affectively laden and may feed back on relationships between group members, task conflict can thus also be seen as a relational consequence of diversity. In support of this notion, Simons and Peterson (2000) showed that when trust within the team is low (e.g., when there is intergroup bias) both relationship conflict and task conflict increase, suggesting that the task conflict may be indicative of similar relational processes as relationship conflict.

Third, we looked at group members' satisfaction. An often-quoted consequence of diversity is that it may negatively affect affective/evaluative responses to the group, as may be evident in for instance reduced satisfaction and commitment to the group and increased intention to turnover (Milliken & Martins, 1996; Williams & O'Reilly, 1998). Group members' satisfaction may thus be considered to be an additional indicator of the quality of group processes in diverse work groups.

Below, six hypotheses regarding the effects of informational diversity and potential faultlines on task-related, relational, and affective/evaluative group

processes and outcomes are advanced. Regarding elaboration of information we expect that groups will engage in more elaborate information processing when they are informationally heterogeneous than when they are informationally homogeneous, except when informational heterogeneity is converged with a potential faultline (*Hypothesis 1*). For the relational and affective/evaluative outcomes we predict that potential faultlines (as compared to homogeneity) will lead to lower satisfaction (*Hypothesis 2a*), less positive team climate (*Hypothesis 2b*), and more relationship conflict (*Hypothesis 2c*), except when the potential faultline is cross-cut by informational heterogeneity. Because task conflict has both task-related and relational components, two competing hypotheses regarding the effects of diversity on task conflict can be advanced. On the one hand, groups may experience more task conflict when they are informationally heterogeneous, except when informational heterogeneity is converged with a potential faultline (*Hypothesis 3a*). On the other hand, it can be predicted that task conflict will increase when there is a potential faultline, except when the potential faultline is cross-cut by informational heterogeneity (*Hypothesis 3b*).

## Method

### *Sample*

A total of 280 students (178 females and 102 males) of the University of Amsterdam participated in the experiment for course credit or monetary compensation (10 Euro, approximately 12 USD). Most participants were psychology undergraduates ( $n = 222$ ). The mean age of the participants was 21 years. The participants were randomly assigned to one of the experimental conditions. A total of 70 four-person groups participated in the experiment. Four groups were not included in the analyses because one or more of the members accurately guessed the true goals of the experiment prior to the experimental task. The groups were videotaped during their interaction. One group could not be videotaped due to technical problems. The videotapes were coded to obtain more objective measures of the variables of interest where possible.

### *Design*

We manipulated informational heterogeneity versus homogeneity and the absence versus presence of a potential faultline formed by other dimensions of diversity (gender and bogus personality feedback). These two manipulations were combined to create a one-factor design with five conditions: (1) potential faultline with informational homogeneity (the *PoFau-InfoHom* condition;  $n = 13$ );

(2) potential faultline converged with informational heterogeneity (the *Converged* condition;  $n = 13$ ); (3) potential faultline crossed with informational heterogeneity (the *Crossed* condition;  $n = 13$ ); (4) no potential faultline with informational heterogeneity (the *NoPoFau-InfoHet* condition;  $n = 14$ ); and (5) no potential faultline with informational homogeneity (the *NoPoFau-InfoHom* condition;  $n = 13$ ). Creating these five conditions was necessary to test and compare all possible combinations of the two diversity dimensions and thereby enable an accurate test of our hypotheses.

#### *Procedure*

On arrival in the laboratory, participants were individually welcomed to the experiment and presented with written instructions.

*Creating a potential faultline.* To create a potential faultline situation we manipulated a number of diversity dimensions. To make these diversity dimensions as salient as possible we chose to manipulate and stack gender composition, feedback on a fake personality test, color of baseball caps, and seating arrangements (cf. Gaertner, Mann, Murrell, & Dovidio; 1989; Marcus-Newhall et al., 1993).<sup>2</sup> Gender composition of the groups was manipulated, because research has shown that gender is often used as a basis for categorization (Stangor, Lynch, Duan, & Glass, 1992). In the potential faultline conditions we created four-person groups consisting of two males and two females; in the no potential faultline conditions the groups consisted of four males or four females. On top of the gender manipulation, participants were given bogus feedback on a fake personality test, and they received colored baseball caps that corresponded with their gender and supposed personality type (cf. Gaertner et al., 1999). Additionally, same-sex group members were seated next to each other. The specific procedure that was employed to manipulate the potential faultline is detailed below.

First, participants read instructions, which stated that the present research aimed to determine the effect of personality on cooperation in a group decision-making task. Then, the participants were asked to fill out a (fake) personality test. After filling out the questionnaire, their answers were supposedly analyzed, and their personality type determined. After about ten minutes, the experimenter returned with the results. The feedback that the participants received stated that they had an H or a K personality type (cf. van Prooijen & van Knippenberg, 2000) and that during the group interaction they had to wear a black (type H) or beige (type K) baseball cap. Participants then received some superficial information about their personality type. The bogus personality feedback was not task-related and all the personality traits reported in the

feedback were positive. In the conditions with no potential faultline all group members had the same personality types (and the same color cap); in the potential faultline conditions personality type was aligned with gender such that the two males had the same personality type and the two females had the same personality type.

Finally, seating was used to make the potential faultline more salient. After all participants had read the information about the task, they were seated in a new room in which the group would be performing the task. Same-gender group members were always seated next to each other at a rectangular table, facing the opposite-gender members. Such converging of diversity dimensions (i.e., gender, [bogus] personality feedback, seating) results in high within-subgroup similarity and high between-subgroup differences, which makes subgroup categorization more likely (Turner et al., 1987; van Knippenberg et al., 2004; cf. Gaertner et al., 1989). We thus created a perfect potential faultline in the sense that differences in gender, (bogus) personality feedback, and seating arrangement were perfectly correlated (cf. Lau & Murnighan, 1998; Thatcher et al., 2003).

*Manipulation of informational diversity.* After the personality test, the participants received the instructions for the decision-making task. We used the Desert Survival Exercise (for a description see Johnson & Johnson, 1982) in which 12 objects have to be ranked in importance. A pretest showed that this task was not gender-related.<sup>3</sup> Before working on the task, participants received some information about surviving in the desert, which was used to manipulate informational diversity. In the informationally homogeneous conditions, every group member received the total set of information. In the informationally heterogeneous conditions this information was divided in two equally informative parts (part A and part B).<sup>4</sup> Two group members received part A and two group members received part B. When groups had a potential faultline, this information was either converged or crossed with the potential faultline. In the converged condition, two males received information set A, and two females received information set B. In the crossed condition, one male and one female received information set A, and one male and female received information set B. After reading the information, participants first worked on the ranking task by themselves. After they were finished, participants were brought to another room and were seated together in four-person groups. They then had 30 minutes to work on the decision-making task together and to determine the group's ranking of the objects. The groups were free to decide which decision rule they wanted to use. The groups were videotaped during

the interaction and the group members all wore their baseball caps. When the group was finished, participants were asked to fill out a questionnaire. After that they were debriefed and thanked.

#### *Dependent Variables*

The main dependent variables were information elaboration, team climate, satisfaction, relationship conflict, and task conflict. Conflict and team climate were coded from the videotapes. Two individuals who were blind to the hypotheses randomly coded 29% of the tapes. We assessed the inter-rater reliability by computing intraclass correlations (ICC, Shrout & Fleiss, 1979). Because all intraclass correlations were excellent (see below), the remaining 71% of the tapes were coded by a single coder. Information elaboration and satisfaction were measured using a questionnaire that was administered after the experiment. The answers to the questions could be given on a 7-point Likert scale, with higher numbers indicating positive answers.

#### *Questionnaire Data*

*Manipulation checks.* Three items were used to check the manipulation of informational diversity (e.g., "Other group members had different opinions about what is important for surviving in a desert than I did," and "The group members often had the same ideas as I did about what was important for surviving in the desert [recoded]"). Reliability analysis showed that these three questions indeed measured the same concept ( $M = 3.62$ ,  $SD = 1.18$ ,  $\alpha = .70$ ). For the manipulation check of the potential faultline manipulation we used seven items, which were combined in one scale (e.g., "The members of the group are similar to each other," and "The members of this group have a lot in common";  $M = 4.52$ ,  $SD = 1.11$ ,  $\alpha = .91$ ).

*Information elaboration.* This variable was measured with three questions (e.g., "During the group task I actively processed the information provided by the other group members," and "During the task things were said that gave me new ideas";  $M = 4.90$ ,  $SD = 1.11$ ,  $\alpha = .78$ ).<sup>5</sup> Because, as far as we know, there are no existing questionnaires measuring information elaboration within work groups, we developed these questions based on the definition of information elaboration as provided by van Knippenberg et al. (2004).

*Satisfaction.* Four questions were asked to determine how satisfied participants were with the cooperation within the group (e.g., "I'm satisfied with the cooperation within this group," and "I have the impression that the cooperation within this group went well";  $M = 5.74$ ,  $SD = 0.62$ ,  $\alpha = .96$ ). This measure was an altered and extended version of a three-item questionnaire developed by Thomas, Ravlin, and Wallace (1996).

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*Audio-Video Data*

*Team climate.* Team climate was rated on five 5-point scales for coziness, friendliness, informality, perseveration, and hostility (the last two items were reverse coded), and these ratings were combined in one scale ( $M = 3.65$ ,  $SD = 0.99$ ,  $\alpha = .84$ ). These keywords were chosen based on the subscale *participative safety* from the Team Climate Inventory (Anderson & West, 1996), which measured how safe people feel to participate in their team. The average intra-class correlation for the two raters was .93, which is considered "excellent" according to the criteria for reliability coefficients developed by Cicchetti and Sparrow (1981).

*Relationship conflict.* Relationship conflicts are recognized interpersonal incompatibilities among group members, and are characterized by frustration, friction and personality clashes within the group (e.g., Jehn, 1995; Ross, 1989). Therefore, we measured relationship conflict by coding the videotapes by counting the number of times negative remarks that were made about individuals in the group or the group as a whole ( $M = 0.19$ ,  $SD = 0.39$ ,  $ICC = .99$ ). Examples of some negative remarks are "We should never have gone into the desert with women, they don't know how to survive"; "you men are so stubborn"; and "I can see you have a different personality type, you're obnoxious."

*Task conflict.* Task conflicts are disagreements among group members about the task being performed, and are characterized by conflicts of ideas in the group and disagreement about content and issues of the task (e.g., Jehn, 1995). Hence, we coded the videotapes for task conflict by counting the number of times negative remarks that were made about information that was provided and about the way the task was handled ( $M = 9.19$ ,  $SD = 5.94$ ,  $ICC = .99$ ). Examples of some negative remarks are "This is not the way we should approach this task" and "You're wrong about the flashlight, it has batteries and it won't work in the heat."

## Results

*Treatment of the Data*

Information elaboration and satisfaction were measured on the individual level and aggregated to the group level, because group data are not independent (Kashy & Kenny, 2000). Tables 2.1 and 2.2 provide an overview of the means, standard deviations, and correlations of the dependent variables. To make sure that the correlations among the dependent variables were not caused by the manipulations, we also calculated partial correlations by controlling for



condition. This was done by creating four dummy variables representing the five conditions (Cohen, Cohen, West, & Aiken, 2003; Hays, 1988). Table 2.1 shows that relationship conflict is positively related to task conflict, and that both constructs are negatively correlated with satisfaction. However, the latter correlation is much stronger in case of relationship conflict. This pattern of results is very similar to the meta-analytic results by De Dreu and Weingart (2003b), and it points to the validity of these measures.

**Table 2.1** - Means, Standard Deviations, Zero-Order Correlations and Partial Correlations of the Main Dependent Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Information elaboration	4.90	0.65		-.11	-.10	-.00	.50*
2. Relationship Conflict	0.19	0.39	-.15		.44*	-.15	-.42*
3. Task Conflict	9.19	5.94	.06	.46*		.01	-.15
4. Team Climate	3.65	0.99	.16	.06	-.08		.10
5. Satisfaction	5.74	0.62	.49*	-.46*	-.24	.10	

*Note.* \* $p < .001$ . Zero-order correlations are presented below the diagonal, partial correlations above the diagonal.

Although the hypotheses predict an interaction between two dimensions of diversity, the only way to test this was by conducting an experiment with five conditions, which creates a non-orthogonal design. The differences of interest were thus predicted to occur between combinations of groups. Performing an omnibus test in this case (i.e., an ANOVA testing for differences between the five conditions) cannot locate differences between conditions, and results in a substantial loss of power (Judd, McClelland, & Culhane, 1995). Therefore, in order to test our hypotheses, we computed hypothesis-relevant contrasts using the oneway analysis of variance procedure, along with Cohen's *d* effect size estimates (1988). According to Cohen, effect sizes of about 0.20 are small, effect sizes around 0.50 are moderate, and effect sizes above 0.80 are large. Table 2.3 provides an overview of the specific contrasts that we computed to test our hypotheses.

**Table 2.2 - Means and Standard Deviations for Dependent Variables per Condition**

Condition	1		2		3		4		5	
	PoFau - InfoHom		Converged		Crossed		NoPoFau - InfoHet		NoPoFau - InfoHom	
	M	SD	M	SD	M	SD	M	SD	M	SD
Information Elaboration	4.52	0.93	4.85	0.33	5.17	0.56	5.26	0.52	4.69	0.53
Satisfaction	5.46	0.83	5.51	0.60	5.83	0.54	5.87	0.48	6.01	0.48
Team Climate	3.86	0.41	3.95	0.97	4.90	2.24	4.70	0.80	4.26	1.01
Relationship Conflict	0.27	0.55	0.34	0.44	0.23	0.47	0.02	0.07	0.10	0.16
Task Conflict	12.21	5.43	9.79	7.90	8.52	6.05	7.68	3.05	7.87	6.11

*Note.* Condition 1 = potential faultline with informational homogeneity; Condition 2 = potential faultline converged with informational heterogeneity; Condition 3 = potential faultline crossed with informational heterogeneity; Condition 4 = no potential faultline with informational heterogeneity; Condition 5 = no potential faultline with informational homogeneity. The conflict data were measured by counting remarks, team climate was measured on a 5-point Likert scale.



Table 2.3 - Contrasts Computed to Test the Hypotheses.

Condition	1	2	3	4	5
	PoFau - InfoHom	Converged	Crossed	NoPoFau - InfoHet	NoPoFau - InfoHom
Hypothesis 1*	-2	-2	3	3	-2
Hypotheses 2a, b, & c*	-3	-3	2	2	2
Hypothesis 3a	-2	-2	3	3	-2
Hypothesis 3b*	-3	-3	2	2	2

*Note.* Condition 1 = potential faultline with informational homogeneity; Condition 2 = potential faultline converged with informational heterogeneity; Condition 3 = potential faultline crossed with informational heterogeneity; Condition 4 = no potential faultline with informational heterogeneity; Condition 5 = no potential faultline with informational homogeneity. Contrasts marked with an asterisk are significant at  $p < .05$ . Hypothesis 1 pertains to information elaboration. Hypothesis 2a, b, and c pertain to satisfaction, team climate, and relationship conflict. Hypotheses 3a and 3b pertain to task conflict.

*Manipulation Checks*

The planned comparison for the manipulation check of informational diversity showed that this manipulation had the desired effect. In the PoFau-InfoHom condition (potential faultline with informational homogeneity;  $M = 3.46$ ,  $SD = .47$ ) and the NoPoFau-InfoHom condition (no potential faultline with informational homogeneity;  $M = 3.09$ ,  $SD = .69$ ) the participants perceived the information that the group had received as being more homogeneous than in the other conditions (Converged condition:  $M = 4.09$ ,  $SD = .39$ ; Crossed condition:  $M = 4.42$ ,  $SD = .72$ ; NoPoFau-InfoHet condition [i.e., no potential faultline with informational heterogeneity]:  $M = 4.23$ ,  $SD = .51$ ),  $t[61] = 7.11$ ,  $p < .001$ ,  $d = 10.55$ .

For the potential faultline manipulation planned comparisons showed that this manipulation too had the intended effect. The NoPoFau-InfoHet condition ( $M = 4.82$ ,  $SD = .46$ ) and NoPoFau-InfoHom condition ( $M = 4.93$ ,  $SD = .90$ ) differed significantly from the PoFau-InfoHom condition ( $M = 4.18$ ,  $SD = .61$ ), from the Crossed ( $M = 4.42$ ,  $SD = .56$ ), and from the Converged condition ( $M = 4.24$ ,  $SD = .59$ ),  $t(61) = 3.95$ ,  $p < .001$ ,  $d = -6.98$ , showing that groups in the potential faultline conditions perceived themselves as more diverse on this dimension than did groups in the no potential faultline conditions.

*Dependent Variables*

*Information elaboration.* As predicted in Hypothesis 1 planned comparisons showed that participants in the homogeneous information conditions (i.e., PoFau-InfoHom and NoPoFau-InfoHom) elaborated significantly less information than did participants in the heterogeneous information conditions (i.e., Crossed and NoPoFau-InfoHet), but only when the diversity variables did not converge within the group (i.e., Converged condition),  $t(61) = 3.50$ ,  $p < .001$ ,  $d = .82$  (see Table 2.2 for means and standard deviations).

*Satisfaction.* Consistent with Hypothesis 2a, planned comparisons showed that participants in the no potential faultline (i.e., NoPoFau-InfoHom and NoPoFau-InfoHet) and Crossed conditions were more satisfied than were groups in the Converged and PoFau-InfoHom conditions,  $t(61) = -2.76$ ,  $p < .01$ ,  $d = -.67$ .

*Team climate.* In line with Hypothesis 2b, planned comparisons showed that groups in the no potential faultline (i.e., NoPoFau-InfoHom and NoPoFau-InfoHet) and Crossed conditions had a more positive team climate than did groups in the Converged and PoFau-InfoHom conditions,  $t(61) = 3.07$ ,  $p < .01$ ,  $d = .73$ .

*Relationship conflict.* In keeping with Hypothesis 2c, planned comparisons

showed that groups in the no potential faultline (i.e., NoPoFau-InfoHom and NoPoFau-InfoHet) and Crossed conditions experienced less relationship conflict than did groups in the Converged and PoFau-InfoHom conditions,  $t(61) = -1.99, p < .05, d = -.50$ .<sup>6</sup>

*Task conflict.* Recall that for task conflict two alternative hypotheses were advanced. Hypothesis 3a predicted that groups would experience more task conflict when they were informationally heterogeneous, except when informational heterogeneity was converged with the potential faultline. Planned comparisons yielded no support for this prediction,  $t(61) = 1.26, ns$ . Instead, planned comparisons showed that groups in the no potential faultline (i.e., NoPoFau-InfoHom and NoPoFau-InfoHet) and Crossed conditions had less task conflict than did groups in the Converged and PoFau-InfoHom conditions,  $t(61) = -2.01, p < .05, d = -.50$ . These results support Hypothesis 3b.

## Discussion

The results of the present study support our hypotheses that the effects of informational diversity are dependent on its relationship with other dimensions of diversity within the group. As predicted, groups in which gender and bogus personality feedback formed a potential faultline were less satisfied, had a more negative team climate, and experienced more relationship conflicts than homogeneous groups. However, and in line with our theorizing, these effects were mitigated when the potential faultline was cross-cut by informational diversity. Informational diversity per se did not influence relational and affective/evaluative processes, but when it converged with a potential faultline groups had more conflicts, experienced more negative team climate, were less satisfied, and processed less information. Cross-cutting informational diversity and the potential faultline, however, resulted in less relationship conflict, a better team climate, greater satisfaction, and increased elaboration of information. These results were found in questionnaire data as well as in data coded from audio-video recordings of group interaction. Thus, answering our main research question about the potential positive effects of informational diversity, we showed that informational diversity *decreases* group functioning when it *converges* with other salient dimensions of diversity, but informational diversity *increases* group functioning when it *cross-cuts* other salient dimensions. Hence, these results show that informational diversity can enhance group functioning even when groups are diverse on other dimensions.

Two alternative hypotheses for task conflict were advanced. Hypothesis 3a predicted that task conflict would be affected by interacting diversity

dimensions in the same way as the elaboration of information, meaning that groups should experience more task conflict when they are informationally heterogeneous, except when informational heterogeneity is converged with a potential faultline. Conversely, Hypothesis 3b predicted that task conflict would be affected by diversity dimensions analogous to relationship conflict, team climate, and satisfaction, meaning that task conflict should be higher when groups have a potential faultline, except when the faultline is cross-cut by informational heterogeneity. The data support Hypothesis 3b: Potential faultlines caused task conflicts in the same way that they caused relationship conflicts, suggesting that task conflict is associated more with the negative effects than with the positive effects of (informational) diversity.

#### *Theoretical and Practical Implications*

An idea that is implicit in some previous research on diversity in work groups is that the beneficial effects of informational diversity might only occur when groups are homogeneous on other dimensions of diversity, especially visible diversity dimensions such as demographic characteristics. This idea has received support in various studies (e.g., Gruenfeld et al., 1996; Jehn et al., 1999; also see Triandis et al., 1994). The present results provide an important qualification of this notion by showing that informational diversity can also have positive effects on group functioning in groups that are diverse on other dimensions, as long as both types of diversity are crossed rather than converged. This finding has a number of important implications, which are discussed below.

Given the increasing diversity of the workforce, work groups are inevitably composed of members with different demographic backgrounds, values, and perspectives. A large body of research has documented negative effects of diversity on group functioning, such as conflict, dissatisfaction, and negative team climate (e.g., Williams & O'Reilly, 1998). The present research shows that important aspects of group functioning, such as those mentioned above, can be positively influenced by crossing different diversity dimensions. More specifically, our results indicate that groups with a potential faultline experience less task and relationship conflict, more satisfaction, and a better team climate when this potential faultline is crossed with informational diversity.

A crucial determinant of successful teamwork concerns the processing of task-relevant information (Hinsz, Tindale, & Vollrath, 1997). Informational diversity can enhance the elaboration of task-relevant information and perspectives within the group, which may increase group effectiveness (van

Knippenberg et al., 2004). However, previous research suggested that the existence of diversity on other dimensions within a group may hinder the elaboration of information, and thereby impede group effectiveness (e.g., Jehn et al., 1999). The present study provides an important qualification of these earlier conclusions by showing that differences on other dimensions of diversity need not be detrimental to the positive effect of informational diversity when these different dimensions of diversity cross-cut each other.

