HANNEKE KOOIJ-DE BODE

Distributed Information and Group Decision-Making

Effects of Diversity and Affect

Distributed Information and Group Decision Making: Effects of Diversity and Affect

Distributed Information and Group Decision Making: Effects of Diversity and Affect

Ongedeelde informatie en groepsbesluitvorming:
Effecten van diversiteit en affect

Proefschrift

ter verkrijging van de graad van doctor aan de
Erasmus Universiteit Rotterdam
op gezag van de
rector magnificus

Prof.dr. S.W.J. Lamberts

en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op
vrijdag 2 november 2007 om 11.00 uur
door
Johanna Maria Kooij-de Bode
geboren te Wormerveer

Promotiecommissie

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Erasmus Research Institute of Management (ERIM)
RSM Erasmus University / Erasmus School of Economics
Erasmus University Rotterdam

Internet: http://www.erim.eur.nl

ERIM Electronic Series Portal: http://hdl.handle.net/1765/1

ERIM Ph.D. Series Research in Management 115

Cover: Laurens Rook

This project was subsidized by the Netherlands Organization for Scientific Research (NWO), NWO grant 402-01-043

Voor Annabel en Isabel

"Ik snap het", zei Knorretje. "Je zou kunnen zeggen dat daden meer zeggen dan woorden".

Allen, vert. 1995, p. 80

Contents

1.

The Use of Distributed Information in Group Decision Making: An Introduction

"I see," said Piglet. "You could say that actions speak louder than words." "That's very good, Piglet. I'll just add it to the last rule." "It's original too," said Piglet proudly. "I just thought it up." The Stranger wrote down what Piglet had said and added a title at the beginning so that what was written on the tablet looked like this:

Rules for Effective Communication

1. To communicate there must be an exchange of information.

2. All information exchanged should be as clear and complete as possible.

3. The information should be meaningful to the individual who is receiving it.

4. Always get confirmation that the message you are communicating has been understood.

5. Information can be given in many ways. The more ways you use the clearer and more believable it will be. However, the message must be the same in all ways. It is vital to be consistent. Remember, action speak louder than words.

They all looked at the written list on the tablet. “I can see why we had difficulty this morning,” Pooh said at last. “We didn’t follow the rule about information being as clear and complete as possible, and we didn’t get feedback”. “Exactly,” said The Stranger.

Allen, 1994, pp. 80-82.

This dissertation is about the use of distributed information in group decision-making. In daily life it is rather common that groups make decisions: Pooh and his friends discuss the best options to find The Stranger and decide together