Together, the results of the present study provide a practical point of departure for effective diversity management in organizations. To the extent that managers can influence the composition of work groups, the results of the current study suggest several important considerations regarding how to compose a team or change its composition. For one thing, it is important to make sure that teams consist of members with different informational backgrounds (e.g., expertise, knowledge, professional experience, etc.), because such teams are more likely to process task-relevant information. Secondly, managers should be aware of the potentially detrimental effects of diversity within teams. When composing a team of employees who are diverse on both salient social-category and informational dimensions, managers should strive to combine the dimensions in such a way that they are crossed rather than converged.

#### *Limitations and Directions for Future Research*

Although experiments are not conducted in a quest for external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), reports of experimental research tend to elicit questions of external validity among their readership. Obviously, then, confidence in the conclusions advanced here could be bolstered when the current results were replicated in a study of work groups in actual organizations, and this would indeed seem an important avenue for future research. Even so, it may be noted that a previous study of work group diversity inspired by similar notions (although not focusing on the interaction of diversity dimensions) obtained similar results in an experiment and in a field study (Earley & Mosakowski, 2000). Moreover, Jehn et al. (1999) argue that the negative effects we associate with converging informational and potential faultlines may also be obtained in the field. We therefore have no reason to suspect that our results are limited to experimental settings.

The primary focus of the current study was to examine the effects of cross-categorization on group processes. We decided to employ an experimental task that optimally allows for the investigation of such processes. Using this task, we shed light on the effects of cross-categorization of different diversity

dimensions on some of the most important aspects of group functioning. A logical next step for future research would be to examine whether cross-categorization in work groups can also affect more tangible outcomes at the organizational level, of which the presently examined variables are predictive, such as performance, productivity, profit, psychological and physical health, absenteeism, and turnover. However, the presently used task is not particularly suited for investigating such outcome measures (cf. Hollingshead, 1996). Because the group process variables that were examined in the present study have proven to be predictive of team performance (e.g., Bain, Mann, & Pirola-Merlo, 2001; De Dreu & Weingart, 2003b; Hinsz et al., 1997; Jehn, 1995; Judge, Thoresen, Bono, & Patton, 2001), we would expect compatible results on performance dimensions in teams as well as organizations as a whole. Nevertheless, future research is needed to investigate to what extent the present conclusions generalize to organizational-level outcomes.

#### *Conclusion*

The present study was conducted to examine under which circumstances informational diversity is conducive to group functioning. In doing this, we focused on the interplay between informational diversity and other dimensions of diversity. We predicted and found that informational diversity stimulates the elaboration of task-relevant information, except when the diversity dimensions converged. Further, potential faultlines were found to increase task and relationship conflict, reduce satisfaction, and deteriorate team climate, except when they were cross-cut by informational diversity. These results point to the importance of considering the relation between different diversity dimensions when predicting group functioning. The present study indicates that informational diversity can increase elaboration of information even if groups are not homogeneous on another diversity dimension, and that potential faultlines does not necessarily have negative effects on group processes as long as they are cross-cut by another diversity dimension.



### Notes

<sup>1</sup> Phillips (2003) and Phillips, Mannix, Neale, & Gruenfeld (2004) show the opposite for three person groups in which the minority outgroup member has different information than the two majority ingroup members. These faultline groups seem to do better than groups in which the minority outgroup member holds the same information as one of the ingroup members. However, as Phillips et al. (2004) state, these effects are limited to three-person groups, because of the unique minority position of one of the group members. Within four-person groups, with equally sized subgroups, intergroup biases are more likely to occur when faultline conditions are created, hindering information elaboration. Indeed, the results reported by Phillips et al. (2004) show that within four-person groups the alignment of subgroups and information are detrimental to team functioning.

<sup>2</sup> One may argue that it is impossible to determine whether the categorization resulting from the potential faultline manipulation can be ascribed to gender, to the feedback on the fake personality test, to the baseball caps, seating, or to a certain combination of these manipulations. However, the present study was not conducted to determine the *causes* of categorization but to determine the *effects* of (subgroup) categorization, and how informational diversity might strengthen or weaken these categorization processes depending on its correlation with this potential faultline. Also, the combination of stacking multiple manipulations of other dimensions of diversity and a subtle manipulation of informational diversity results in a conservative test of our cross-categorization hypothesis.

<sup>3</sup> A pretest with 23 participants who did not participate in the main study showed that there was no difference in performance between men and women on the task, suggesting that the task is not gender-related,  $F(1, 22) = .29$ , *ns*. Also, we tested whether the participants themselves perceived the task to be gender-related by asking them whether they thought the task was more related to women or more related to men on a seven point scale (with the midpoint of the scale [4] representing neither to women nor men). A one-sample t-test showed that the mean response ( $M = 4.22$ ,  $SD = 0.90$ ) did not differ from the midpoint of the scale (4;  $t[22] = 1.16$ , *ns*), showing that the participants did not perceive the task to be gender-related. Again, we found no difference in response between men and women,  $F(1, 22) = .91$ , *ns*.

<sup>4</sup> A pretest with 22 participants who did not participate in the main study showed that information parts A and B were equally informative.

<sup>5</sup> A confirmatory factor analysis revealed that the manipulation checks



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for informational diversity and information elaboration are separate constructs. The three items designed to measure information elaboration loaded on one factor, with factor loadings ranging from .71 to .90 and discriminant factor loadings ranging from -.21 to .12. The three items checking the manipulation of informational diversity all loaded on the other factor with factor loadings between .75 to .84 and discriminant factor coefficients between -.22 and .30.

<sup>6</sup>One could argue that for groups that interacted for a longer period of time an overestimation of relationship conflict and task conflict can occur. However, analyses revealed that the time used to complete the group task did not differ between conditions. Accordingly, when controlling for time by using time as covariate the same pattern of results was obtained (for statistical method see Hays, 1988, pp. 292-294).



## CHAPTER 3

### BRIDGING FAULTLINES BY VALUING DIVERSITY: THE EFFECTS OF DIVERSITY BELIEFS ON INFORMATION ELABORATION AND PERFORMANCE IN DIVERSE WORK GROUPS

*Based on Homan, van Knippenberg, Van Kleef, & De Dreu (2006a)*

When important decisions have to be made, organizations often turn to groups. Especially when group members differ with respect to the information and expertise they bring to the table, groups may outperform individuals in terms of the quality of the decisions they reach (Argote, Gruenfeld, & Naquin, 2000; Hollingshead, 1996; Ilgen, 1999; Laughlin & Ellis, 1986; see also Hinsz, Tindale, & Vollrath, 1997). Organizations therefore increasingly rely on cross-functional work groups and project teams in an attempt to stimulate innovation, solve problems, and make decisions. Often, informational diversity within such teams comes hand in hand with differences on other dimensions, such as demographic characteristics and deeply held values and beliefs (Harrison, Price, & Bell, 1998; Jehn, Northcraft, & Neale, 1999; Milliken & Martins, 1996; Phillips, 2003; Williams & O'Reilly, 1998). This is unfortunate, because when different dimensions of diversity converge (e.g., when all team members with technical expertise are male and those with knowledge about marketing and sales are female) so-called diversity faultlines emerge.

Diversity faultlines are generally believed to have a negative impact on group processes and performance, and a number of studies have indeed documented such negative effects (see Brewer, 1995; Homan, van Knippenberg, Van Kleef, & De Dreu, 2006b; Lau & Murnighan, 1998; Phillips, Mannix, Neale, & Gruenfeld, 2004; Thatcher, Jehn, & Zanutto, 2003; van Knippenberg, De Dreu, & Homan, 2004; cf. Earley & Mosakowski, 2000). In the present study, we challenge the widely shared assumption that groups with diversity faultlines cannot benefit from their informational diversity and will therefore perform poorly (cf. Jehn et al., 1999). Specifically, we argue and show that groups may overcome the potentially detrimental effects of faultlines when group members endorse pro-diversity beliefs (as opposed to pro-similarity beliefs), and see virtue (rather than vice) in work group diversity. In developing and testing this

argument, we first review previous research on work group diversity, information elaboration, and performance. Subsequently, we introduce the notion of diversity beliefs, and advance specific hypotheses regarding the moderating influence of diversity beliefs on the diversity-performance relationship. Finally, we report an empirical study on the role of diversity beliefs in decision-making groups, in which these hypotheses were systematically tested.

### **Work Group Diversity**

Diversity refers to differences between individuals on any attribute that may lead to *the perception that another person is different from the self* (e.g., Jackson, 1991; Triandis, Kurowski, & Gelfand, 1994; Williams & O'Reilly, 1998). Williams and O'Reilly (1998) argued that informational diversity can enhance the elaboration of task-relevant information and perspectives within the group – that is, the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task (van Knippenberg, De Dreu, et al., 2004). Informational diversity can be defined as "differences in knowledge bases and perspectives that members bring to the group" (Jehn et al., 1999, p. 743), and has also been referred to as functional diversity or knowledge diversity (e.g., Pelled, Eisenhardt, & Xin, 1999; Phillips et al., 2004). The potential benefit of informational diversity for performance thus lies in the opportunity to exchange and elaborate upon diverse pieces of information, which is especially important in tasks that require the combination and integration of different perspectives and ideas (e.g., Ancona & Caldwell, 1992; Gruenfeld, Mannix, Williams, & Neale, 1996; Jehn et al., 1999; Simons, Pelled, & Smith, 1999).

Although the existence of diverse perspectives within a team can lead to enhanced team functioning through information elaboration, this effect may be reduced or even reversed when informational diversity converges with other diversity dimensions such as gender, personality differences, or religious or political values and beliefs that are essentially task-irrelevant. Research has shown that such diversity dimensions can increase interpersonal tensions and conflict (e.g., Alagna, Reddy, & Collins, 1982; Chatman, Polzer, Barsade, & Neale, 1998; Pelled et al., 1999; Tsui & O'Reilly, 1989), increase turnover intentions (e.g., Tsui, Egan, & O'Reilly, 1992), and lower group performance and creativity (e.g., Ancona & Caldwell, 1992; Gruenfeld et al., 1996; Harrison et al., 1998; Triandis, Hall, & Ewen, 1965). Furthermore, when informational differences converge with such diversity dimensions, the resultant faultline may elicit subgroup categorization and create "us-them" distinctions (Lau &

Murnighan, 1998). These distinctions can in turn lead to intergroup bias, such as in-group favoritism, outgroup derogation, prejudice, and discrimination (Brewer & Brown, 1998; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Diversity can thus undermine group performance through social categorization processes, and this is most likely to occur when several dimensions of diversity converge to create diversity faultlines (Lau & Murnighan, 1998; Phillips et al., 2004; Thatcher et al., 2003). We contend, however, that the performance of groups with diversity faultlines need not necessarily be impeded. Specifically, we argue that the performance of groups with diversity faultlines will depend on the group members' beliefs about the value of diversity.

### **Diversity Beliefs**

Diversity beliefs can be defined as beliefs about the value of diversity to work group functioning (van Knippenberg & Haslam, 2003). People may hold beliefs about how group composition in terms of homogeneity or diversity affects group functioning. Especially for task groups, group composition may affect the extent to which the group is perceived as being a "good" group – where "good" is subjectively defined, and may refer to (expectations of) task performance as well as to other aspects of group functioning. Some authors have noted that people may differ in their beliefs about or attitudes toward diversity (Hostager & De Meuse, 2002; Paulus, Nakui, Parthasarathy, & Baruah, 2004; Strauss, Connerley, & Ammermann, 2003) or that organizational climates and cultures may differ in the extent to which they value diversity (Cox, 1993; Ely & Thomas, 2001; Jackson et al., 1992; Kossek & Zonia, 1993; Mor Barak, Cherin, & Berkman, 1998). These studies have advanced the theoretical notion that beliefs or climates/cultures valuing diversity are needed to harvest the benefits of diversity, and have focused on the measurement and the determinants of diversity beliefs and climates. However, so far, a quantitative test of the influence of diversity beliefs on performance and group processes in diverse teams has not been conducted. The present study provides such a test.

Diversity beliefs inform responses to actual work group composition, and lead people to respond more favorably to work group diversity the more they believe in the value of diversity for work group functioning (van Knippenberg, Haslam, & Platow, 2004). Illustrative of the potential positive effects of diversity beliefs, Ely and Thomas (2001) argued that organizational diversity perspectives on cultural diversity influence the functioning of culturally diverse groups and organizations. They define diversity perspectives as group members' (implicit or explicit) normative beliefs and expectations about

cultural diversity and its role in their work group. On the basis of qualitative interviews and subjective reports of group functioning they reported that when an organization's diversity perspective emphasized cultural diversity as a valuable resource for the organization, group members reported feeling more valued and respected, reported a higher quality of intergroup relations, and felt that they were more successful than when the organization's perspective was not focused on the potential value of diversity. Along similar lines, van Knippenberg, Haslam et al. (2004) showed in a survey as well as a laboratory experiment that the relationship between work group composition and group members' identification with their work group was moderated by diversity beliefs. When individuals believed that diversity was beneficial for the task at hand, diversity was positively related to work group identification, whereas diversity tended to be negatively related to identification when individuals believed in the value of homogeneity.

### **The Present Study**

The present study was designed to investigate the interactive effects of informational diversity and diversity beliefs in diverse work groups. As discussed above, previous work suggests that when heterogeneity is seen as valuable to group functioning, group members may respond more positively to diversity. In the present study we extend these findings by providing a quantitative test of the moderating effect of diversity beliefs on actual group performance in diverse groups. The potential positive effects of informational differences are most likely to be impeded when diverse groups experience a faultline situation (Lau & Murnighan, 1998; Phillips et al., 2004; Thatcher et al., 2003). In order to allow for a conservative test of our hypothesis, we therefore focused on groups that are characterized by a strong diversity faultline.

The potentially positive effects of work group diversity on group performance are likely to emerge primarily in groups performing relatively complex tasks that require information processing, creativity, and collaborative decision-making, where the exchange and integration of diverse task-related information and perspectives may stimulate groups' thorough consideration of the task at hand (Bowers, Pharmer, & Salas, 2000; Jehn et al., 1999; van Knippenberg, De Dreu et al., 2004). We therefore decided to explore the interactive effects of diversity beliefs and informational diversity in a group decision-making context. Building on the foregoing discussion on diversity beliefs, we hypothesized that even under faultline conditions groups may make good use of informational diversity when they hold beliefs favoring group

diversity rather than homogeneity. Specifically, we predicted that pro-diversity beliefs would lead groups to respond positively to their diversity, thus setting the stage for the effective use of informational diversity. Because especially informationally diverse groups need to elaborate task-relevant information and perspectives to perform well (i.e., they need to exchange and integrate diverse information and perspectives that are already shared in informationally homogeneous groups), we expected informationally diverse groups to be more strongly affected by diversity beliefs than informationally homogeneous groups. Based on this reasoning we advance the following four hypotheses.

*Hypothesis 1:* Informationally diverse groups perform better when group members believe in the value of diversity rather than homogeneity, whereas the performance of informationally homogeneous groups is less affected by diversity beliefs.

*Hypothesis 2:* Informationally diverse groups engage in more elaboration of task-relevant information and perspectives when they believe in the value of diversity rather than homogeneity, whereas elaboration in informationally homogeneous groups is less affected by diversity beliefs.

*Hypothesis 3:* In informationally diverse groups, performance is more strongly related to the elaboration of task-relevant information than in informationally homogeneous groups.

*Hypothesis 4:* Elaboration of task-relevant information mediates the effect of diversity beliefs on performance in informationally diverse groups.

These hypotheses were tested in an experimental study of four-person groups that worked interactively on a complex decision-making task in which they had to generate decision alternatives and decide about the alternatives adopted. We decided to adopt an experimental approach for two main reasons. First, testing our hypotheses in an experimental setting allowed us to reach strong conclusions about causality (e.g., Kerr, Aronoff, & Messé, 2000). Such inferences are of great value if we are to understand the temporal sequence of events and manage performance in diverse groups and organizations (e.g., do diversity beliefs *influence* team performance, or do different diversity beliefs emerge *as a function of* team performance?). Second, this approach allowed us to directly assess relevant group processes through behavioral coding of audio-video recordings of group interaction, rather than having to rely on the retrospective self-report data that are more customary in field research. This method thus yields a more direct and objective assessment of the group processes leading up to group performance (Weingart, 1997; Wittenbaum, Hollingshead, & Botero, 2004).



## Method

### *Sample and Design*

A total of 184 students (92 females and 92 males) of the University of Amsterdam participated in the experiment for course credit or monetary compensation (10 Euro, approximately 12 USD). The mean age of the participants was 21 years. The participants were randomly assigned to gender-diverse four-person groups (always consisting of two males and two females), and these groups were then randomly assigned to one of the conditions of a 2 (informational diversity: heterogeneity vs. homogeneity)  $\times$  2 (diversity belief: pro-similarity vs. pro-diversity) factorial design. A total of 46 groups participated in the experiment. Two groups could not be videotaped due to technical problems.

### *The Task*

The task that was used required groups to generate ideas and to decide whether the ideas were good enough to adopt. The task was inspired by a decision-making task developed by Johnson and Johnson (1982). Groups were instructed to come up with as many useful items as possible needed to survive in a desert, based on information provided to them before the task. The only rules were that (1) the items should be portable and (2) participants had to explain why the selected items were important for surviving in a desert. The groups thus had to work on making a list of high quality options by generating options, discussing them, and determining which options were good enough to put on the list. A pretest showed that this task was not gender-related.<sup>1</sup>

### *Procedure*

*Creating a faultline.* Upon arrival in the laboratory, participants were seated in a room in same-sex pairs. At this time, they could not see the two other group members. The participants individually read instructions, which stated that the study aimed to determine the effect of personality on cooperation in a task. Then, the participants were asked to fill out a personality test. After filling out the questionnaire, their answers were supposedly analyzed, and their personality type determined. After about ten minutes, the experimenter returned with the results. The bogus feedback that the male participants received stated that they had an "M" personality type. The female participants received bogus feedback stating that they had an "F" personality type. They then received some superficial information about their personality type. The description of the personality type consisted of eight gender specific traits (e.g., strong, adventurous for males; emotional, considerate for females; Willemsen & Fischer, 1999). The bogus personality feedback was not task-related and all the

personality traits reported in the feedback were positive. Next, the participants read that there was a chance they would be working in a group with people with a different personality type, and they were given three traits of people with a different personality type (e.g., females read that people with an M personality type were rational).

Finally, seating was used to make the faultline more salient. After all participants had read the information about the task, they were seated in a new room in which the group would be performing the task. Same-gender group members were always seated next to each other at a rectangular table, facing the opposite-gender members. Such converging of diversity dimensions (i.e., gender, [bogus] personality feedback, seating) results in high within-subgroup similarity and high between-subgroup differences, which makes subcategorization more likely (Turner et al., 1987; van Knippenberg, De Dreu, et al., 2004; cf. Gaertner, Mann, Murrell, & Dovidio, 1989). We thus created a perfect faultline, in the sense that differences in gender, (bogus) personality feedback, and seating arrangement were perfectly correlated (cf. Lau & Murnighan, 1998; Thatcher et al., 2003). Previous research has shown that this specific convergence of diversity attributes elicits a strong faultline and evokes disadvantageous group processes (Homan et al., 2006b).

*Manipulation of informational diversity.* After the feedback about the personality test and before working on the task, participants received the instructions for the decision-making task and some information about surviving in the desert. This information was written by the experimenters and was used to manipulate informational diversity. Based on expert information (Johnson & Johnson, 1982), twelve different categories of information concerning surviving in a desert were distinguished (e.g., make sure you do not dry out, create shade, batteries overheat in the heat). In the information package, these twelve different categories were mentioned in such a way that thoughtful use of the information could help in determining which items would be useful for surviving in a desert. In the informationally diverse conditions, eight of these categories of information were divided into two equally informative parts (part A and part B).<sup>2</sup> Two of the group members received part A and two of the group members received part B. This information was always distributed in such a way that same gender group members received the same information (again enhancing the faultline).

*Manipulation of diversity beliefs.* After the personality test and before the decision-making task, participants received some additional information about working in teams. Through this information, diversity beliefs were

manipulated. Groups in the pro-diversity beliefs condition read that research had shown that gender-diverse groups typically performed better on decision-making tasks, and experienced more pleasant group processes than gender-homogeneous groups. Conversely, groups in the pro-similarity beliefs condition read that research had shown that gender-homogeneous groups typically performed better on decision-making tasks, and experienced more pleasant group processes than gender-diverse groups. Following this information, the participants received a short introduction to the task and some feedback about their personality type. Finally, participants were given a questionnaire to check the manipulation of diversity beliefs. After reading all the information, the participants were brought to another room and were seated together in a four-person group. They were then given 30 minutes to work on the decision-making task together in order to determine which objects were most important, and to write these objects down. The groups were videotaped during the interaction. When a group was finished, the participants were asked to fill out a questionnaire to check the manipulation of informational diversity. After that participants were debriefed and thanked.

#### *Dependent Variables*

*Manipulation checks.* Seven items were used to check the manipulation of informational diversity (e.g., "during the group task, the group members regularly said things I did not know," and "the group members often had the same ideas as I did about what was important for surviving in the desert [reverse coded]"). Reliability analysis showed that these seven questions indeed measured the same construct ( $M = 3.28$ ,  $SD = 1.07$ ,  $\alpha = .79$ ). For the manipulation check of diversity beliefs we used four items (e.g., "groups that are diverse on gender usually perform better than groups that are homogeneous on gender";  $M = 4.22$ ,  $SD = 1.42$ ,  $\alpha = .86$ ). All items were scored on 7-point Likert scales, ranging from 1 = *totally disagree* to 7 = *totally agree*.

*Performance.* Performance was determined by calculating the mean score per item for each group. In the original task, twelve categories of items were distinguished. Based on these categories a coding scheme was developed by which performance could be calculated. Better items (i.e., items that were ranked higher in the expert ranking reported by Johnson & Johnson, 1982) received a higher score, with the highest possible score being 12 points. For example, when the group decided they would bring a magnetic compass, they received a score of 1 (i.e., a very low score), because the information clearly indicated that groups should not walk. Two individuals who were blind to the hypotheses randomly coded the lists of items of 21% of the groups. We assessed

the inter-rater reliability by computing intraclass correlations (ICC, Shrout & Fleiss, 1979). The average intra-class correlation for the two raters was .91, which is considered "excellent" according to the criteria for reliability coefficients developed by Cicchetti and Sparrow (1981). Finally, because instructions asked for quality items, we divided the score by the number of items generated. In this way, groups that came up with a lot of low quality items could not get a higher score than groups that came up with a few high quality items. Thus, quality of performance was not influenced by quantity.<sup>3</sup>

*Information elaboration.* Information elaboration at the group level involves the degree to which information is shared, and is being processed by the group members (van Knippenberg, De Dreu, et al., 2004; cf. Hinsz et al., 1997). Elaboration of information was measured by coding the videotapes of 44 groups (two groups had to be omitted from the analyses due to technical problems). The coding scheme was developed based on the different information categories as described under the manipulation of informational diversity. It was expected that the differences between groups receiving homogeneous and groups receiving heterogeneous information would only be visible when examining the unshared information items. Thus, because we did not expect (or find) differences between groups on the elaboration of shared information items, we focused on the eight information categories that were unshared in the heterogeneous information conditions.<sup>4</sup>

The coding scheme was constructed as follows. The higher the score, the more an information item was elaborated upon. A score of "0" was given when an information item was not mentioned at all during the discussion. A score of "1" was given when information was mentioned, but none of the other members reacted to it (i.e., if the information was only exchanged). A score of "2" was given when one of the members mentioned an item of information and at least one of the other members reacted to it (e.g., by saying something like "ok" or by nodding), but after this the group still failed to ask questions about it or integrate it with the other information. A score of "3" was given when a unshared piece of information was mentioned by one of the group members and one or more other members clearly responded by asking a question about it (e.g., "Why is it important to give light signals?"). A score of "4" was given when the mentioning of an unshared information item resulted in a conclusion about whether something was important or not (e.g., "ah, a mirror must be important, you can use the light of the sun to signal with that."). Finally, a score of "5" was given when the information item was combined with another piece of unshared information by one of the other group members (e.g., "Wait a

minute, we need protection from the sun as well, right? Why don't we take an aluminum tent with us, that will create shade *and* will reflect light as well."'). Some groups immediately jumped from level 1 of elaboration to level 4 of elaboration, while some groups went through all levels of elaboration for each item. We therefore did not just add everything together, because that might have given "slow" groups an advantage over "fast" groups. Rather, we determined the highest level of information elaboration for each information item (either 0, 1, 2, 3, 4 or 5); the total amount of information elaboration was then determined by computing the sum of information elaboration for the eight information categories. The maximum number of points that could be obtained thus was 8 items x 5 points is 40 points. Two independent raters coded the videotapes. They provided double ratings of twenty percent of the videotapes to check interrater reliability. Interrater reliability was excellent (Cohen's kappa =.98).

## Results

### *Treatment of the Data*

In order to test the hypotheses, we used analysis of variance for Hypotheses 1 and 2 and regression analysis for Hypotheses 3 and 4. The manipulation check variables were measured at the individual level and aggregated to the group level.

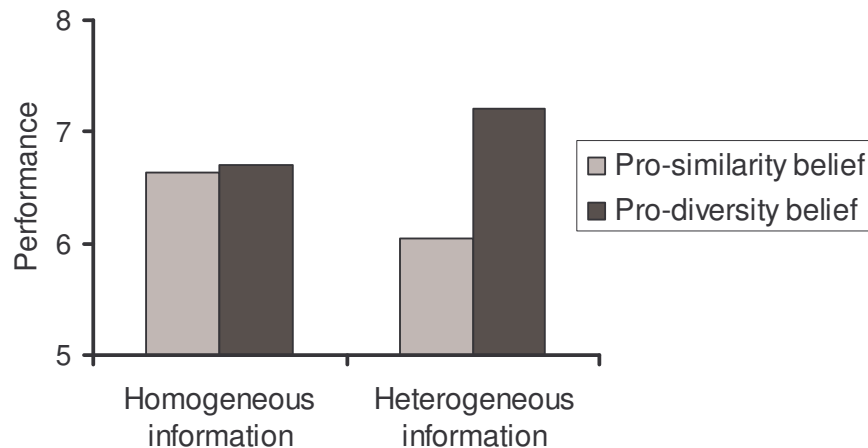
### *Manipulation Checks*

The manipulation checks for informational diversity showed a significant effect of information,  $F(1, 42) = 45.52, p < .01, \eta^2 = .52$ . Groups in the homogeneous information condition ( $M = 2.73, SD = .51$ ) indicated that the information that the group members received was less diverse than did groups in the heterogeneous information condition ( $M = 3.87, SD = .67$ ). The manipulation checks for informational diversity were not influenced by the manipulation of diversity beliefs,  $F(1, 42) = 0.63, ns$ . There was no interaction between informational diversity and diversity beliefs,  $F(1, 42) = 3.44, ns$ .

The manipulation checks for diversity beliefs showed a main effect of diversity beliefs,  $F(1, 42) = 25.87, p < .01, \eta^2 = .38$ . Groups that held pro-diversity beliefs ( $M = 4.85, SD = .84$ ) indicated that diverse teams would perform and cooperate better than groups that held pro-similarity beliefs ( $M = 3.64, SD = .74$ ). The manipulation checks for diversity beliefs were not influenced by informational diversity,  $F(1, 42) = 0.02, ns$ , or by the interaction between informational diversity and diversity beliefs,  $F(1, 42) = 0.40, ns$ .

### Performance

First of all, ANOVA revealed a significant main effect of diversity beliefs on performance, indicating that groups that held a pro-diversity belief performed better ( $M = 6.95$ ,  $SD = .96$ ) than did groups that held a pro-similarity belief ( $M = 6.36$ ,  $SD = .89$ ),  $F(1, 42) = 5.27$ ,  $p < .05$ ,  $\eta^2 = .11$ . More important, we obtained an interaction between diversity beliefs and informational diversity,  $F(1, 42) = 4.25$ ,  $p < .05$ ,  $\eta^2 = .09$  (see Figure 3.1). Supporting Hypothesis 1, simple effects analysis showed that groups that received diverse information and held pro-diversity beliefs ( $M = 7.20$ ,  $SD = .82$ ) outperformed groups with diverse information and pro-similarity beliefs ( $M = 6.04$ ,  $SD = .74$ ),  $F(1, 42) = 4.27$ ,  $p < .05$ . Groups with homogeneous information were not influenced by diversity beliefs; they performed the same regardless of whether they held pro-diversity beliefs ( $M = 6.70$ ,  $SD = 1.10$ ) or pro-similarity beliefs ( $M = 6.64$ ,  $SD = .94$ ),  $F(1, 42) = .03$ , *ns*.



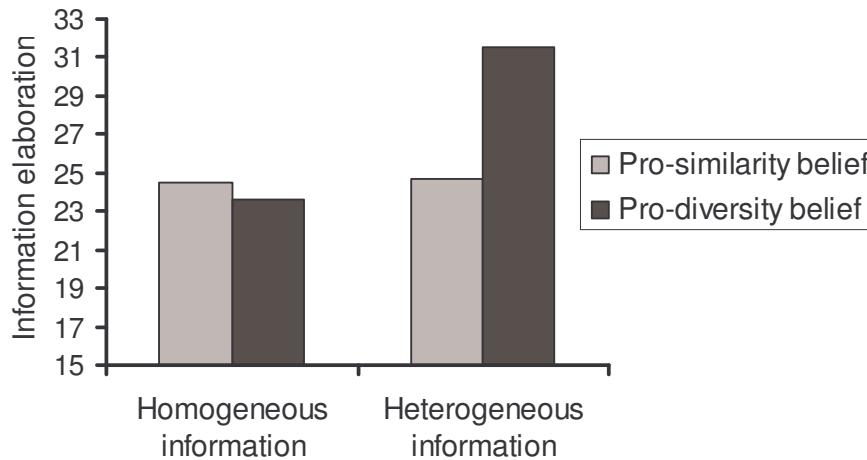
**Figure 3.1** - Group performance as a function of informational diversity and diversity beliefs.

### Information Elaboration

ANOVA revealed a main effect of diversity beliefs on information elaboration as coded from the video tapes, showing that groups with pro-diversity beliefs ( $M = 27.59$ ,  $SD = 6.21$ ) elaborated more information than did groups with pro-similarity beliefs ( $M = 24.61$ ,  $SD = 4.54$ ),  $F(1, 42) = 4.39$ ,  $p < .05$ ,  $\eta^2 = .08$ . More important, we obtained a significant interaction between diversity beliefs and informational diversity,  $F(1, 42) = 6.61$ ,  $p < .05$ ,  $\eta^2 = .33$  (see Figure 3.2). As expected, groups that received diverse information and held



pro-diversity beliefs ( $M = 31.55$ ,  $SD = 5.82$ ) elaborated more information than did groups with diverse information and pro-similarity beliefs ( $M = 24.70$ ,  $SD = 5.08$ ),  $F(1, 42) = 10.96$ ,  $p < .01$ . Groups that had homogeneous information were not influenced by diversity beliefs – they elaborated the same amount of information regardless of whether they held pro-diversity beliefs ( $M = 24.54$ ,  $SD = 4.29$ ) or pro-similarity beliefs ( $M = 23.64$ ,  $SD = 3.57$ ),  $F(1, 42) = .22$ ,  $ns$ . These results support Hypothesis 2.



**Figure 3.2** - Information elaboration as a function of informational diversity and diversity beliefs.

#### *Information Elaboration and Performance*

A regression analysis was conducted to examine whether performance was more strongly related to information elaboration in the informationally diverse groups than in the informationally heterogeneous groups, as predicted in Hypothesis 3. Informational diversity was dummy coded (0 for homogeneous information and 1 for heterogeneous information), information elaboration was centered, and their cross-product was computed. These three variables were then simultaneously entered into the regression equation to predict group performance. As expected, the interaction between informational diversity and information elaboration on performance was significant,  $\beta = .61$ ,  $t = 2.73$ ,  $p < .01$ . In line with Hypothesis 3, informationally heterogeneous groups performed significantly better when they elaborated more rather than less information. Simple slope analysis showed that this effect was significant,



$\beta = .47$ ,  $t = 2.60$ ,  $p < .05$ . The performance of informationally homogeneous groups was not significantly affected by information elaboration,  $\beta = -.50$ ,  $t = -1.82$ , *ns*.

#### *Mediation Analysis*

Hypothesis 4 predicted that diversity beliefs would moderate the effect of informational diversity on performance through their impact on information elaboration. To test this predicted pattern of mediation, we followed the mediation procedure developed by Baron and Kenny (1986). Because, as predicted, information elaboration was more strongly related to performance in the informationally heterogeneous condition than in the informationally homogeneous condition (Hypothesis 3), regression slopes are not parallel between conditions (cf. Stevens, 1996). As a result, we cannot simply use information elaboration as a mediator of the interactive effect of diversity beliefs and informational diversity on performance. Rather, we have to include the "covariate interaction" between informational diversity and elaboration as a mediator of the interaction (this covariate interaction reflects the differences in regression slopes between informational diversity conditions; Hull, Tedlie, & Lehn, 1992).

We already established that pro-diversity beliefs as compared with pro-similarity beliefs inspired greater elaboration in informationally diverse groups (but not in informationally homogeneous groups), and that informational diversity and diversity beliefs similarly interacted to affect performance. To establish that the higher performance engendered by pro-diversity beliefs in informationally diverse groups was indeed mediated by greater elaboration of task-relevant information, we should also establish that the interaction effect on performance is reduced to nonsignificance when controlling for the covariate interaction. To test whether this was the case, the interaction between informational diversity and diversity beliefs (including both main effects) and the covariate interaction between informational diversity and information elaboration (including the main effect of information elaboration) were simultaneously entered into the equation to predict performance. This analysis produced a significant effect of the covariate interaction (informational diversity by information elaboration) on performance,  $\beta = .59$ ,  $p < .05$  (Hypothesis 3), and the originally significant interaction between informational diversity and diversity beliefs was reduced to non-significance,  $\beta = .43$ , *ns*. In line with Hypothesis 4, these results indicate that elaboration of task-relevant information indeed mediated the effect of diversity beliefs on the quality of group decisions in informationally diverse groups.

## Discussion

As a result of the increasing diversity of the workforce, work groups are inevitably more and more composed of members with different demographic backgrounds, values, expertise, and perspectives. Although the presence of diverse perspectives and knowledge in teams can potentially lead to enhanced performance (i.e., the "value-in-diversity" hypothesis; e.g., Cox, Lobel, & McLeod, 1991; Williams & O'Reilly, 1998), diverse teams are often unable to benefit from their diversity. When informational diversity converges with other salient dimensions of diversity (creating a "diversity faultline"), valuable differences in task-related dimensions are often not used to their full potential (Jehn et al., 1999; Lau & Murnighan, 1998; Phillips et al., 2004). We argue, however, that diversity faultlines need not be detrimental to group performance, proposing that beliefs about the value of diversity (versus homogeneity) influence the degree to which diverse groups are able to fulfill their potential. In support of this proposition, the present study showed that diversity beliefs moderated the relationship between informational diversity and performance in teams with a diversity faultline, such that informationally diverse (but not informationally homogeneous) groups performed better when they endorsed a pro-diversity belief rather than a pro-similarity belief. Moreover, mediation analysis revealed that this moderating effect of diversity beliefs on performance in informationally diverse groups was mediated by the groups' level of information elaboration. Below we consider the theoretical and practical implications of these findings, discuss the strengths and limitations of our approach, and outline some avenues for future research.

### *Theoretical Contributions*

Although contemporary models of diversity seem to be able to explain the positive or negative effects of diversity when they occur, they are less able to *predict* when positive or negative effects will occur. As a case in point, recent attempts at meta-analytical integration have not been very successful in reliably linking diversity to performance (Bowers et al., 2000; Webber & Donahue, 2001; see also Wood, 1987). Van Knippenberg, De Dreu et al. (2004) attribute this to the "main effects" approach that has characterized a lot of diversity research and propose that it is impossible to understand the effects of diversity without taking moderators into account (for similar arguments, see Pelled et al., 1999; Phillips, 2003). In support of this general proposition, research focusing on moderators of elaboration processes (e.g., task complexity; Bowers et al., 2000; Jehn et al., 1999) and subcategorization (e.g., the extent to which dimensions of diversity cross-cut or converge; Homan et al., 2006b; Lau & Murnighan, 1998;

Phillips et al., 2004; Thatcher et al., 2003) has yielded more consistent results. The present focus on diversity beliefs should thus be seen as a contribution to and an extension of this emerging attention to moderators of the relationship between work group diversity and work group functioning. It is noteworthy in this respect that the positive effects of pro-diversity beliefs occurred under faultline conditions, which have been shown in previous work to be detrimental to group functioning (Homan et al., 2006b; Thatcher et al., 2003). This not only sheds new light on research into faultlines (cf. Lau & Murnighan, 1998; Thatcher et al., 2003), but also gives us a more positive outlook on diversity issues in teams (also see Gibson & Vermeulen, 2003).

Several scholars have argued that diversity beliefs and related constructs may play a crucial role in diverse teams (e.g., Ely & Thomas, 2001; Kossek & Zonia, 1993; Swann, Polzer, Seyle, & Ko, 2004; van Knippenberg, Haslam et al., 2004). A quantitative test of the moderating effect of diversity beliefs in the relation between diversity and group performance was still missing, however, and in that respect the present study provides an important extension of research in the role of diversity beliefs, attitudes, perspectives, and climates. Importantly, due to its experimental nature, the present study is also able to provide a strong and internally valid test of this moderating effect. In a controlled study of diverse four-person work groups we found that informationally diverse groups elaborated more information and performed better when they endorsed pro-diversity rather than pro-similarity beliefs. Because of the experimental nature of the study, we can draw causal conclusions as to the role of diversity beliefs in diverse work groups. This is of particular importance in this respect, because group performance arguably could also be a cause of diversity beliefs (i.e., more favorable experience with diversity resulting in more pro-diversity beliefs). We should note, however, that the causal direction established in the current study does not imply that the reverse direction of causality may not also exist (i.e., diversity beliefs and performance mutually influencing each other). From the perspective of diversity management, however, it would seem more important to focus on the current causal chain.

Our experimental approach not only allows us to reach conclusions about causality, it also provided us with relatively objective measure of group performance and of the *process* underlying the effects of diversity beliefs on performance. In order to get information about the group processes that lead to group performance, we video-taped the groups' discussions and coded these discussions for the amount of information elaboration that took place. This

allowed us to examine the influence of information elaboration on group performance. In line with the theoretical argument advanced by van Knippenberg, De Dreu et al. (2004), we found that information elaboration is conducive to performance in diverse work groups. Furthermore, our results show that the interactive effects of informational diversity and diversity beliefs on performance are mediated by the amount of information elaboration that occurred during group discussion. As such, the present findings contribute to our understanding of the processes that give rise to successful performance in diverse teams.

#### *Practical Implications*

The results of the present study are not only valuable for diversity theory, but may also point to a helpful strategy for organizations in managing their increasingly diverse workforce. It is important that teams perform to the best of their potential, and based on the present research it seems that convincing teams of the value of diversity might help in obtaining that goal. In organizations, diversity beliefs can be influenced by multiple sources, such as the organizational culture or team leaders (Ely & Thomas, 2001). It is important, therefore, that managers advocate a positive outlook on diversity so as to encourage pro-diversity beliefs in employees, work groups, and the organization as a whole.

The present results also have important implications for diversity training programs, which are becoming increasingly popular. When searching for books on diversity training on the Internet (retrieved June 5, 2005 from <http://www.amazon.com>) one finds over 90,000 books, articles, flyers, and advertisements. Interestingly, most diversity training seems to be limited to making people aware of their stereotypes about other groups and changing people's feelings and ideas about those groups (e.g., Karp & Sammour, 2000). The current findings suggest that it is also important to manage people's feelings toward *diversity* (i.e., rather than about different others) and making them aware of the potential of being a member of a diverse team. It would therefore seem worthwhile to extend diversity training programs that now typically focus on stereotypes about dissimilar others (e.g., Kossek & Lobel, 1996; Rynes & Rosen, 1995) with a focus on beliefs about and attitudes toward diversity itself.

A crucial determinant of successful teamwork concerns the processing of task-relevant information (Hinsz et al., 1997). Informational diversity can enhance the elaboration of task-relevant information and perspectives within the group, which may increase team effectiveness (van Knippenberg, De Dreu

et al., 2004). In organizations, informationally diverse teams will often have a larger pool of information and ideas than informationally homogeneous teams. Accordingly, when circumstances are conducive to the elaboration of task-relevant information, informationally diverse teams should be able to outperform informationally homogeneous teams (e.g., Cox, 1993; Jehn et al., 1999). This means that promoting pro-diversity beliefs might lead informationally diverse teams to outperform informationally homogeneous teams, because the former are likely to have more information at their disposal than the latter. This possibility could not be addressed in the present study, because providing informationally diverse groups with more information than informationally homogeneous groups would have confounded informational diversity with the amount of information available to the group. Although this coalescence is likely to occur in organizations, it was undesirable for our purposes, because the aim of the present study was to show that diversity beliefs (and not the amount of information available) moderate the diversity-performance relationship. Nevertheless, one could predict that, in organizational settings, informationally diverse groups may outperform informationally homogeneous groups even under faultline conditions, provided that they hold pro-diversity beliefs.

#### *Limitations and Directions for Future Research*

Although experiments are not conducted in a quest for external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), reports of experimental research tend to elicit questions of external validity among their readership. Obviously, then, confidence in the conclusions advanced here could be bolstered when the current results were replicated in a study of teams in actual organizations, and this would indeed seem an important avenue for future research. In this respect, it is noteworthy that a previous study of work group diversity has found similar effects of diversity beliefs on identification in both an experiment and a field study (van Knippenberg, Haslam et al., 2004). Likewise, Ely and Thomas' (2001) qualitative analysis of the role of diversity perspectives in organizations suggests that the effects of diversity beliefs observed in the present study also occur in the field. As always, however, the proof of the pudding is in the eating, and it would be valuable if future research would focus on the effects of diversity beliefs on team performance in the field.

A second important direction for future research would be to develop theory about the origins of diversity beliefs. In order to be able to manage diversity beliefs, we would need to know which factors fuel these beliefs. At least three partly interrelated antecedents of diversity beliefs are suggested by

previous research. First, van Knippenberg, Haslam et al. (2004) identified diversity-related task requirements as a source of diversity beliefs, showing that individuals working on a task that required diverse perspectives developed more positive attitudes toward diversity than did individuals who worked on a task that required homogeneous perspectives. Second, prior experience would seem to be a source of diversity beliefs. When people have positive experiences with working in a diverse group, it is likely that those experiences will shape their beliefs about diversity in the future. Finally, Flynn (2005) and Strauss et al. (2003) note that individual difference variables may affect beliefs about different ethnic groups and diversity in general. In sum, then, it would seem appropriate to explore individual differences as well as situational influences both internal and external to the work group, as determinants of diversity beliefs and attitudes. Considering these and other potential precursors of diversity beliefs may help to lay the foundations for successful diversity management in organizations.

#### *Conclusion*

This study provides an important first step in examining the effects of diversity beliefs on performance in informationally diverse groups. We showed that informationally diverse groups that endorsed pro-diversity beliefs elaborated more task-relevant information and performed better than did informationally diverse groups that endorsed a pro-similarity belief. This finding has obvious implications for diversity management and performance in organizations. Given that it is impossible as well as undesirable to create homogeneity in organizational teams, managing diversity beliefs seems to be a promising approach when it comes to harvesting the value in diversity.



### Notes

<sup>1</sup> A pretest with 23 participants who did not participate in the main study showed that there was no difference between men and women on task performance, suggesting that the task is not gender-related,  $F(1, 22) = .29, ns$ . Also, we tested whether the participants themselves perceived the task to be gender-related by asking them whether they thought the task was more related to women or more related to men on a seven point scale (with the midpoint of the scale [4] representing neither to women nor men). A one-sample T-test showed that the mean response ( $M = 4.22, SD = 0.90$ ) did not differ from the midpoint of the scale (4;  $t[22] = 1.16, ns$ ), indicating that participants did not perceive the task to be gender-related. Again, we found no difference in response between men and women,  $F(1, 22) = .91, ns$ .

<sup>2</sup> A pretest ( $N = 22$ ) revealed that that students who received all the information (i.e., parts A and B) did significantly better ( $M = 25.00, SD = 6.68$ ) than did those who read only information set A ( $M = 35.50, SD = 8.60$ ) or information set B ( $M = 39.67, SD = 8.24$ ),  $F(2, 19) = 6.73, p < .01, \eta^2 = .42$  (lower scores reflect better performance). Participants who received only set A or set B did not differ in terms of performance,  $F(1, 10) = .83, ns$ . These findings suggest that (1) information sets A and B are equally useful and informative when it comes to listing items needed for survival in the desert, and (2) people who are aware of the information in both sets perform better than do those who only know set A or set B.

<sup>3</sup> ANOVA revealed no effects of the experimental manipulations on the number of items generated,  $F(3, 42) = .41, ns$ .

<sup>4</sup> ANOVA revealed no effects of the manipulation on the elaboration of shared information items,  $F(3, 42) = 1.10, ns$ .





## CHAPTER 4

### FACING DIFFERENCES WITH AN OPEN MIND: THE INFLUENCE OF OPENNESS TO EXPERIENCE AND SALIENCE OF SOCIAL CATEGORIES ON THE PERFORMANCE OF DIVERSE WORK GROUPS

*Based on Homan, Hollenbeck, Humphrey, van Knippenberg, Ilgen, & Van Kleef (2006)<sup>1</sup>*

When important decisions have to be made, organizations often turn to groups because groups are expected to have more and better informational resources than individuals (Ilgen, 1999). Groups in organizations have become more diverse in terms of their demographic composition over the years and will continue to become more diverse in years to come (Jackson, 1991; Triandis, Kurowski, & Gelfand, 1994; Williams & O'Reilly, 1998). Because work group diversity has been found to influence group performance (e.g., Guzzo & Dickson, 1996; Milliken & Martins, 1996; Williams & O'Reilly, 1998), understanding the processes that underlie these effects and managing them has become a major challenge to organizational theory and practice.

On the one hand, diversity has potential value for teams because diverse teams generally possess more (diverse) information and knowledge, which may enhance team performance (Williams & O'Reilly, 1998). On the other hand, diversity may also disrupt team processes and performance. These negative outcomes are often explained from a social categorization and a similarity/attraction perspective. The social categorization perspective posits that negative effects occur to the extent that individuals perceive the team as consisting of distinct subgroups (i.e., when team members make "we-they" distinctions; Brewer, 1995; Phillips, Mannix, Neale, & Gruenfeld, 2004; van Knippenberg, De Dreu, & Homan, 2004). Along similar lines, the similarity/attraction paradigm (e.g., Byrne, 1971) predicts that demographic dissimilarities within teams decrease interpersonal attraction and liking because people favor similar over dissimilar people (e.g., Tsui & O'Reilly, 1989). The aim of the present paper is to increase our understanding of such diversity dynamics by exploring how to minimize the harmful effects of demographic diversity.

Because diversity in organizations is unavoidable, it is not only impossible but also undesirable to create homogeneous teams. Therefore, in the present study we accept diversity as a given, and we explore how the performance of demographically diverse teams can be increased. First, we argue that the team's level of openness to experience influences the performance of diverse teams, in such a way that teams in which members have a high (rather than low) level of openness to experience will perform better. Second, we explore how structural aspects of the situation influence the salience of dissimilarities and thereby the issues associated with diversity. The structural aspect we focus on here is the influence of *reward structures*. Reward structures are not only important tools for influencing team's effectiveness (e.g., Hackman, 1990), but they can also influence the salience of diversity dimensions within the team. Groups in which demographic diversity is reinforced (creating a diversity faultline) are compared to groups in which "we-they" distinctions are decreased by structural aspects of the situation, namely by: (1) cross-categorizing demographic diversity with reward structure; and (2) emphasizing the superordinate identity. Finally, we propose that the positive effects of openness to experience on performance will especially come about in teams in which demographic diversity is salient. In exploring these issues we generate important insights as to how to manage diversity issues in organizations.

### **Work Group Diversity**

Diversity refers to differences between individuals on any attribute that may lead to *the perception that another person is different from the self* (e.g., Jackson, 1991; Triandis, et al., 1994; Williams & O'Reilly, 1998). In a comprehensive review of the literature, Williams and O'Reilly (1998) argued that diversity can have detrimental effects on team functioning. From a social categorization perspective one can predict that within demographically diverse teams, subgroup categorization can create "we-they" distinctions, and these distinctions can in turn lead to inter-group bias, such as in-group favoritism or prejudice (Brewer & Brown, 1998; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). Along similar lines, similarity/attraction perspectives (e.g., Williams & O'Reilly, 1998) predict that people favor working with and are attracted to similar rather than dissimilar people. In support of these ideas, a number of studies report negative effects of diversity on group functioning, such as interpersonal tensions and conflict (e.g., Alagna, Reddy, & Collins, 1982; Chatman, Polzer, Barsade, & Neale, 1998; Pelled, Eisenhardt, & Xin, 1997; Tsui & O'Reilly, 1989), turnover intentions (e.g., Tsui, Egan, & O'Reilly, 1992), and

low group performance and creativity (e.g., Ancona & Caldwell, 1992; Gruenfeld, Mannix, Williams, & Neale, 1996; Harrison, Price, & Bell, 1998; Triandis, Hall, & Ewen, 1965).

Although these theoretical considerations predict negative effects of demographic diversity in teams, studies have found inconsistent results (e.g., Bowers, Pharmer, & Salas, 2000; Webber & Donahue, 2001). For example, Cox, Lobel, and McLeod (1991) showed that demographic differences had positive effects on team performance. However, in studies by Jehn, Northcraft, and Neale (1999) and Pelled et al. (1999) demographic diversity was not related at all to group performance. So, if demographic differences do not always result in deteriorated group functioning, it is important to know how these negative effects can be prevented. In the present study, we therefore focus on how to reduce these negative effects and we propose that within diverse teams, performance can be influenced by an individual difference variable and the salience of diversity dimensions. First, we will examine the notion that people might differ in their reaction to dissimilarities between people within groups.

### **Openness to Experience**

As elaborated upon before, diversity can negatively affect teams because people tend to respond more favorably to similar rather than dissimilar others. However, people may differ in their reactions to diversity and dissimilarity in groups, and these individual differences might be important in predicting the influence of diversity in teams. Especially for task groups, personality characteristics of the team members may affect the favorability of responses to diversity and dissimilar others. Diversity might thus have less negative effects in groups that are more open toward differences. Although personality characteristics have also been studied as diversity variable (e.g., Barry & Stewart, 1997; Mohammed & Angell, 2003), we are interested in the additive effect of a personality trait at the group level.<sup>2</sup>

One of the most widely used taxonomies in personality research is the Big Five factor model (Costa & McCrae, 1988), and this taxonomy is also widely used in studies on personality issues in teams. Group members' dispositional characteristics have been conceptually (e.g., Hackman & Morris, 1975; Haythorn, 1953; Jackson et al., 1992) and empirically associated with group processes and performance (e.g., Barrick, Stewart, Neubert, & Mount, 1998). Numerous studies have shown that personality traits such as cognitive ability, extraversion, neuroticism, and conscientiousness can directly affect team functioning (e.g., Barry & Stewart, 1997; Neuman, Wagner, & Christiansen,

1999). Additionally, individual differences have been shown to moderate the effects between situational- and task-relevant variables and team functioning (e.g., Hollenbeck et al., 2002; LePine, 2003).

Of the five components in the Big Five, the factor that seems most likely to influence whether people will positively react to dissimilarity within their work group is openness to experience. Although openness to experience is reported to be the most difficult of the five factors to grasp, some facets are repetitively distinguished. Costa and McCrae (1992) distinguish six facets of openness to experience of which three are important in terms of reactions to dissimilarities: (a) ideas (e.g., intellectual curiosity), (b) actions (e.g., valuing experimentation and learning), and (c) values (e.g., moral issues should not be based on religion or principle). Openness to experience has been said to influence how ideas, attitudes, and beliefs are structured within individuals (Rokeach, 1960). People high on openness to experience tend to be less dogmatic in their ideas, more willing to consider opinions different from their own, and acknowledge more frequent revisions in attitudes than people low on openness to experience (e.g., George & Zhou, 2001).

People high on openness to experience seem to be more open to all kinds of situations and events, less rigid in their behavior, and less likely to reject or deny conflicts (e.g., LePine, 2003). All these aspects of openness to experience seem to imply that people high on openness to experience are more open to diversity in teams, are more likely to see the value in these differences, and are more prone to creating new solutions to complex problems and situations. That attitudes or beliefs about dissimilarities can indeed have an effect on team functioning, has been shown in a study by Homan, van Knippenberg, Van Kleef, and De Dreu (2006a). They found that demographically diverse groups made better use of diverse information and performed better when they had pro-diversity rather than pro-similarity beliefs. Taking all these considerations together, we propose that heterogeneous groups can perform well as long as the group has a high level of openness to experience. This brings us to our first hypothesis.

*Hypothesis 1: Diverse teams with a high level of openness to experience will outperform diverse teams low on openness to experience.*

### **Salience of Social Categories**

Diversity is more likely to negatively influence team functioning to the degree that work group members are more aware of subgroups and/or dissimilarities within the group. Whether diverse groups will indeed

experience subgroup categorization processes and dissimilarities will, among other things, be determined by the *salience* of social categories within the group. Thus, in addition to selecting group members with certain personality characteristics, a second way one can influence the performance of diverse teams is to manipulate the salience of the differences within diverse groups. Among other things, the salience of subgroups is influenced by the *comparative fit* of the subgroup-categorization (Oakes, Haslam, & Turner, 1994; Turner et al., 1987). Comparative fit is a function of the perceived differences within and between categories (i.e., groups), and increases with lower perceived differences within groups and higher perceived differences between groups. Conversely, comparative fit decreases to the extent that individuals perceive the differences between subgroups to be smaller than the differences within subgroups.

Inevitably, work group members differ on a variety of demographic dimensions. These differences may be correlated to a greater or lesser degree (e.g., gender differences in a group may be independent of age differences or race differences, but gender and age may also co-vary). For diverse groups, this means that the higher the comparative fit, the more people will be inclined to perceive the group as consisting of subgroups (i.e., subgroup categorization; Brewer, 2000; Brewer & Gaertner, 2001; Earley & Mosakowski, 2000; Hewstone, Rubin, & Willis, 2002). Quite recently, this notion of social category salience has received more research attention within the diversity literature (e.g., Earley & Mosakowski, 2000; Lau & Murnighan, 1998, 2005; Thatcher, Jehn, & Zanutto, 2003). One way in which the organizations might influence the salience of a diversity dimension is by using reward structures.

*Reward structures.* Within organizations reward structures are important tools for influencing team's effectiveness (e.g., Hackman, 1990; Lawler & Cohen, 1992). The design of reward systems can, for example, be based on the performance of individuals, small groups, or teams (Kerrin & Oliver, 2002). Although reward structures are often used as a management tool for motivating people, they also have the potential to influence the salience of social categories (e.g., Gaertner et al., 1999). One can imagine that rewarding a diverse team on the basis of team performance might decrease the salience of subgroups, because they emphasize minimizing distinctions among group members (e.g., Beersma, Hollenbeck, Humphrey, Moon, Conlon, & Ilgen, 2003). On the other hand, teams might be rewarded on the bases of performance of subgroups within the team. One can imagine a situation in which subgroups from different departments work together within a project team, in which the

reward structure is based on the performance of each single subgroup. In this situation, reward structure can potentially increase the salience of these subgroups.

In the present study, we will examine how different reward structures influence category salience and performance. First, as illustrated in the example above, rewards can reinforce existing subgroups creating a *faultline* team. Second, rewards can *cut across* the demographic differences, and lower the salience of the existing subgroups. Third, reward structures can also create a strong *superordinate identity*, and thus minimize the perceptions of all kinds of sub-groups.

#### *Faultlines*

It has been proposed that diverse groups experience especially negative effects of being diverse when multiple diversity dimensions converge within the team (i.e., when the team has a "diversity faultline"; e.g., Jehn et al., 1999; Lau & Murnighan, 1998; Thatcher et al., 2003). When diversity dimensions are reinforced with other characteristics of the team (i.e., are correlated), comparative fit is higher, and this makes social categories more salient (Doise, 1978; Oakes et al., 1994; Thatcher et al., 2003). Phillips et al. (2004), for example, showed that within four-person groups, diverse information was less elaborated upon when it was divided in alignment with the existing subgroups. Gaertner et al. (1989) showed that when existing subgroups were made salient by rewarding teams based on subgroup performance intergroup bias increased. Along similar lines, Lau and Murnighan (1998) argued that convergence of multiple diversity characteristics increases the salience of subgroups, resulting in suboptimal communication and deteriorated group functioning.

To illustrate this idea, imagine a situation in which a team consists of men and women and older and younger people. If all the women in this team are also old and all the men are young, the joint impact of these two dimensions of diversity is accentuated compared to a situation in which age is evenly distributed over gender. In terms of the traditional metrics associated with measuring diversity, the two teams described above could be equal in terms of the amount of diversity represented in each. However, the groups vary in terms of how that diversity is distributed, and this may have drastic effects on group functioning. Thus, diversity can undermine group performance, and this detrimental effect most likely emerges when several dimensions of diversity converge and conspire to create diversity faultlines (Lau & Murnighan, 1998; Phillips et al., 2004; Thatcher et al., 2003). Thus, in line with faultline theory we propose that when diversity is reinforced with reward structure, subgroups



will become salient resulting in deteriorated group functioning (cf. Jehn et al., 1999; Pelled et al., 1999). Below we propose a number of hypotheses comparing a faultline team with teams in which the reward structure either cross-cuts the diversity dimension or creates a strong superordinate identity.

#### *Cross-Categorized Group Identities*

There are a number of reasons why cross-categorization has positive effects (cf. Brewer & Pierce, 2005). First, cross-cutting categories makes social categorization more complex, and decreases the distinction between the ingroup and the outgroup (e.g., Doise, 1978). Second, partially overlapping group memberships undermine the motivational bases that people have for intergroup comparison (e.g., Vanbeselaere, 1991). Because people are a member of multiple categories at the same time there is no need within a group to make a distinction based on one of those categories. Thus, by cross-categorizing multiple dimensions of diversity the salience of former subgroups is reduced or eliminated and differences between groups are minimized. In this way, the potential positive effects or elements of diversity are maintained, while the negative effects (e.g., intergroup bias) are diminished. In terms of the example given above, perceived differences in a work group that is diverse on the dimensions of gender and age become smaller when some men and women are relatively old and some men and women are relatively young, because people will have something in common with each other on one of the dimensions (i.e., age and gender respectively).

A meta-analysis by Migdal, Hewstone, and Mullen (1998) indeed showed that convergence of attributes (i.e., a diversity faultline) leads to an accentuation of the differences between, and similarities within categories (i.e., high comparative fit), while the crossing of two category dimensions accentuates similarities between the categories and differences within each category (i.e., low comparative fit). Migdal et al.'s analysis further showed that inter-group bias is reduced when diversity attributes are crossed. Marcus-Newhall, Miller, Holtz, and Brewer (1993) showed that crossing existing subgroups with role expectancies decreased intergroup bias compared to converging subgroups with roles. Incorporating cross-categorization in research on diversity issues, Homan, van Knippenberg, Van Kleef, and De Dreu (2006b) examined the beneficial effects of crossing a salient diversity dimension with informational diversity on team functioning. They showed that cross-categorization indeed improved information elaboration, and team climate, and lowered conflict within teams compared to diverse teams in which diversity dimensions created a faultline. These considerations constitute the basis for our next hypothesis

that cross-categorizing a diversity dimension with a reward structure will make those teams perform better than teams in which the diversity dimension is converged with reward structure.

*Hypothesis 2: Diverse teams in which a diversity dimension is crossed with reward structure will outperform diverse teams with a faultline.*

#### *Superordinate Group Identities*

When group members are induced to re-categorize the aggregate as a superordinate group, the one-group representation replaces the former subgroup boundaries with a single, inclusive superordinate boundary (e.g., Brown & Turner, 1981; Doise, 1978; Gaertner et al., 1989; Turner, 1981). In this way, subgroup members' perspectives can be transformed from "us" (i.e., the own subgroup) and "them" (i.e., the other subgroup) to a more inclusive "we" (i.e., the group as a whole). This "common in-group identity" increases positive attitudes toward former out-group members (Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993) and promotes cohesiveness (e.g., Gaertner et al., 1989).

The positive effects of re-categorizing subgroups as one group on intergroup bias were illustrated by a study by Gaertner et al. (1989) who systematically manipulated several factors in the context such as spatial arrangement of the members, assignments of names, and the nature of interdependence among the group members. When these context factors emphasized the group as a whole (i.e., the superordinate identity) people reported significantly less intergroup bias than when the context emphasized the subgroups. Gaertner's work did not pertain to effects on team functioning and performance, but based on these considerations we expect diverse teams to perform better when a reward structure makes the superordinate identity salient compared to a team in which the subgroups are made salient (i.e., a faultline team). This brings us to the third hypothesis of the present study.

*Hypothesis 3: Diverse teams in which a superordinate identity is created will outperform diverse teams with a faultline.*

### **Openness to Experience and the Salience of Social Categories**

Although we have been discussing the main effects on performance that arise out of specific personality characteristics (openness to experience) and the salience of social categories (faultlines, cross-cut identities or superordinate identities), we also argue and hypothesize that this compositional factor and structural factor within diverse groups interact (cf. Hollenbeck et al., 2002). In this context, the positive effects of openness to experience will be most pronounced in groups with a reward structure that makes differences salient.

As proposed in Hypothesis 1, openness to experience makes people more open to differences within teams and will therefore increase performance in diverse teams. One can therefore predict that openness will especially have positive effects in teams in which differences are salient.

In the current study, differences or diversity will most likely be salient when the reward structure makes differences rather than similarities salient within the group. When the reward structure creates a faultline or a cross-categorized group differences will be more pronounced than when a superordinate identity (which emphasizes similarity) is created. We therefore expect that the proposed positive effect of openness to experience will be particularly pronounced in faultline or cross-categorized groups as opposed to groups in which a superordinate identity is stressed. That is, using reward structures to create cross-categorization in the group may be necessary but not sufficient for deriving the benefits of diversity. Low levels of openness to experience may neutralize the effects of the reward structure, thus suggesting a possible interaction between these two factors. Because the superordinate identity may neutralize the perceived differences within the team (e.g., Gaertner et al., 1993), openness to experience will play a lesser role in teams in which the superordinate identity is made salient. Therefore, the final purpose of this study will be to examine interactions between personality composition and structure, and we hypothesize:

*Hypothesis 4: The positive impact of high openness to experience will be more pronounced in teams with a diversity faultline and in cross-categorized teams relative to teams in which a super-ordinate identity is created.*

## Method

### *Participants*

Research participants were 232 business students from a large Midwestern university who were arrayed into 58 four-person teams. The mean age was 20.91 ( $SD = 1.26$ ), and 80.6% indicated to be Caucasian. In exchange for their participation, participants earned class credit and were eligible for cash prizes (10 USD per student) based upon their performance (see "manipulation of reward structure"). The groups were randomly assigned to one of the experimental conditions. The teams were composed so that all teams were gender diverse (i.e., two males, two females) and were thus exactly alike in terms of gender diversity.

### *Procedure*

Participants entered a computer laboratory in groups between four and

twelve people. Depending on the amount of participants, one or two four-person groups were created and the remaining participants performed an individual version of the task. The participants were seated behind a computer screen and filled out a number of questionnaires. After a training session, the participants performed two 30 minutes tasks. After the first and after the second task, the participants filled out a number of electronic questionnaires. The results reported in the present paper are based on the second task that the teams performed.

#### *Task*

The participants engaged in a modified version of the Distributed Dynamic Decision-Making (DDD) Simulation (see Miller, Young, Kleinman, & Serfaty, 1998). The DDD is a dynamic command and control simulation, originally developed for the Department of Defense for research and training. The specific variant used in the present experiment requires little or no military experience and involves skills that emphasize vigilance and monitoring. The object of the networked computer task is to monitor and defend a restricted airspace within a geographic region against an invasion from unfriendly ground or air targets. A depiction of the computer screen and a comprehensive description of the task appears in Hollenbeck et al. (2002) and Beersma et al. (2003). Within this region, four decision makers (DMs) are responsible for defending the grid by identifying and attacking unfriendly targets. Below a short description of the task is provided. The manipulations specific for the present experiment will be explained thereafter.

*The geographic region.* The geographic region (grid) was divided in four geographic quadrants of equal size (NW, NE, SW, SE) and each area was assigned to one of the team members (i.e., decision makers one through four or DM1 through DM4), with DM2 being localized in the northwest, DM4 in the northeast, DM3 in the southwest, and DM1 in the southeast. The four geographic quadrants taken together form a 12 X 12 square within the geographic area. This square was referred to as the *restricted zone*, and within this restricted zone is a 4 X 4 square called the *highly restricted zone*. Outside the restricted zone was a neutral space. The object of the task was to monitor and defend the restricted zones, by identifying and attacking unfriendly forces (i.e., tracks) moving into these zones, while at the same time allowing friendly forces to move in and out of the areas freely. If an unfriendly track entered the restricted zones, the team began to lose points. Twice as many points per second were lost for unfriendly tracks located in the highly restricted zone than in the restricted zone. Points were also lost if tracks get attacked in the neutral

space and when friendly tracks were attacked. Cash prizes were awarded to teams who lost the least amount of points.

The scores were kept on three different levels: individual, pair, and group. The individual score was based on the amount of points lost and gained in each DMs individual quadrant. The geographical pair score was based on the amount of points gained and lost in the *southern* quadrants (DM1 and DM3) and *northern* quadrants (DM2 and DM4). Finally, the group score was based on the amount of points gained and lost in all four quadrants (the restricted zone). Each DM could see his or her individual score, his or her geographic pair score, and the group score.

*Bases and assets.* On the screen, the team members' physical location was indicated by a black box named DM1-DM4. Each DM's base had a *detection ring* (DR) and an *identification ring* (IR) that were used to monitor the air space around the base. Within the detection ring, DMs could detect tracks, and within the identification ring, DMs could discern the nature of the tracks (in terms of friendly and unfriendly). Any track outside the detection ring was invisible to the DMs from their base alone. To see and identify the tracks outside of the detection and identification ring around the base, each DM could launch vehicles and move them near tracks anywhere on the screen. Assigned to each base were four assets, or vehicles, that could be used to identify tracks and defend the space (i.e., keep unfriendly tracks out of restricted areas). The four assets consisted of a certain combination of surveillance aircraft (AWACS), jets, helicopters, and tanks.

*Training.* Before working on the task, all participants received an extensive training, which consisted of two separate modules. First, the team members were introduced to the simulation by means of a standardized PowerPoint presentation, which lasted approximately 20 minutes. In the presentation, the theoretical aspects of the task were explained in words, pictures of the task, and by a voice-over. Second, the participants received a hands-on training of the simulation, which lasted approximately 60 minutes. In this hands-on part of the training the participants learned the basic mouse movements and operations, learned how to identify and engage tracks, and how to move and use assets.

*The scenario.* The scenario lasted for 30 minutes and required the identification of 72 tracks. Each track was preprogrammed to enter the screen at a certain point, and could change course during their route across the grid. Regardless of condition, every team experienced the exact same set of tracks in terms of their number, nature, timing, and sequencing.

*Manipulations and Measures*

*Group personality composition: Openness to experience.* Openness to experience was measured with a 12 item scale taken from the Revised NEO Personality Inventory – short form (NEO-PI-R-short) prior to the experiment. This is one of the most widely used operationalizations of the five-factor model, and Costa and McCrae (1992) provide ample evidence on the reliability and construct validity of this questionnaire. The coefficient alpha estimate of reliability for the 12 items measuring openness to experience was .70.

To determine how to aggregate openness to experience to the group level, we used Steiner's (1972) taxonomy, which separates disjunctive, conjunctive, and additive tasks to classify the type of task used in this study (see also Neuman & Wright, 1999). Of Steiner's (1972) three categories, the additive model best represents the team task used in the present study. Each member could access a certain set of information common to all the team members; however, he or she also had knowledge of certain aspects of the task that were specific to his or her post. If the team wanted to perform at a high level, all team members had to interact with each other to some degree, thereby increasing the team's pool of information. On the basis of the additive nature of the task, the average of the team member's scores was used to represent openness to experience at the team level ( $M = 3.26$ ,  $SD = 0.26$ ; see also Barrick et al., 1998; Ellis, Hollenbeck, Ilgen, Porter, West, & Moon, 2003; Moynihan & Peterson, 2001)

*Group Structure: Faultline, Superordinate, and Cross-Categorized Groups.* Groups were heterogeneous on gender and always consisted of two males and two females. Thus, all teams were equal in terms of their gender diversity. The structure of the groups was manipulated via the reward structures to create either (a) faultline groups, or (b) cross-categorized groups, or (c) groups with a superordinate identity.

In order to create faultline groups and cross-categorized groups, the overall team described above was further broken down into two sub-teams, one that managed the Northern Region (the "Northern sub-team") and one that managed the Southern Region (the "Southern sub-team"). The performance of these sub-teams could be assessed independently from each other and from the team as a whole, and rewards financial awards in these conditions were based upon the performance of these sub-teams. That is, the highest performing sub-team would receive an award of \$20. This distinction based on geographic sub-teams, which is an existing characteristic of the task, was necessary to converge



or cross-cut reward structure with gender diversity. In the *faultline condition*, the Northern sub-team was managed by two men and the Southern sub-team was managed by two women (or vice versa) thus reinforcing the gender difference. In the *cross-categorized condition*, the Northern sub-team and Southern sub-team were composed of a mixed gender sub-team, thus de-emphasizing the salience of the gender difference.

To create a *superordinate identity condition*, we provided teams in this condition with a team-level reward and members of the group were informed that the top performing teams would receive a reward of \$40, creating a common fate condition (see e.g., Gaertner et al., 1989). Along similar lines, Beersma et al. (2003) argued that rewarding a diverse team on the basis of team performance might decrease the salience of subgroups, because this emphasizes minimizing distinctions among group members. There were no subgroups formally identified within these teams (and the team either won or lost the financial bonus as a team). In teams where we created a superordinate identity there were no physical differentiations between team members in the Northern or Southern sub-team, and thus in lieu of differentiated rewards, the gender composition within either region should not make any difference. Still, in order to control for some potential unanticipated difference, we ran half of the teams in the superordinate condition with mixed gender Northern/Southern sub-teams and half the teams with same gender Northern/Southern sub-teams. For analysis purposes we kept these two forms of superordinate identity teams separate, despite the fact that there was not any reason for members of these teams to even be aware of Northern/Southern distinctions.

To check the composition manipulation, we asked the participants if they could indicate whether the gender of their sub-team member (i.e., the gender of the person that was based next to them during the game) was similar or dissimilar to their own gender. To check the adequacy of the reward structure manipulation, we asked the participants how they would be rewarded and gave them two answering possibilities: "on the basis of performance of my team" and "on the basis of the performance of my geographic pair (i.e., sub-team)".

#### *Performance*

Each team started the simulation with 50,000 points and lost 1 point for each second that any unfriendly track was in the restricted zone and 2 points per second for each track in the highly forbidden zone. The teams also lost 300 points for disabling any friendly track. This calculation of team performance was the same as used by Hollenbeck et al. (2002) and Moon et al. (2004). For the



team members this score was visualized in the 'group score' ( $M = 41400.33$ ,  $SD = 3520.36$ ).

## Results

### *Overview*

All questionnaires were filled out electronically and the manipulation check questions were presented last, because manipulation checks can create suspicion concerning the goal of the study and in turn influence the answers to other questions. However, the fact that they were presented last did result in some non-response ( $n = 37$  for the reward structure manipulation check and  $n = 36$  for the gender composition manipulation check). Some participants experienced technical problems which resulted in a crash of the last webpage of the questionnaire, while others just overlooked the last part of the questionnaire. However, because the manipulation of gender composition of the teams was factual and almost impossible to answer incorrectly, non-response seems hardly an issue. Additionally, the non-response was evenly distributed across conditions and groups. Manipulation checks were analyzed individually, but team level analysis rendered similar results.

The analyses were performed using regression analysis. The dependent variable – performance – was standardized. We centered openness to experience and created three dummy variables comprising the four conditions. The comparison condition (i.e., the condition that scored a zero on all dummies) was the condition in which same-gender sub-teams were aligned with a pair reward: the *faultline condition*. This condition was compared to the condition with a pair reward for mixed-gender sub-teams (*cross-categorized condition*; dummy 1), and to the two *superordinate conditions* in which mixed-gender and same-gender sub-teams were rewarded based on their team performance (dummy 2 and 3). As noted earlier, we left the two superordinate conditions separate to explore whether simply being seated together in the Northern or Southern Region (without any explicit sub-team reward) made any difference in the efficacy of the superordinate condition. To test the effects of openness to experience combined with the different levels of salience of categories we calculated the product of openness to experience and the three dummy variables.

### *Manipulation Checks*

The manipulation of gender composition of the subgroups was checked by performing a Pearson Chi-square test. It was found that participants were aware of the gender of the other person in their geographical pair,  $\chi^2(1, N = 196) = 169.02$ ,  $p < 0.01$ . Participants that were in a same-gender sub-team indicated

that the gender of the person in their sub-team was the same as their own gender, while participants in a mixed-gender sub-team indicated that the gender of their sub-team-member was different. The manipulation check for gender was not affected by the manipulation of reward structure,  $\chi^2(1, N = 195) = 0, ns$ . A Pearson Chi-square test showed that the manipulation of reward structure was successful,  $\chi^2(1, N = 195) = 36.88, p < 0.01$ . Teams that were told that their reward was dependent on the performance of their team indeed indicated that they thought the chances for their reward were dependent on team performance, and teams that were told that their reward was dependent on the performance of their sub-team indeed indicated this on the manipulation check. This manipulation was not affected by the gender composition of the sub-teams,  $\chi^2(1, N = 196) = 0.74, ns$ .

#### *Test of Hypotheses*

*Hypothesis 1.* Table 4.1 shows the results of the hierarchical regression we used to test our hypotheses. In step 1 we entered openness to experience to predict team performance. As expected, groups with a higher level of openness to experience performed better than groups with a low level of openness to experience ( $t[55] = 2.67, p = .01$ ). Openness to experience explained 12% of the variance.

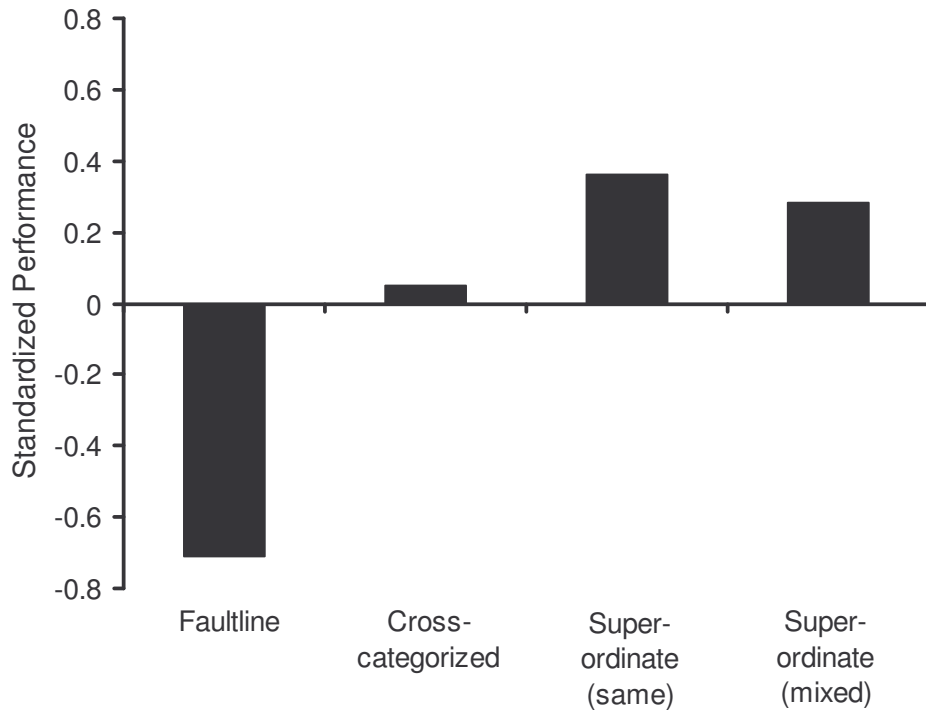
*Hypotheses 2 and 3.* In Step 2, we hierarchically regressed team performance on the three dummy variables representing the superordinate and cross-categorized identity conditions. Consistent with Hypothesis 2, we found that groups in the cross-categorized identity condition performed significantly better than diverse groups in the condition in which the existing subgroups were made salient (i.e. the faultline condition;  $t[49] = 2.28, p = .03$ ). In line with Hypothesis 3, groups in which a superordinate identity was made salient performed significantly better than the faultline group ( $t[49] = 3.18, p = .002$ , and  $t[49] = 3.02, p = .004$ ; see Figure 4.1). As expected, both superordinate identity conditions increased performance compared to the faultline condition and there was no difference in performance between the two superordinate identity conditions,  $F(1, 26) = 0.88, ns$ . The incremental variance explained by the reward structure manipulations over and above openness to experience is 18%.

Table 4.1 - Team performance as a function of reward structure and openness to experience.

	Performance		
	1	2	3
<i>Step 1</i>			
Openness to Experience (O <sub>tE</sub> )	.34* (0.48)	.36** (0.46)	.78*** (0.79)
<i>Step 2</i> (Three dummies based on gender composition and rewards - Dummies are always compared to the Faultline condition)			
Cross-Categorized Identity		.33* (0.33)	.46** (0.31)
Superordinate Identity (mixed gender sub-teams)		.45** (0.34)	.51*** (0.31)
Superordinate Identity (same-gender sub-teams)		.44** (0.33)	.46*** (0.30)
<i>Step 3</i> (Two-way interactions)			
Cross-Categorized Identity x O <sub>tE</sub>			.11 (1.46)
Superordinate Identity (mixed gender sub-teams) x O <sub>tE</sub>			-.32* (1.17)
Superordinate Identity (same-gender sub-teams) x O <sub>tE</sub>			-.48** (1.04)
R2	.12*	.29**	.46**
ΔR2		.18**	.17**

Note. N = 59; Standardized coefficients ( $\beta$ ) are reported in Models 1-3; Standard errors are reported in parentheses.

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



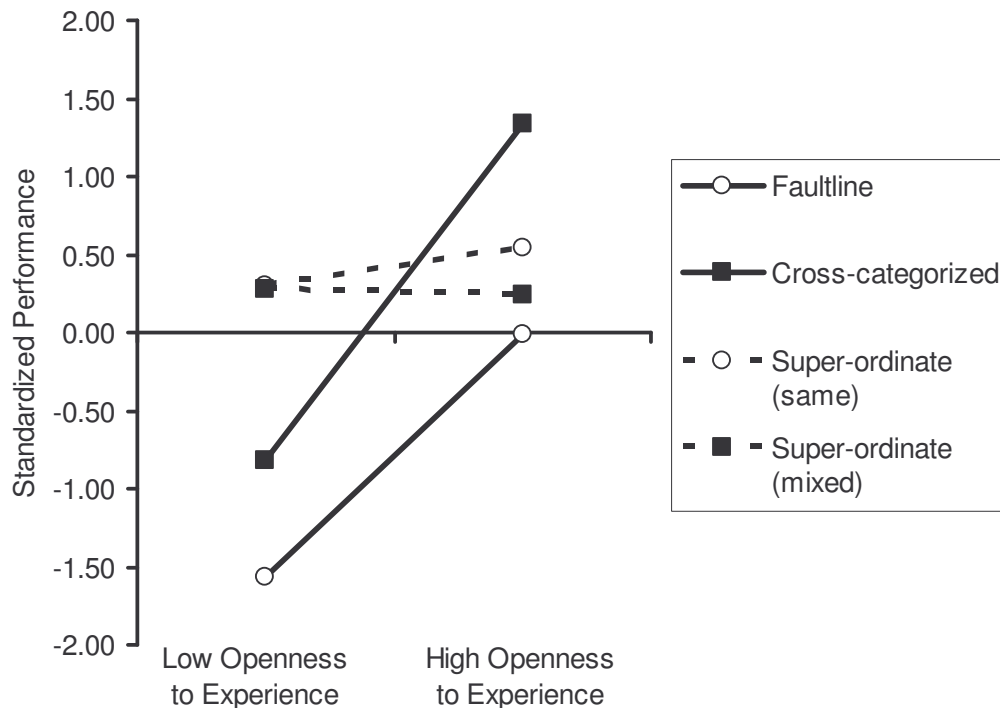
**Figure 4.1** - The effects of salience of social categories on performance of diverse groups (Hypotheses 2 and 3).

*Hypothesis 4.* In Step 3 of the hierarchical regression we examined the interaction between group composition and reward structures by adding the product of openness to experience and the three dummy variables. As can be seen in Figure 4.2, openness to experience is positively related to performance in both faultline teams and cross-categorized teams. That is, in both cases where differences are salient, high openness promotes team performance and the magnitude of this effect is the same for each condition ( $t[55] = .80, ns$ ). In contrast, openness to experience has no impact on performance in either of the conditions where the super-ordinate identity was stressed ( $t[55] = -2.18, p = .03$ , and  $t[55] = -2.98, p = .005$ ). This final step, in which we tested the interaction between group structure and group composition, accounted for 17% of the incremental variance in performance over and above the main effects.

Additionally, to test whether the effect of openness to experience in the cross-categorized condition indeed differed significantly from the effect of openness to experience in the superordinate condition, we basically performed the same regression analysis except for recoding the dummy variables in such a

way that the cross-categorized condition was always visualized by a 0. This regression analysis indeed showed that the positive effect of openness to experience in the cross-categorized condition was not obtained in the superordinate identity conditions ( $t[55] = -2.48, p = .02$ , and  $t[55] = -3.04, p = .004$ ).

When considering all the effects taken together, Figure 4.2 makes it clear that the worst performing team, as expected, is the faultline group where the team was low in openness. In contrast, the highest performing team, as expected, was the cross-categorized team where the team was high in openness to experience. In general, the teams where a superordinate identity was created, the effect of openness to experience was basically neutralized, and did little to help or hinder the team. Finally, it needs to be noted that all of this variance occurred within teams that were identical in terms of gender diversity, that is, each group in this study contained two males and two women, and yet the performance of these groups was different depending upon their level of openness to experience and reward structure.



**Figure 4.2** - The effects of openness to experience and salience of social categories on performance of diverse groups (Hypothesis 4).

## Discussion

As a result of the increasing diversity of the workforce, work groups are inevitably composed of members with different demographic backgrounds, values, expertise, and perspectives. Although the presence of diverse perspectives and knowledge in teams can potentially lead to enhanced performance (i.e., the "value-in-diversity" hypothesis; e.g., Cox et al., 1991; Williams & O'Reilly, 1998), diverse teams are often unable to benefit from their diversity. Valuable differences in task-related dimensions are often not used to their full potential when informational diversity converges with other salient dimensions of diversity (creating a "diversity faultline"; Jehn et al., 1999; Lau & Murnighan, 1998, 2005; Phillips et al., 2004). In the present study we focused on a number of ways in which the functioning of diverse teams can be improved.

First, we tested how an individual difference variable influenced performance in diverse teams. As predicted in Hypothesis 1, we found that teams that were high on openness to experience performed worse than teams that were low on openness to experience. Second, we examined the impact of the structure of the group by manipulating the salience of certain identities within the team. In line with faultline theory, we found that groups in which existing subgroups were reinforced did not perform very well. In line with Hypotheses 2 and 3, the data showed that groups in which a reward structure stressed the superordinate identity and groups that were cross-categorized performed better than faultline groups. Finally, we were interested in the interaction between identity salience and openness to experience. Consistent with Hypothesis 4, it was found that openness to experience improved performance in cross-categorized and faultline teams but not in superordinate identity groups. Below we consider the theoretical and practical implications of these findings, discuss the strengths and limitations of our approach, and outline some avenues for future research.

### *Theoretical Implications and Contributions*

Although contemporary models of diversity seem to be able to *explain* the positive or negative effects of diversity when they occur, they are less able to *predict* when positive or negative effects will occur. Van Knippenberg, De Dreu et al. (2004) attribute this to the "main effects" approach that has characterized a lot of diversity research and propose that it is impossible to understand the effects of diversity without taking moderators into account (for similar arguments, see Pelled et al., 1999; Phillips, 2003). The focus on personality characteristics and sub-categorization (e.g., the extent to which dimensions of diversity cross-cut or converge; see also Lau & Murnighan, 1998;

Phillips et al., 2004; Thatcher et al., 2003) in the present paper should therefore be seen as a contribution to and an extension of this emerging attention to moderators of the relationship between work group diversity and work group functioning.

The finding that openness to experience is positively related to performance of diverse teams is a substantive extension of the theory on personality composition of teams, because we show that an individual difference variable has important implications for the functioning of *diverse* teams. Diverse teams will thus benefit from being high on openness to experience, especially when diversity or dissimilarities within the team are salient. While some research has demonstrated the importance of taking group personality composition into account when examining group processes and performance (e.g., Barry & Stewart, 1997; Neuman et al., 1999), the present study thus also examined the possible direct and *moderating* role of a personality trait within diverse groups.

We argued that openness to experience would positively influence diverse teams because people high on openness to experience would react more favorable to dissimilar people. The idea that being open and positive toward differences can have positive effects on the performance of diverse teams has recently started to receive attention in the diversity literature in terms of diversity beliefs. Diversity beliefs can be defined as beliefs about the value of diversity to work group functioning (van Knippenberg & Haslam, 2003; van Knippenberg, Haslam, & Platow, 2004). Van Knippenberg and Haslam (2003) report that such beliefs may inform responses to actual work group composition, and lead people to respond more favorably to work group diversity the more they believe in the value of diversity for work group functioning. Homan et al. (2006a) showed that diversity beliefs also influenced the performance of diverse teams with informational diversity. Recently, researchers have started to pay attention to the idea that personality characteristics might be related to diversity beliefs. Strauss, Connerley, and Ammermann (2003), for example, argued that selecting people with traits related to appreciation of diverse others is a next step in creating organizational cultures accepting of diversity. Additionally, Flynn (2005) showed that people who are high on openness to experience have more positive attitudes toward minority members than people low on openness to experience. Although several authors have argued that individual differences can be important determinants of attitudes toward differences in teams (e.g., Flynn, 2005; Kossek & Zonia, 1993; Strauss et al., 2003), these studies have focused mainly on how



personality characteristics predict stereotyping and inter-group bias at the *individual* level. The present study shows that the groups' composition in terms of openness to experience also impacts the way diversity issues are dealt with and influences performance at the *group* level.

In similar vein, besides our focus on personality characteristics, our focus on subgroup-categorization adds to this new line of research on moderators of the effects of diversity. In the present study different identities were made salient and compared in diverse groups. Not only did we compare a faultline with a cross-categorized group (e.g., Homan et al., 2006b; Sawyer, Houlette, & Yeagley, 2005), we also included a condition in which the superordinate identity was made salient. Extending previous research, the present study shows that diverse groups can thus experience different effects of their diversity depending on the salience of the diversity dimension within the group.

Additionally, next to the examination of two important main effects on the functioning of diverse groups, we also focused on the interaction between openness to experience and reward structures. First, results indicated that the positive effects of openness to experience were quite manifest under faultline conditions, which have been shown in previous work to be detrimental to group functioning (Thatcher et al., 2003). This not only sheds new light on research into faultlines (cf. Lau & Murnighan, 1998; Thatcher et al., 2003), but also gives us a more positive outlook on diversity issues in teams (also see Gibson & Vermeulen, 2003). Apparently, within diverse groups, diversity faultlines need not disrupt team processes as long as the team members are high on openness to experience. Second, the positive effect of openness to experience was also visible in cross-categorized groups. This implies, corroborating our reasoning, that the proposed positive effects of openness to experience are mainly present in situations in which differences are salient to people. When similarities were stressed – in a superordinate identity condition – openness to experience did not affect the functioning of the group at all. These "superordinate" teams were better than the faultline teams that were low in openness, but worse than teams that were high in openness and cross-categorized.

#### *Practical Implications*

The results of the present study are not only valuable for diversity theory, but may also point to a helpful strategy for organizations regarding how to manage their increasingly diverse workforce. It is important that teams perform to the best of their potential, and based on the present research it

seems that selecting team members who are high in openness to experience might help in obtaining that goal. As discussed before, authors have argued that people might differ in their attitudes toward diversity (e.g., Hostager & De Meuse, 2002; Paulus, Nakui, Parthasarathy, & Baruah, 2004; Strauss et al., 2003; cf. Ely & Thomas, 2001), and that openness to experience might be closely related to the concept of diversity beliefs (e.g., Flynn, 2005). As personality differences are stable constructs and difficult to influence (e.g., Costa & McCrae, 1988), it seems important from a management perspective to also look at concepts like diversity beliefs because they might be easier to manage and train. Indeed, van Knippenberg and Haslam (2003) have shown that diversity beliefs can be manipulated within groups and they found positive effects of these diversity beliefs on group identification. Diversity beliefs can be influenced by multiple sources, such as the organizational culture or team leaders (Ely & Thomas, 2001). It is important, therefore, that managers advocate a positive outlook on diversity so as to encourage pro-diversity beliefs in employees, work groups, and the organization as a whole.

Related to this idea, the present results also have important implications for diversity training programs, which are becoming increasingly popular. Interestingly, most diversity training seems to be limited to making people aware of their stereotypes about other groups and changing people's feelings and ideas about those groups (e.g., Karp & Sammour, 2000). The current findings suggest that it is also important to manage people's feelings toward *diversity* and *differences* (i.e., rather than about different others) and making them aware of the potential of being a member of a diverse team. It would therefore seem worthwhile to extend diversity training programs that now typically focus on stereotypes about dissimilar others (e.g., Kossek & Lobel, 1996; Rynes & Rosen, 1995) with a focus on beliefs about and attitudes toward diversity itself (cf. van Knippenberg, Haslam et al., 2004).

In the present study, reward structure was used to influence the salience of identities within the diverse groups. As discussed earlier, reward structures are important tools for influencing teams' effectiveness (e.g., Hackman, 1990; 1998; Lawler & Cohen, 1992). The present study shows that they also have the potential to influence the salience of social categories (e.g., Gaertner et al., 1999) and can influence the effect diversity has in diverse teams. Li and Hambrick (2005) indicated in the discussion of their article on faultlines that reward structures emphasizing group performance could help suppress the divisive processes that occur in faultline teams. Our results underscore this conclusion. Using reward structure – which is a form of outcome interdependence – might

be one of the many instruments organizations or managers can use to create a superordinate identity or a cross-categorized identity.

Some of the other instruments that managers might use to influence the salience of social categories are described in this paragraph. For example, Brewer (1995) describes how role assignment can break down subgroup identities. In a study by Marcus-Newhall et al. (1993) existing artificial social categories were either converged or crossed with specialized role assignments. It was found that when these role assignments cross-categorized the existing social category, individuals perceived the group as a whole as more similar and reported less bias against the other social category members than when role assignments converged with the existing social category. Related to this, evidence from laboratory experiments shows us that spatial arrangements and providing common group goals are also useful tool in influencing the salience of social categories (e.g., Gaertner & Dovidio, 2000). Thus, other possible ways in which a superordinate identity can be reached is by increasing task interdependence by influencing the amount and type of interaction between group members (e.g., Campbell, 1958; Gaertner, Mann, Durrell, & Dovidio, 1989; Wageman, 1995), and by increasing goal interdependence by stressing the group goals instead of goals of individuals or sub-units (e.g., Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990). Although future research could examine whether the results of these studies can also be extended to the performance of diverse teams, these findings do show that there might be other ways in which organization can fruitfully manage the performance and functioning of diverse teams. Some practical recommendations therefore could be to (1) make sure that members of potential subgroups within teams are not sitting or flocking together (segregation), and (2) make cooperation between all team members likely by requiring consensus on tasks.

An important side note concerning the manipulation of the salience of social categories, however, is that providing diverse groups with a strong superordinate identity could also limit the potential positive effects of diversity. Although a strong super-ordinate can thus overcome the negative effects of diversity, it might also hinder the use of differences within teams. The presence of diverse perspectives and knowledge in teams can potentially lead to enhanced performance (i.e., the "value-in-diversity" hypothesis; e.g., Cox et al., 1991; Williams & O'Reilly, 1998). These positive aspects of diversity are likely to be ignored when the focus is on similarities within the team rather than on differences within the team. In similar vein, Polzer, Milton, and Swann (2002) argue that in order for diverse teams to capitalize on their differences, people

should feel that their self- and social views are verified. Recategorizing the subgroups with an inclusive work-group identity, could cause group members to replace their personalized self-conception with a cognitive replacement of themselves as embodiments of the work group prototype (cf. Swann, Polzer, Seyle, & Ko, 2004). Providing the team with a strong superordinate identity may therefore not always be the best option, especially when groups are potentially better off when elaborating upon all their diverse perspectives and ideas.

#### *Limitations and Future Directions*

Although the main aim of experimental studies is not to obtain external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), reports of experimental research tend to elicit questions of external validity among their readership. Obviously, then, confidence in the conclusions advanced here could be strengthened when the current results were replicated in a study of teams in actual organizations, and this would indeed seem an important avenue for future research. On the other hand, the highly controlled nature of the research context employed promoted internal validity, and the ability to randomly assign teams to conditions and obtain objective measures of performance provides a stronger base from which to draw causal inferences (Ilgen, 1999). Moreover, prior research using this experimental task has shown that participants are aware of the consequences of their behavior in this task and were genuinely interested in winning the bonus money. Thus, we believe that our task had experimental or psychological realism (e.g., Berkowitz & Donnerstein, 1982). Participants did seem very engaged in the task and often made comments to each other that reflected a strong desire to perform well.

One of the aims of the present research was to examine a personality trait that would impact the attitudes team members have toward dissimilarities believing that this personality characteristic would moderate the relationship between diversity and performance. Openness to experience was the most logical choice because former research has shown that openness to experience indeed impacts prejudice, right-wing authoritarianism, conservatism, and diversity attitudes (e.g., Butler, 2000; Flynn, 2005; Judge, Thoresen, Pucik, & Welbourne, 1999; McCrae & Costa, 1997; Peterson, Smirles, & Wentworth, 1997; Strauss et al., 2003). Providing additional support for the idea that openness influences attitudes toward diversity, Ekehammar, Akrami, Gylje, and Zakrisson (2004) reported that generalized prejudice was indirectly influenced by openness to experience through right wing authoritarianism. Riemann, Grubich, Hempel, Mergl, and Richter (1993) report significant relationships

between openness to experience and diversity attitudes. Finally, in a study on racial attitudes within interviews, Flynn (2005) found that people who scored high on openness to experience formed more positive impressions of Black interviewees than did individuals low on openness to experience. In this study, people who were high in openness were less rigid in their use of stereotypes and more open to consider stereotype-disconfirming information. Based on these considerations, one can propose that selecting people high on openness to experience will not only improve the functioning of diverse teams, but might also create diversity accepting cultures. Although the idea that openness to experience makes people more open toward dissimilarities within teams thus seems logically appealing, we did not assess whether openness to experience is directly related to measures of diversity beliefs and whether these two concepts have similar effects on performance of diverse teams. However, future studies could address both concepts in one study, examining whether the obtained effects on team performance hold for both openness to experience and diversity beliefs.

In the present paper, we used an additive measure of openness to experience at the group level to see whether groups high on openness to experience will be less negatively affected by diversity in teams. However, researchers also focused on the effects of *diversity* in personality and attitudes (e.g., Barrick et al., 1998; Barry & Stewart, 1997). Harrison et al. (1998), for example, distinguished two types of diversity: deep-level and surface-level diversity. Surface-level diversity is conceptualized as visible, readily detectable diversity such as gender, race, and age, and deep-level diversity can be described as differences in personality and attitudes (cf. Harrison, Price, Gavin, & Florey, 2002). Below, we advance two theoretical arguments for this choice. First, variability in personality within teams is found to affect team functioning over time. For example, research has shown that differences in conscientiousness started to impact social integration only after a number of weeks (Harrison et al., 2002; cf. Harrison et al., 1998; Mohammed & Angell, 2004). In our study, groups worked together for a limited amount of time (i.e., an hour) and we therefore expected that variability in personality would not play an important role in these groups. Second, although openness to experience is most likely to influence how people think about diversity, it is also a personality trait that has not generally emerged as a significant predictor of individual or team performance (e.g., Barrick & Mount, 1991; Hough, 1992). For this reason, some authors chose to not incorporate diversity in openness to experience as a potentially important diversity variable (e.g., Mohammed &

Angell, 2003). Additionally, our data show that the variance in openness to experience did not affect the performance of diverse teams. These arguments strengthen our hypothesis that openness to experience acts as a facilitator of diversity effects, and not acts as a diversity variable by itself, as well as our confidence that the aggregation of openness to experience to the group level by taking the mean of all group members is valid. However, future research, especially in the field or with teams which have been together for a longer period of time, could examine the impact of openness to experience as a diversity variable as well as an additive variable.

The current study did not focus on *mediators* underlying the effects of openness to experience and the salience of social categories. We focused first on these variables because, from an applied perspective, establishing the factors that influence the relationship between diversity and performance is the key to answering questions about how to manage diversity issues adequately. However, especially from an academic perspective, the question *why* these effects occur is also very important and future research should incorporate these underlying mechanisms. To provide some ideas on which variables to measure, it is important to distinguish between variables that are predicted to cause the negative and positive effects of diversity on team functioning. On the one hand, the negative effects of diversity are often predicted to be caused by subgroup categorization and the resulting intergroup bias (e.g., van Knippenberg, De Dreu et al., 2004; Williams & O'Reilly, 1998). In order to measure social categorization and intergroup bias future studies could directly assess subgroup categorization, trust, and cooperation (cf. van Knippenberg & Schippers, in press). On the other hand, the potential benefits of diversity for team performance are argued to lie in the availability of more diverse information and perspectives, leading to more thorough and creative information processing, problem solving, and decision making (e.g., Ancona & Caldwell, 1992; Gruenfeld et al., 1996; Hinsz, Tindale, & Vollrath, 1997; Jehn et al., 1999; Simons, Pelled, & Smith, 1999). Therefore, measures of information exchange and more importantly information elaboration should be incorporated in future studies focusing on the potential benefits of diversity for team functioning.

It is important to note that gender is not the only dimension on which team members may differ. As discussed above, teams differ on numerous dimensions ranging from highly visible characteristics such as race and age to more invisible characteristics like perspectives, functional backgrounds, and values. While our sample was relatively homogeneous with regard to these



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other factors, research focusing on diversity with respect to these other characteristics should be conducted. For demographic – or highly observable – differences like race and age one could predict that the results are likely to be similar to the effects we obtained for gender diversity (cf., Milliken & Martins, 1996; Webber & Donahue, 2001; Williams & O'Reilly, 1998). Whether the results will be the same will be, among other things, dependent on the salience of the diversity dimension to the group. While gender is more visible than, for example, functional background, openness to experience might play a lesser role when there is functional background diversity. Therefore, future research should, next to incorporating other diversity characteristics, determine the salience of the diversity dimensions of interest.

Related to the above, we focused on a diversity dimension that is likely to result in subgroup categorization (i.e., gender diversity). We predicted that when these differences would be highly salient, groups would experience the negative effects of diversity rather than the positive effects. Recently, researchers have focused on "healthy divides" in teams (e.g., Gibson & Vermeulen, 2003), distinctions or faultlines that make groups perform better instead of worse. Jehn, Bezrukova, and Thatcher (in press) have recently made a distinction between informational and demographic faultlines, predicting that contrary to demographic faultlines, informational faultlines might benefit performance. Although informational faultlines were not the scope of the present study, future studies might take these potential positive faultlines into account and examine the potential performance boosting effect of positive attitudes toward diversity in teams with informational faultlines.

Despite these limitations, the results of the present study provide a practical point of departure for effective diversity management in organizations. To the extent that managers can influence the composition of work teams, the results of the current study suggest several important considerations regarding how to compose a team or change its composition. For one thing, it is important to make sure that teams consist of members who are open towards differences, because such teams are more likely to function and perform better. Secondly, managers should be aware of the potentially detrimental effects of diversity within teams. When composing a team of employees who are diverse, managers should strive to influence the salience of this diversity dimension in such a way that the salient identity is either the superordinate or cross-categorized identity rather than the converged identity.



### Notes

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<sup>2</sup> Although we are aware of the fact that researchers have used the variance in group personality composition to operationalize diversity in teams (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Barry & Stewart, 1997; Harrison, Price, & Bell, 1998), we chose not to incorporate personality as a *diversity* variable in the present study for a number of theoretical and empirical reasons. We give a theoretical rationale for this decision in the discussion section of this paper. To check whether we could empirically defend our choice to not include personality composition as a diversity variable, we repeated our analysis with the variance in openness to experience as a predictor (cf. Mohammed & Angell, 2003). As expected, we found no main effect ( $t[55] = 1.90$ , *ns*) or interaction effects between variance in openness to experience and our dummy variables representing cross-categorization, and the two super-ordinate identity conditions (cross-categorization:  $t[55] = -1.12$ , *ns*; super-ordinate identity:  $t[55] = -1.13$ , *ns* and  $t[55] = -1.53$ , *ns* respectively) on the performance of our teams.

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## CHAPTER 5

### GENERAL DISCUSSION

Diversity is a ubiquitous feature of organizations and work groups. Teams are inevitably composed of people with different demographic and informational characteristics and these differences influence group processes as well as group performance (e.g., Milliken & Martins, 1996; Webber & Donahue, 2001; Williams & O'Reilly, 1998). As discussed in the Chapter 1, however, it has been difficult to account for all of the effects found in numerous field and experimental studies using the theoretical frameworks that were available up to this point in time. On the one hand, diversity seems to improve creativity and performance, while on the other hand it often deteriorates intragroup processes and group functioning (e.g., Williams & O'Reilly, 1998). Trying to account for these inconsistencies, I discussed a theoretical framework that would be better predictive of the effects of diversity within teams (van Knippenberg, De Dreu, & Homan, 2004). Based on this framework I decided to focus on two variables that are important when examining the effects of diversity in teams, namely the salience of social categories and the effects of attitudes toward diversity. Using this framework I set out to answer the following research question: *How can the potential positive effects of diversity be harvested?*

This chapter is structured as follows. First, the main findings of the empirical studies reported in Chapters 2, 3, and 4 are summarized. On the basis of these findings, an overview of the theoretical and practical contributions will be given. Finally, the strengths and the limitations of the present approach will be discussed, combined with some guidelines for future research on diversity issues in teams.

#### **Summary of the Main Findings**

The aim of this dissertation was to examine ways in which the potential positive effects of diversity could be harvested, while at the same time eliminating the negative effects of diversity. It was argued that thorough elaboration of task-relevant information underlies the positive effects of diversity in groups, and that these information elaboration processes might be eliminated by concomitant subgroup categorization processes. Based on this argument, I distinguished two important issues within diverse groups: (1) the

salience of social categories and social categorization processes, and (2) the relationship between these social categorization processes and group processes. I argued that the existence of objectively observable differences does not necessarily result in subgroup categorization, and that, even when they do, subgroup categorization does not necessarily produce detrimental group processes. To test my hypotheses, I have conducted three elaborate experiments in which four person groups worked on a decision-making task. To obtain measures of the variables of interest, I used questionnaires, detailed coding of group interaction, and objective performance measures. In the following paragraphs I summarize the core findings of the present work.

#### *Salience of Social Categories*

In the first study (Chapter 2), I examined the interaction between subgroup categorization and information elaboration processes. Based on informational/decision-making considerations, it was argued that task-relevant informational differences may constitute value-in-diversity and therefore increase team functioning. However, teams are often also diverse on task-irrelevant dimensions, such as gender, ethnicity, and age, and the relationship between these often more salient diversity dimensions and informational differences was studied in this chapter. It was hypothesized that informational differences could improve team functioning when those differences were crossed rather than converged with the other diversity dimension. As predicted, members of groups that were diverse on a salient, task-irrelevant diversity dimension were less satisfied, perceived a more negative team climate, and experienced more relationship and task conflicts than did the members of homogeneous groups. However, and as predicted, these effects were mitigated when social-category diversity was crossed with informational diversity. Cross-categorization resulted in less relationship and task conflict, a better team climate, greater satisfaction, and increased elaboration of information. Informational diversity per se did not influence intragroup processes – except for information elaboration – but did play an active role in increasing or decreasing category salience. The effects of informational diversity thus depend on its correlation with other dimensions of diversity. Informational diversity *decreases* team functioning when it *converges* with another salient dimension of diversity, but informational diversity *increases* team functioning when it *crosses* with another salient dimension.

#### *Seeing Value in Diversity*

The presence of diverse perspectives and knowledge in teams can potentially lead to enhanced performance (i.e., the "value-in-diversity"

hypothesis; e.g., Cox, Lobel, & McLeod, 1991; Williams & O'Reilly, 1998), but diverse teams are often unable to benefit from their diversity. As said before, when informational diversity converges with other salient dimensions of diversity (creating a "diversity faultline"), valuable differences in task-related dimensions are often not used to their full potential (Lau & Murnighan, 1998, 2005; Phillips, Mannix, Neale, & Gruenfeld, 2004). In Chapter 3, I studied the effects of diversity beliefs in groups with a diversity faultline. As also argued in the introduction, I proposed that diversity faultlines need not be detrimental to group performance, because beliefs about the value of diversity (versus homogeneity) influence the degree to which diverse groups are able to fulfill their potential. In support of this proposition, the study reported in Chapter 3 showed that diversity beliefs moderated the relationship between informational diversity and performance in teams with a diversity faultline, such that informationally diverse (but not informationally homogeneous) groups performed better when they endorsed a pro-diversity belief rather than a pro-similarity belief. Moreover, mediation analysis revealed that this moderating effect of diversity beliefs on performance in informationally diverse groups was mediated by the groups' level of information elaboration.

#### *Interactions Between Category Salience and Seeing Value in Diversity*

In Chapter 4, I examined the interaction between the salience of social categories and people's beliefs about diversity. It was argued that group structures (in terms of identity salience) and group's attitudes toward diversity (in terms of openness to experience) would influence the performance of diverse teams. I predicted that the team's level of openness to experience would have a positive effect on the performance of the diverse group. The data indeed showed that diverse teams with high levels of openness to experience and concomitant low acceptance of diversity performed better than teams with low levels of openness to experience.

In this third experiment, I again compared a converged and cross-categorized social category, but I additionally studied the effect of creating a strong super-ordinate identity. I hypothesized that group structures that make the existing subgroups salient (i.e. a faultline condition) lead to poorer performance than group structures emphasizing a super-ordinate identity or cross-categorized identity. In line with faultline theory, groups in which the existing subgroups were reinforced did not perform very well. As expected, the data showed that groups in which a reward structure stressed the super-ordinate identity and groups in which reward structures created a cross-

categorized group performed better than groups in which reward structures made the existing subgroups salient.

Additionally, I proposed an interaction between openness to experience and the salience of different categories. In line with similarity/attraction and social categorization arguments, groups in which existing subgroups were made salient (i.e., faultline groups) and cross-categorized groups were supposed to benefit most from open attitudes toward diversity. As expected it was found that openness to experience improved performance in teams in which differences were salient. In groups in which a super-ordinate identity was stressed, similarities are made salient (e.g., Gaertner et al., 1999) which makes an open attitude toward differences less important. The data indeed showed that openness to experience improves performance in the cross-categorized and faultline groups but not in super-ordinate identity groups.

In brief, the three experiments reported in the preceding chapters demonstrate that (1) the interplay of diversity dimensions can influence the functioning of diverse teams, (2) decreasing the salience of subgroups positively influences the performance of diverse teams, (3) positive beliefs about diversity or dissimilarities play an important role in predicting the performance of diverse teams, and (4) positive beliefs about diversity are especially important in teams in which diversity or differences are salient. In the following section I consider the theoretical and practical implications of these findings.

### **Theoretical Implications and Contributions**

In the following paragraphs I will give an overview of the theoretical implications of the present dissertation. Based on the findings of the three studies, these contributions are organized under three sub-headings: Social category salience, seeing value in diversity, and the interaction between salience and seeing value in diversity. Because some important implications are – more or less – related to one another, some overlap can exist.

#### *Social Category Salience*

An idea that is implicit in some previous research on diversity in teams is that the beneficial effects of informational diversity only occur when teams are homogeneous on other dimensions of diversity, especially visible diversity dimensions such as demographic characteristics (e.g., Gruenfeld, Mannix, Williams, & Neale, 1996; Jehn, Northcraft, & Neale, 1999; also see Triandis, Kurowski, & Gelfand, 1994). The present dissertation provides an important qualification of this notion by showing that informational diversity can also

have positive effects on group functioning in social-category diverse teams, as long as both types of diversity are crossed rather than converged. More specifically, my results indicate that teams that are diverse on a social-category dimension experience less task and relationship conflict, more satisfaction, and a better team climate when social-category diversity is crossed with informational diversity.

Additionally, a crucial determinant of successful teamwork concerns the *processing* of task-relevant information (Hinsz, Tindale, & Vollrath, 1997). Informational diversity within groups is proposed to enhance the elaboration of task-relevant information and perspectives within the group (van Knippenberg, De Dreu et al., 2004). However, previous research suggested that the existence of diversity on other dimensions within a team may hinder the elaboration of information (e.g., Jehn et al., 1999). The results of the study reported in Chapter 2 show that informational diversity can increase information elaboration even when groups are diverse on another dimension. The idea that groups should thus be homogeneous on other dimensions to realize the potential of informational differences (see also Jehn et al., 1999; Gruenfeld et al., 1996; Thatcher, Jehn, & Zanutto, 2003; Triandis et al., 1994) is therefore not true for the situations created in the present dissertation.

The focus on subgroup categorization and category salience in Chapter 4 adds to a new line of research on moderators of the effects of diversity. This is the first study, as far as I know, that has looked at the performance of equally diverse groups in which different identities were made salient. Not only did I compare a faultline with a cross-categorized group (e.g., Sawyer, Houlette, & Yeagley, 2005), I also included a condition in which the super-ordinate identity was made salient. Based on these findings, one can argue that groups in which diversity is present perform better when a super-ordinate identity or a cross-categorized identity is stressed, compared to groups with a faultline. This not only extends research on diversity effects but also provides an addition to research on identity salience and intergroup bias. Because most social psychological research on categorization strategies has been aimed at intergroup relations (e.g., Bettencourt, Brewer, Croak, & Miller, 1992; Brown & Turner, 1979; Deschamps, 1977; Gaertner, Mann, Murrell, & Dovidio, 1989; Marcus-Newhall, Miller, Holtz, & Brewer, 1993), little or no inference has been made on the effects of these strategies on group functioning and performance (e.g., Brewer, 1995; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993; Marcus-Newhall et al., 1993). In the present dissertation, I took these



considerations a step further by looking at objective performance and group functioning measures.

Furthermore, the results in Chapter 2 and 4 give new insights in the formation and activation of faultlines. Recently, authors started to note that potential faultlines do not always have negative effects on team functioning. For example, Jehn, Bezrukova, and Thatcher (in press) propose that the type of faultline is important. They distinguish between information-based faultlines and social-category faultlines. Examining the differential effects of these different types of faultlines, Bezrukova, Jehn, Zanutto, and Thatcher (2005) find that information-based faultlines are related to high levels of individual performance outcomes while social-category faultlines are related to low levels of individual performance outcomes. This recent focus on potential positive effects of faultlines (see also Gibson & Vermeulen, 2003) underlines the idea that alignment of diversity dimensions is not detrimental per se. However, the present dissertation additionally shows that informational differences can be a part of a faultline, depending on how the informational differences are related to other, task-irrelevant, differences within the group. For example, Study 1 shows that informational differences can thus be used to their potential when they are crossed with other diversity dimensions, but not when they converge with other diversity dimensions. Note however that in Study 2, I qualify these findings even further by showing that even faultline groups in which informational differences are aligned with other diversity dimensions can capitalize on their diversity as long as the group believes in the value of diversity.

The findings concerning category salience suggests that it is important to take the salience of social categories into account when studying diversity issues in teams and that even when there are existing subgroups, cross-categorization and stressing a super-ordinate identity can overcome potential faultlines and problems with diversity. In managing diversity, influencing the salience of social identities is thus not only useful for intergroup relations, but also plays an important role in group functioning.

#### *Seeing Value in Diversity*

Several scholars have argued that diversity beliefs and related constructs may play a crucial role in diverse teams (e.g., Ely & Thomas, 2001; Kossek & Zonia, 1993; Swann, Polzer, Seyle, & Ko, 2004; van Knippenberg, Haslam, & Platow, 2004). A quantitative test of the moderating effect of diversity beliefs in the relation between diversity and group performance was still missing, however, and in that respect the present dissertation provides an important



extension of research in the role of diversity beliefs, attitudes, perspectives, and climates. In a controlled study (Chapter 3) of diverse four-person work groups I found that informationally diverse groups elaborated more information and performed better when they endorsed pro-diversity rather than pro-similarity beliefs. Because of the experimental nature of the study, I can draw conclusions about the causal role of diversity beliefs in diverse work groups. This is of particular importance, because group performance arguably could also be a cause of diversity beliefs (i.e., more favorable experience with diversity resulting in more pro-diversity beliefs). I should note, however, that the causal direction established in this study does not imply that the reverse direction of causality may not also exist (i.e., diversity beliefs and performance mutually influencing each other).

The experimental approach in Chapter 3 not only allowed conclusions about causality, it also provided a relatively objective measure of group performance and of the *process* underlying the effects of diversity beliefs on performance. To get information about the group processes that lead to group performance, I video-taped the groups' discussions and coded these discussions for the amount of information elaboration that took place. This allowed me to examine the influence of information elaboration on group performance. In line with the theoretical argument advanced by van Knippenberg, De Dreu et al. (2004), I found that information elaboration is conducive to performance in diverse work groups. Furthermore, the results showed that the interactive effects of informational diversity and diversity beliefs on performance are mediated by the amount of information elaboration that occurred during group discussion. As such, the findings in Chapter 3 contribute to the understanding of the processes that give rise to successful performance in diverse teams.

In Chapter 4, I extended our knowledge about attitudes toward diversity by examining an individual difference variable that affects how open people are toward new, exciting, and potentially difficult situations. Individual differences in openness to experience positively impact diversity climate, and negatively relate to stereotyping, conservatism, and rightwing authoritarianism (e.g., Butler, 2000; Ekehammar, Akrami, Gylje, & Zakrisson, 2004, Flynn, 2005). That openness to experience is positively related to performance of diverse teams is important because this is the first experimental study which shows that an individual difference variable has important implications for the functioning of diverse teams. Although some have argued that individual differences can be important determinants of attitudes toward diversity (e.g., Flynn, 2005; Kossek & Zonia, 1993; Strauss, Connerley, & Ammermann, 2003)

studies have been focused mainly at how personality characteristics predict stereotyping and intergroup bias on the individual level. The study in Chapter 4 showed that the groups' composition in terms of openness to experience also impacts the way diversity issues are dealt with and influences performance.

These findings point to the importance of taking diversity climate and beliefs into account when studying diversity in groups. The focus on people's ideas about diversity, manipulated as diversity beliefs and measured in terms of openness to experience, in the present dissertation should thus be seen as a contribution to and an extension of the emerging attention to moderators of the relationship between work group diversity and work group functioning.

#### *Interactions Between Category Salience and Seeing Value in Diversity*

In Chapter 3, the effects of diversity beliefs were tested only in a faultline situation. It is noteworthy that the positive effects of openness to experience occurred under faultline conditions, which have been shown in previous work to be detrimental to group functioning (Thatcher et al., 2003). However, of course, it is important to examine whether these positive effects of beliefs can also be obtained in diverse teams without a diversity faultline. Based on Study 1, one could argue that diverse teams that are cross-categorized might benefit from positive attitudes toward diversity as well. This idea was one of the research questions of Chapter 4. Additionally, next to examining whether the effects of diversity on performance in faultline and cross-categorized teams are contingent upon diversity beliefs, I included yet another condition in which the salience of the social category was influenced by stressing a super-ordinate identity.

In Chapter 4, I wanted to replicate the findings of Chapters 2 and 3 and combine the ideas about social category salience with attitudes toward diversity to provide additional evidence for my hypotheses. As expected and in accordance with Study 2, openness to experience had a positive effect on performance in faultline teams. Furthermore, the effect of openness to experience was also visible in cross-categorized groups. This implies that the proposed positive effects of openness to experience are mainly present in situations in which differences are salient to people. Indeed, this idea was supported when looking at the effect of openness to experience in groups in which a super-ordinate identity was made salient. When the super-ordinate identity was stressed openness to experience did not affect the functioning of the group.

## **Practical Implications and Contributions**

### *Salience of Social Categories*

Together, the results of the present dissertation provide a practical point of departure for effective diversity management in organizations. To the extent that managers can influence the composition of work teams, the results of the current study suggest several important considerations regarding how to compose a team or change its composition. For one thing, it is important to make sure that teams consist of members with different informational backgrounds (e.g., expertise, knowledge, professional experience, etc.), because such teams are more likely to process task-relevant information. Secondly, managers should be aware of the potentially detrimental effects of diversity within teams. When composing a team of employees who are diverse on both social-category and informational dimensions, managers should strive to combine the dimensions in such a way that they are crossed rather than converged. If cross-categorization is not possible, managers could also stress the super-ordinate identity in order to hinder the negative effects of diversity within teams.

In the present study, reward structure was used to manipulate the salience of identities within the diverse groups. As discussed earlier, reward structures are important tools for influencing team's effectiveness within organizations (e.g., Hackman, 1990; Hackman, 1998; Lawler & Cohen, 1992). Reward structures are often used as a management tool for motivating people, but the present study endorsed the argument that they also have the potential to influence the salience of social categories (e.g., Gaertner et al., 1999). Considering a practical example in which subgroups from different departments work together within a project team, the reward structure can be based on the performance of each single subgroup. The way in which this subgroup-reward is distributed within the team can influence the salience of social categories. When the reward structure reinforces existing social categories, the salience of these categories increases. This will decrease performance in those teams. However, the reward structure can also cross-cut the existing social categories, decreasing the salience of these categories, which will enhance performance. Therefore, organizations should be aware of the composition of their teams and use reward structures strategically.

### *Seeing Value in Diversity*

It is important that teams perform to the best of their potential, and based on the present research it seems that (1) convincing teams of the value of diversity, and (2) selecting people that have positive attitudes toward diversity

might help in obtaining that goal. In organizations, diversity beliefs can be influenced by multiple sources, such as the organizational culture or team leaders (Ely & Thomas, 2001). It is vital, therefore, that managers advocate a positive outlook on diversity so as to encourage pro-diversity beliefs in employees, work groups, and the organization as a whole.

The present results thus have important implications for diversity training programs, which are becoming increasingly popular. Interestingly, most diversity training seems to be limited to making people aware of their stereotypes about other groups and changing people's feelings and ideas about those groups (e.g., Karp & Sammour, 2000). The current findings suggest that it is also important to manage people's feelings toward *diversity* (i.e., rather than about different others) and making them aware of the potential of being a member of a diverse team. It would therefore seem worthwhile to extend diversity training programs that now typically focus on stereotypes about dissimilar others (e.g., Kossek & Lobel, 1996; Rynes & Rosen, 1995) with a focus on beliefs about and attitudes toward diversity itself.

As discussed before, a crucial determinant of successful teamwork concerns the processing of task-relevant information (Hinsz et al., 1997). Informational diversity can enhance the elaboration of task-relevant information and perspectives within the group, which may increase team effectiveness (van Knippenberg, De Dreu et al., 2004). In organizations, informationally diverse teams will often have a larger pool of information and ideas than informationally homogeneous teams. Accordingly, when circumstances are conducive to the elaboration of task-relevant information, informationally diverse teams should be able to outperform informationally homogeneous teams (e.g., Cox, 1993; Jehn et al., 1999). This means that promoting pro-diversity beliefs might lead informationally diverse teams to outperform informationally homogeneous teams, because the former are likely to have more information at their disposal than the latter. This possibility could not be addressed in the present dissertation, because providing informationally diverse groups with more information than informationally homogeneous groups would have confounded informational diversity with the amount of information available to the group. Although this coalescence is likely to occur in organizations, it was undesirable for my purposes, because the aim of the present dissertation was to show that diversity beliefs (and not the amount of information available) moderate the diversity-performance relationship. Nevertheless, one could predict that, in organizational settings, informationally diverse groups may outperform informationally homogeneous groups even

under faultline conditions, provided that they hold pro-diversity beliefs or have a dispositional positive attitude toward diversity.

*Interactions Between Category Salience and Seeing Value in Diversity*

Finally, as managers and organizations have the potential to influence the salience of social categories as well as attitudes toward diversity, it might be possible to capitalize on diversity by combining these two strategies. First, when a diverse team has a faultline, the organization of manager can overcome the potential negative effects resulting from this faultline by promoting pro-diversity beliefs. Second, when the manager or organization has the possibility to compose teams, it might be extremely beneficial to cross-categorize diversity dimensions and create a positive diversity climate. In this way, the combined positive effects of cross-categorization and attitudes toward diversity might make diverse teams outperform homogeneous teams. Third, making the superordinate identity really salient to the team members can overcome the negative effects of diversity, but also inhibits the potential positive effects of diversity. This strategy makes similarities instead of differences salient, which can also make the team members less aware of their task-relevant differences and therefore less able to capitalize on those.

### **Reflections and Directions for Future Research**

In the present dissertation, I investigated how one could capitalize on the potential positive effects of diversity. I have replicated the main findings in multiple experimental methods, across different countries, and with different manipulations. Not only were all my studies conducted with "real," interactive four-person groups, the data were also collected using multiple means such as questionnaires, audio-video tapes, and objective performance measures (cf. Reis & Judd, 2000; Weingart, 1997). Although the present findings thus generalize across settings, operations, and populations, some of them may be limited for some methodological, theoretical, or measurement reasons, and below I will consider some of these limitations.

*Method and Tasks*

Although experiments are not conducted in a quest for external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), reports of experimental research tend to elicit questions of external validity among their readership. Obviously, then, confidence in the conclusions advanced here could be strengthened when the current results were replicated in a study of teams in actual organizations, and this would indeed seem an important avenue for future research. Even so, concerning Chapters 2 and 4, it may be noted that a

previous study of work group diversity inspired by similar notions (although not focusing on the interaction of diversity dimensions) obtained similar results in an experiment and in a field study (Earley & Mosakowski, 2000). Moreover, Jehn et al. (1999) argue that the negative effects I associate with converging informational and social-category diversity may also be obtained in the field. In similar vein, concerning Chapters 3 and 4, a previous study of work group diversity has found similar effects of diversity beliefs on identification in both an experiment and a field study (van Knippenberg, Haslam et al., 2004). Likewise, Ely and Thomas' (2001) qualitative analysis of the role of diversity perspectives in organizations suggests that the effects of diversity beliefs observed in the present study also occur in the field. As always, however, the proof of the pudding is in the eating, and it would be valuable if future research would focus on the effects of the salience of social categories and diversity beliefs on team performance in the field.

When closer considering the studies reported in this dissertation, one could argue that the experimental settings might lack realism. To discuss this issue, I first want to discuss the difference between *mundane* and *psychological* realism (e.g., Aronson, Wilson, & Brewer, 1998). Mundane realism refers to the extent to which the research setting resembles events in everyday life. Most psychological researchers, however, aim for psychological realism, which is the extent to which the psychological processes that occur in an experiment are the same as psychological processes that occur in everyday life. The experimental settings reported in this dissertation were developed to have high psychological realism. However, one could argue that the studies reported might have little mundane realism. Although the studies were indeed not conducted in a field setting with existing teams, all experiments were performed with real, interactive groups which were performing involving tasks (e.g., Kerr, Aronoff, & Messé, 2000). In Study 1 and 2, these groups were working on a judgmental and creative task that is comparable to decision-making and problem-solving tasks in organizations. When examining the audio-video tapes, groups appeared highly motivated to do well, and although groups could stop whenever they wanted, most groups took the total amount to time given to them to work on the task. In Study 3, the computerized research method allowed us to examine group functioning under conditions of high realism without sacrificing experimental control (Ilgen, 1999). As an illustration of this, prior research using this experimental task has shown that participants really were aware of the consequences of their behavior in this task and were genuinely interested in winning the bonus money (e.g., Beersma,



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Hollenbeck, Humphrey, Moon, Conlon, & Ilgen, 2003). Again, this shows that the task had psychological realism (e.g., Berkowitz & Donnerstein, 1982). Participants did seem very engaged in the task and often made comments to each other that reflected a strong desire to perform well. An additional and related limitation could be that the groups in my experiments interacted for a relatively short period of time. In Study 2 and 3, they worked together for half an hour, and in study 3 they interacted for an hour. Of course, teams in organizations can be working together for years, and it is an empirical question whether the findings will generalize to teams which have been working together for a longer period of time. Yet again, these considerations could be tested by testing whether the results generalize across settings, and tasks.

#### *Variables of Interest*

The reported experiments do not focus on exactly the same dependent, mediating, and moderating variables. In the first study, the main dependent variables were related to team functioning and group processes, the second study focused on performance and the underlying process resulting in performance, and in the last study we were mainly interested in comparing the effects of multiple moderators on performance in diverse teams. Thus although the potential underlying processes have been shown to be influenced by my manipulations (see Chapters 2 and 3), the study in Chapter 4 focused on *moderators* of the effects of diversity on team performance, not *mediators* underlying these effects. The question *why* these effects occur is also very important and future research should therefore focus on these underlying mechanisms. In doing so, it may be useful to distinguish between variables that cause the negative and positive effects of diversity on team functioning (cf. van Knippenberg & Schippers, in press). The negative effects of diversity are often predicted to be caused by subgroup categorization and the resulting intergroup bias (e.g., van Knippenberg, De Dreu et al., 2004; Williams & O'Reilly, 1998). To measure intergroup bias future studies could directly assess identification, subgroup categorization, trust, attitudes, and cooperation. The potential benefits of diversity for team performance are, in contrast, argued to lie in the availability of more diverse information and perspectives, leading to more thorough and creative information processing, problem solving, and decision making (e.g., Ancona & Caldwell, 1992; Gruenfeld et al., 1996; Hinsz et al., 1997; Jehn et al., 1999; Simons, Pelled, & Smith, 1999). Measures of information exchange and information elaboration should be incorporated in future studies focusing on the potential benefits of diversity for team functioning.



Next to focusing on additional mediators, future research could also take other types or dimensions of diversity into account. Gender is, of course, not the only dimension on which team members may differ, and as discussed in the introduction, teams differ on numerous dimensions ranging from highly visible characteristics such as race and age to more invisible characteristics like perspectives, functional backgrounds, and values. While my samples were relatively homogeneous with regard to these other factors, research focusing on diversity with respect to these other characteristics should be conducted. For demographic – or highly observable – differences like race and age one could predict that the results are likely to be similar to the effects I obtained for gender diversity (cf., Milliken & Martins, 1996; Webber & Donahue, 2001; Williams & O'Reilly, 1998). Whether other diversity characteristics will indeed generate the same results as gender diversity, may depend on the salience of the diversity dimension to the group. While gender is more visible than, for example, functional background, attitudes toward diversity might play a lesser role. Therefore, future research could, next to incorporating other diversity dimensions, determine the salience of the diversity dimensions of interest.

Related to the above, I focused on a diversity dimension that is likely to result in subgroup categorization (i.e., gender diversity), because in the current studies these differences were not task-related yet highly observable. I predicted that when these differences would be highly salient, groups would experience the negative effects of diversity rather than the positive effects. Recently, researchers started to focus on "healthy divides" in teams (e.g., Gibson & Vermeulen, 2003), distinctions or faultlines that make groups perform better instead of worse. Gibson and Vermeulen (2003) propose that the presence of subgroups within teams may stimulate learning behavior, because cohorts may enable individuals to bring their unique viewpoints to the table and be heard (e.g., Wittenbaum & Stasser, 1996). Along similar lines, Jehn et al. (in press) have recently made a distinction between informational and demographic faultlines, predicting that contrary to demographic faultlines, informational faultlines might benefit performance. Although informational faultlines were not the scope of the present study, future studies might take these potential positive faultlines into account and examine the potential performance boosting effect of positive attitudes toward diversity in these teams.

Finally, an additional important direction for future research would be to develop or test theory about the origins of diversity beliefs. To manage diversity beliefs, we need to know which factors fuel these beliefs. At least three partly interrelated antecedents of diversity beliefs are suggested by

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previous research. First, van Knippenberg, Haslam et al. (2004) identified diversity-related task requirements as a source of diversity beliefs, showing that individuals working on a task that required diverse perspectives developed more positive attitudes toward diversity than did individuals who worked on a task that required homogeneous perspectives. Second, prior experience would seem to be a source of diversity beliefs. When people have positive experiences with working in a diverse group, it is likely that those experiences will shape their beliefs about diversity in the future. Finally, Flynn (2005) and Strauss et al. (2003) note that individual difference variables may affect beliefs about different ethnic groups and diversity in general. In sum, then, it would seem appropriate to explore more individual difference variables as well as situational influences both internal and external to the work group, as determinants of diversity beliefs and attitudes. Considering these and other potential precursors of diversity beliefs may help to lay the foundations for successful diversity management in organizations.

#### *Conclusion*

The results of the present dissertation provide a practical point of departure for effective diversity management in organizations. To the extent that managers can influence the composition of work teams, the results provide suggestions on how to compose a team or how to change its composition. For one, it is important to make sure that teams consist of members with open beliefs toward diversity, because such teams are more likely to function and perform better. Secondly, managers should be aware of the potentially detrimental effects of diversity within teams. When composing a team of employees who are diverse, managers should strive to influence the salience of this diversity dimension in such a way that the salient identity is either the super-ordinate or cross-categorized identity rather than the converged identity. However, and more interesting, managers should also be aware of the potential *positive* effects of diversity within teams. Stressing the similarities between team members might seem a fruitful solution to prevent negative effects of diversity, but it also limits the potential positive effects of diversity. As diversity cannot and should not be avoided nowadays, this dissertation shows that capitalizing on the value in diversity is not only possible, but also quite easy to achieve.



## SAMENVATTING

### DUTCH SUMMARY

De beroepsbevolking wordt in zijn algemeenheid steeds gevarieerder in zijn samenstelling (o.a. Jackson, 1991; Triandis, Kurowski, & Gelfand, 1994; Williams & O'Reilly, 1998). Dit heeft implicaties voor de samenstelling van teams in organisaties. Diversiteitvraagstukken zijn dan ook een belangrijk en centraal onderwerp binnen de theorie en praktijk van onderzoek naar gedrag in organisaties. Vijfentwintig jaar geleden bestond het personeel nog voornamelijk uit blanke mannen tussen de 25 en 45 jaar. Tegenwoordig maken vrouwen, allochtonen, en ouderen een steeds groter deel uit van de werkzame beroepsbevolking. Overzichten van de samenstelling van de beroepsbevolking van het Centraal Bureau voor Statistiek (verkregen 4 januari, 2006 van <http://www.cbs.nl>) laten zien dat in 2004 bijna de helft van de werkzame beroepsbevolking vrouw was (41%), en dat door toenemende vergrijzing ruim 35% van het personeel tussen de 45 en de 64 jaar was. Daarnaast had in 2004 ruim 3 op de 16 mensen in Nederland een niet-Nederlandse of allochtone achtergrond (19%) en de prognose is dat dit percentage in 2040 gestegen zal zijn naar 26%. Tot slot maken organisaties steeds meer gebruik van crossfunctionele teams, waardoor ook steeds meer functionele en kennis diversiteit in teams geïntroduceerd wordt.

Omdat diversiteit in groepen zowel positieve als negatieve effecten kan hebben op de prestatie en het functioneren van de groep (o.a. Guzzo & Dickson, 1996; Milliken & Martins, 1996; Williams & O'Reilly, 1998) is het belangrijk te onderzoeken door welke processen de positieve en negatieve effecten van diversiteit veroorzaakt worden en hoe deze processen gestuurd kunnen worden om het functioneren en presteren van diverse groepen te optimaliseren. De centrale vraag van dit proefschrift is dan ook: *"Hoe kunnen de potentieel positieve effecten van diversiteit benut worden?"* De afgelopen 50 jaar hebben al vele onderzoekers uit verschillende onderzoeksdomeinen de effecten van diversiteit binnen groepen onderzocht (voor een overzicht zie o.a. van Knippenberg & Schippers, in druk; Webber & Donahue, 2001; Williams & O'Reilly, 1998). Psychologen, economen, sociologen, antropologen, onderwijskundigen, en organisatie onderzoekers hebben veld- en experimentele studies uitgevoerd naar het functioneren van groepen. De vraag

was hierbij hoe het functioneren beïnvloed wordt door de groepssamenstelling in termen van sekse, etniciteit, leeftijd, opleiding, arbeidsduur, en persoonlijkheid (o.a. Allport, 1954; Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Blau, 1977; Hallinan & Smith, 1985; Harrison, Price, & Bell, 1998; LePine, 2003). Sommige auteurs suggereren dat diversiteit, mits goed gebruikt, nuttig kan zijn voor organisaties en teams en dat verschillen uiteindelijk het functioneren van teams verbeteren. Dit idee staat bekend als de "waarde-in-diversiteit hypothese" (Cox, Lobel, & McLeod, 1991). Er zijn echter ook onderzoekers die laten zien dat diversiteit schadelijk is voor het functioneren van groepen (o.a. Brewer, 1979; Guzzo & Dickson, 1996; Jehn, Northcraft, & Neale, 1999; Messick & Mackie, 1989; Triandis e.a., 1994). Tezamen suggereren deze onderzoeken dat diversiteit de groepsprestatie en het groepsfunctioneren zowel positief als negatief kan beïnvloeden (zie ook o.a. Milliken & Martins, 1996; Williams & O'Reilly, 1998).

De positieve effecten van diversiteit worden vaak beschreven vanuit een informatie/besluitvorming perspectief (o.a. Williams & O'Reilly, 1998). Dit perspectief voorspelt dat heterogene groepen de beschikking hebben over meer taakrelevante kennis en vaardigheden dan homogene groepen en dat ze daarom beter zouden presteren. Eén van de belangrijke onderliggende ideeën is daarom dat positieve effecten van diversiteit veroorzaakt worden door een grondige verwerking van deze taakrelevante kennis en informatie (o.a. van Knippenberg, De Dreu, & Homan, 2004). De positieve effecten zullen dan ook voornamelijk tot uitdrukking komen op taken waarvoor het bespreken en verwerken van informatie van alle groepsleden nodig is. De perspectieven die de negatieve effecten van diversiteit verklaren, zijn het sociale categorisatie en het gelijkheid/aantrekkelijkheid perspectief (o.a. Williams & O'Reilly, 1998). Het sociale categorisatie perspectief houdt in dat mensen overeenkomsten en verschillen gebruiken om zichzelf en anderen in groepen in te delen. De verschillende groepen of categorieën die zo ontstaan, onderscheiden de eigen *ingroup* van één of meerdere *outgroups*. Mensen hebben de neiging om leden van hun eigen groep meer te vertrouwen en aardiger te vinden dan leden van andere groepen (o.a. Brewer, 1979, Tajfel & Turner, 1986). Het gelijkheid/aantrekkelijkheid perspectief (Byrne, 1971) doet soortgelijke voorspellingen, en houdt in dat mensen de neiging hebben om mensen die hetzelfde zijn, aantrekkelijker en leuker te vinden dan mensen die verschillend zijn. Het categoriseren van mensen in ingroups en outgroups kan tot gevolg hebben dat er, binnen teams, subgroepen ontstaan en dat kan weer leiden tot het ontstaan van problematische relaties tussen deze subgroepen (i.e.,

intergroepsbias). Deze problematische relaties tussen ingroup en outgroup kunnen het functioneren van diverse teams negatief beïnvloeden.

Hoewel er dus substantieel bewijs is dat diversiteit het functioneren van groepen beïnvloedt, is het tot nu toe nog niet echt duidelijk wanneer en waarom diversiteit positieve of negatieve effecten heeft. Het is daarom belangrijk de aandacht te verschuiven van hoofdeffecten van diversiteit in groepen naar de mediërende en modererende processen die de relatie tussen diversiteit en het functioneren van groepen beïnvloeden. Van Knippenberg e.a. (2004) hebben een eerste poging gedaan de tegenstrijdige resultaten binnen diversiteitonderzoek te verklaren, door in het categorisatie-elaboratie model (CEM) de twee veronderstelde processen die kunnen voortvloeien uit diversiteit samen te brengen. Uitgangspunt van het CEM is dat alle vormen van diversiteit kunnen leiden tot zowel subgroep-categorisatie als informatieverwerking, en dat deze twee processen interacteren. Op het moment dat diversiteit categorisatie processen in gang zet, kunnen informatieverwerkingsprocessen verstoord worden. Op basis van literatuur en onderzoek over subgroep-categorisatie (o.a. Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) kan men voorspellen dat naarmate categorieën meer saillant (d.w.z. opvallender) worden, de kans groter is dat er subgroepen ontstaan. Als het zo is dat subgroep-categorisatie processen positieve effecten van diversiteit kunnen verstoren, is het belangrijk om onderzoek te doen naar manieren waarop deze subgroep-categorisaties kunnen worden tegengegaan. Met dit uitgangspunt in gedachten heb ik in hoofdstuk 1 van dit proefschrift een raamwerk geschetst waarbinnen twee belangrijke onderwerpen worden onderscheiden die de effecten van diversiteit beter kunnen verklaren en voorspellen, namelijk (1) de saillantie van sociale categorieën en (2) attitudes ten aanzien van diversiteit.

Allereerst wilde ik me richten op de relatie tussen saillante categorieën en categorisatie processen. Dit heb ik gedaan door te onderzoeken hoe de saillantie van sociale categorieën en het functioneren van diverse groepen beïnvloed kan worden met behulp van cross-categorisatie (d.w.z. het kruisen van diversiteitsdimensies zodat mensen onderling iets met alle leden van de groep gemeen hebben; Experiment 1 en 3) en het creëren van een overkoepelende identiteit (Experiment 3). In dit proefschrift heb ik in alle studies gebruik gemaakt van diverse groepen waarin een diversiteitdimensie erg saillant was door deze dimensie te laten bestaan uit een aantal verschillen die boven op elkaar gestapeld werden of door verschillen op een andere manier te versterken. In Hoofdstuk 2 heb ik bijvoorbeeld sekse gekoppeld aan

persoonlijkheidsfeedback, petjes, en de plaats waar de groepsleden zaten aan tafel. Dit betekende dat de mannen in een groep dezelfde (valse) persoonlijkheidsfeedback kregen, dezelfde kleur pet moesten opzetten, en naast elkaar aan één kant van de tafel moesten gaan zitten. Het samenvallen van meerdere diversiteitdimensies of kenmerken wordt binnen de diversiteitsliteratuur ook wel een *faultline* genoemd (o.a. Lau & Murnighan, 1998). In een zogenaamde breuklijn-groep zijn de aanwezige verschillen en potentiële subgroepen dus erg saillant en is de kans groot dat de groep negatieve effecten van diversiteit ervaart (o.a. Thatcher, Jehn, & Zanutto, 2003).

Ten tweede wilde ik de relatie tussen sociale categorisatie processen en negatieve intragroepsprocessen onderzoeken. Hoewel onderzoek naar intergroepsrelaties subgroep-categorisatie identificeert als de oorzaak van problematische relaties en processen binnen groepen, is subgroep-categorisatie niet hetzelfde als intergroepsbias. Intergroepsbias verwijst namelijk naar positievere percepties, attitudes en gedragingen richting de ingroup dan de outgroup (Brewer, 1979), terwijl subgroep-categorisatie slechts verwijst naar het indelen van mensen in groepen (Turner e.a., 1987). Het onderscheid tussen subgroep-categorisatie en intergroepsbias is belangrijk, omdat de potentiële negatieve effecten van diversiteit voortkomen uit intergroepsbias en niet uit subgroep-categorisatie per se. Op basis van dit onderscheid was de verwachting dat sociale categorisatie processen niet altijd resulteren in negatieve groepsprocessen, maar dat deze relatie gemodereerd wordt door attitudes ten aanzien van diversiteit (o.a. Ely & Thomas, 2001; van Knippenberg & Haslam, 2003). Mensen, organisaties, en groepen kunnen verschillen in hun ideeën over diversiteit en deze overtuigingen kunnen de manier waarop mensen omgaan met diversiteit beïnvloeden (Kossek & Zonia, 1993). Als groepsleden diversiteit zien als iets dat potentieel goed is voor de groep zullen zij eerder de positieve aspecten van hun verschillen benutten dan wanneer ze denken dat diversiteit slecht is. Voorspeld werd daarom dat diverse groepen die diversiteit als positief ervaren minder last hebben van de negatieve effecten van diversiteit dan diverse groepen die diversiteit als negatief beschouwen. Deze voorspellingen heb ik getoetst in drie complexe experimenten waarin vierpersoonsgroepen een besluitvormingstaak uitvoerden. Voor het meten van de afhankelijke variabelen heb ik gebruik gemaakt van vragenlijsten, gedrag en groepsprocessen gecodeerd van videobanden, en objectieve prestatie data.

In Hoofdstuk 2 heb ik mij gericht op de interactie tussen subgroep-categorisatie en informatieverwerkingsprocessen. Gebaseerd op het informatie/besluitvormingsperspectief werd beredeneerd dat groepen waarin



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mensen van elkaar verschillen op een taakrelevante dimensie een potentiële waarde in diversiteit bezitten en dat deze waarde het functioneren van de groep verbetert. Groepen zijn echter ook vaak divers op meer zichtbare en opvallende (i.e., saillante) diversiteitdimensies zoals sekse, etniciteit, en leeftijd. Naarmate verschillen binnen de groep opvallender zijn, is de kans groter dat de groepsleden op basis van deze saillante verschillen de groep in subgroepen gaan indelen. Deze meer saillante dimensies van diversiteit kunnen derhalve negatieve groepsprocessen in gang zetten. De relatie tussen deze twee diversiteitdimensies (i.e., een saillante en een informationele dimensie) werd in deze studie onderzocht. De voorspelling was dat informationele verschillen het functioneren van teams konden verbeteren wanneer deze verschillen gekruist waren met een saillante dimensie van diversiteit, maar niet als ze zouden samenvallen met de saillante diversiteitdimensie. Zoals verwacht waren groepen met een saillante diversiteitdimensie minder tevreden, heerste er negatiever teamklimaat en was er sprake van meer persoonlijk- en taakconflict. Deze negatieve effecten werden echter verminderd als de saillante diversiteitdimensie *gekruist* was met de informationele diversiteitdimensie. Binnen groepen waarin de twee diversiteitdimensies gekruist waren, heerste er meer tevredenheid, een beter teamklimaat en was er minder persoonlijk- en taakconflict. Bovendien verwerkten deze groepen meer informatie dan groepen waarin deze dimensies samenvielen of waarin alleen een saillante dimensie van diversiteit aanwezig was.

In Hoofdstuk 3 heb ik me gericht op het tweede onderdeel van mijn theoretisch raamwerk, namelijk de invloed van attitudes ten aanzien van diversiteit. Zoals eerder gezegd, kan de aanwezigheid van heterogene perspectieven en kennis in teams leiden tot een betere prestatie, maar zijn diverse teams vaak niet in staat om deze verschillen daadwerkelijk te benutten. Binnen diverse groepen kan het ervaren van subgroep-categorisatie processen leiden tot negatieve groepsprocessen en het hinderen van de verwerking van informatie binnen de groep. Deze subgroepprocessen worden waarschijnlijker naarmate potentiële subgroepen binnen het team saillanter zijn. Derhalve wordt de kans dat groepen informationele verschillen benutten kleiner als deze informationele verschillen samenvallen met een saillante dimensie van diversiteit (Lau & Murnighan, 1998; Phillips, Mannix, Neale, & Gruenfeld, 2004). In deze studie heb ik gekeken of attitudes ten aanzien van diversiteit de effecten van diversiteit op team prestatie beïnvloeden en kunnen helpen om de informationele verschillen boven tafel te krijgen. Voorspeld werd dat groepen met een faultline wel goed zouden kunnen presteren zolang ze maar overtuigd

zijn van de waarde van diversiteit. Om deze voorspelling te toetsen, werden diverse groepen gecreëerd met een faultline, door sekse, persoonlijkheidsfeedback, en tafelschikking op elkaar te stapelen. In deze groepen werd de houding van de groepsleden ten opzichte van diversiteit gemanipuleerd (d.w.z. ze kregen positieve of negatieve instelling over diversiteit) en ze kregen homogene of heterogene taakrelevante informatie. Zoals verwacht liet deze studie zien dat attitudes ten aanzien van diversiteit inderdaad de relatie tussen diversiteit en groepsprestatie modereerden. Voor groepen met heterogene taakrelevante informatie gold dat zij beter presteerden wanneer ze overtuigd waren dat diversiteit goed was dan wanneer ze geloofden dat homogeniteit goed was. Tevens werd dit interactie-effect vervolgens gemedieerd door de hoeveelheid informatieverwerking in de groep. Dat wil zeggen, groepen met heterogene taakrelevante informatie waarin de leden een positieve instelling ten aanzien van diversiteit hadden, presteerden beter omdat zij meer informatie gingen verwerken.

In Hoofdstuk 4, tenslotte, wilde ik de interactie tussen de twee bouwstenen van mijn theoretisch raamwerk, namelijk saillante sociale categorieën en attitudes ten aanzien van diversiteit, onderzoeken. Verondersteld werd dat groepstructuren (in termen van hoe saillant bepaalde identiteiten voor de groepsleden waren) en de manier waarop groepen over diversiteit dachten (in termen van de *Big Five* persoonlijkheidsvariabele "openstaan" [i.e., *openness to experience*]) de prestatie van diverse teams zou beïnvloeden. Allereerst werd voorspeld dat een hoog groepsniveau van "openstaan" de prestatie van diverse groepen positief zou beïnvloeden. Uit onderzoek is namelijk gebleken dat deze persoonlijkheidsvariabele negatief gerelateerd is aan stereotyperen, conservatisme, en vooroordelen (o.a. Butler, 2000; Flynn, 2005; Peterson, Smirles, & Wentworth, 1997) en positief gerelateerd aan attitudes ten aanzien van diversiteit (o.a. Riemann, Grubich, Hempel, Mergl, & Richter, 1993). De resultaten lieten inderdaad zien dat dit het geval was: Groepen die een meer rigide houding hadden ten opzichte van diversiteit presteerden slechter dan groepen die openstonden voor diversiteit. In dit onderzoek vergeleek ik wederom een diverse groep waarin een sociale categorie werd versterkt (een faultline groep) met een groep waarin deze categorie doorkruist werd (een cross-categorisatie groep). Daarnaast keek ik echter ook naar een groep waarin de overkoepelende identiteit benadrukt werd. Voorspeld werd dat groepsstructuren die de bestaande verschillen of subgroepen saillant maken (d.w.z. een faultline conditie) negatieve effecten hebben op de groepsprestatie in vergelijking met groepsstructuren die leiden

tot cross-categorisatie of tot het saillant maken van een overkoepelende identiteit. In overeenstemming met faultline theorie en consistent met Experiment 1, vond ik dat groepen waarin de bestaande subgroepen versterkt werden (faultline groepen) minder goed functioneerden dan groepen waarin een overkoepelende identiteit werd benadrukt of waarin bestaande subgroepen werden doorkruist.

Tot slot veronderstelde ik een interactie tussen het groepsniveau op "openstaan" en de saillantie van de categorieën. Op basis van veronderstellingen vanuit het gelijkheid/aantrekkelijkheid paradigma en het sociale categorisatie perspectief verwachtte ik dat voornamelijk groepen waarin verschillen of subgroepen saillant zijn (dus door faultlines of cross-categorisatie) baat zouden hebben bij het openstaan voor diversiteit. Groepen waarin verschillen verkleind worden door het benadrukken van de groep als geheel (een overkoepelende identiteit) werden verondersteld minder baat te hebben van het openstaan voor diversiteit, omdat zij minder diversiteit zouden ervaren. Deze hypothesen werden inderdaad ondersteund door de data. Een open houding tegenover verschillen had een positief effect op de prestatie van groepen waarin verschillen saillant waren, maar niet in groepen waarin een overkoepelende identiteit saillant was.

In Hoofdstuk 5 geef ik een overzicht van de belangrijkste conclusies die we op basis van de resultaten van de drie experimenten kunnen trekken. In dit proefschrift lag de nadruk op onderzoek naar manieren om *positieve* effecten van diversiteit meer kans te geven en de kans op negatieve effecten te verkleinen. Het onderzoeken van de twee aandachtspunten die ik binnen mijn theoretische inleiding onderscheiden heb, te weten (1) de saillantie van sociale categorieën en (2) attitudes ten aanzien van diversiteit, heeft inderdaad inzicht verschaft in hoe de positieve kanten van diversiteit in teams benut kunnen worden. Diverse groepen hebben eerder kans de negatieve effecten van diversiteit te ervaren als verschillende diversiteitdimensies saillant worden gemaakt. Het kruisen van diversiteitdimensies (Experiment 1 en 3) of het benadrukken van een overkoepelende identiteit (Experiment 3) kan de negatieve effecten van diversiteit verkleinen. Daarnaast zijn de overtuigingen van de groep met betrekking tot diversiteit van groot belang bij het voorspellen van de effecten van diversiteit. Positieve attitudes ten aanzien van diversiteit gaan de negatieve effecten van diversiteit duidelijk tegen, en kunnen, zoals Experimenten 2 en 3 lieten zien, de prestatie van teams verbeteren.

Naast de belangrijke theoretische bijdragen van mijn proefschrift aan onder andere onderzoek naar faultlines, functioneren van diverse teams, en

attitudes ten aanzien van diversiteit, zijn er ook belangrijke praktische aanbevelingen te doen op basis van mijn resultaten. Aangezien diversiteit een vaststaand gegeven is en in potentie zeer positieve effecten kan hebben op het functioneren van teams, is het niet alleen onmogelijk maar ook onwenselijk om heterogeniteit uit de weg te gaan. Managers binnen organisaties, die te kampen hebben met diversiteitproblemen, kunnen deze resultaten gebruiken om de aanwezige diversiteit adequaat te hanteren.

Ten eerste kunnen organisaties gebaat zijn bij een cultuur die het verschijnsel diversiteit als iets positiefs beschouwd. Om dit te bereiken zouden mensen geselecteerd moeten kunnen worden op hun – dispositioneel bepaalde – positieve houding ten aanzien van diversiteit. De positieve houding kan ook uitgedragen worden door de organisatie als geheel, de afdeling, of de manager. Daarnaast zouden organisaties gebruik kunnen maken van diversiteitstrainingen. Op dit moment zijn de meeste trainingen op het gebied van diversiteit nog gericht op de bewustwording van het hebben en het gebruiken van stereotypen over andere groepen en het veranderen van de ideeën en gevoelens die mensen hebben over die groepen (o.a. Karp & Sammour, 2000). De resultaten in dit proefschrift laten echter zien dat het belangrijk is om de ideeën die mensen hebben over *diversiteit* te beïnvloeden en men er van bewust te maken dat het lidmaatschap van een diverse groep een potentiële waarde kan hebben. Het lijkt daarom waardevol om trainingsprogramma's, die zich op dit moment vooral richten op stereotypen over mensen die anders zijn (o.a. Kossek & Lobel, 1996; Rynes & Rosen, 1995), uit te breiden met attitudes ten aanzien van groepscompositie en diversiteit.

Een tweede praktische aanbeveling heeft te maken met de samenstelling van diverse groepen. Als er binnen organisaties de mogelijkheid is om de samenstelling van teams te beïnvloeden, biedt dit proefschrift aantal leidraad voor de mogelijke samenstelling van de groep. Ten eerste is het belangrijk om informationele diversiteit, dat wil zeggen diversiteit in kennis, perspectieven, en vaardigheden, aan te moedigen, omdat deze vorm van diversiteit de verwerking van taakrelevante informatie kan bevorderen. Ten tweede moeten organisaties en managers op de hoogte zijn van de potentiële negatieve effecten van diversiteit. Als teams divers zijn op verschillende dimensies of karakteristieken is het aan te raden om deze dimensies niet samen te laten vallen of te benadrukken, maar te laten kruisen. Wanneer cross-categorisatie niet mogelijk is, kunnen managers ook een overkoepelende identiteit saillant maken. Het nadeel van een sterke overkoepelende identiteit is echter dat ook waardevolle verschillen minder saillant zijn en dus minder goed benut zouden

kunnen worden.

In Hoofdstuk 5 worden naast relevante theoretische en praktische contributies ook een aantal beperkingen en aanbevelingen voor toekomstig onderzoek besproken. De belangrijkste en meest interessante aanbeveling is dat managers en organisaties op de hoogte moeten zijn van de potentieel positieve effecten van diversiteit en zich niet alleen maar moeten richten op de negatieve effecten van diversiteit. Het benadrukken van overeenkomsten tussen groepsleden kan een vruchtbare oplossing lijken in het tegengaan van negatieve effecten van diversiteit, maar deze oplossing beperkt wel de potentieel positieve effecten van de verschillen tussen mensen. Aangezien diversiteit onvermijdelijk is en blijft, is het belangrijk te benadrukken dat dit proefschrift laat zien dat het benutten van diversiteit niet alleen mogelijk is, maar ook relatief makkelijk.



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## *BIOGRAPHY*

Astrid Carlotta Homan was born on July 24, 1979 in Eindhoven. She finished her secondary education in 1997 and then started the study Communication Science at the University of Amsterdam. During the last two years of her study, she worked as a research and teaching assistant, which initiated her enthusiasm for academia. In September of 2001, she started her PhD project at the Work and Organizational Psychology department of the University of Amsterdam. During her PhD she spent four months at Michigan State University in East Lansing, USA, as a Fulbright Scholar. Starting September 2005, Astrid Homan works as an assistant professor at the Social and Organizational Psychology department of Leiden University.









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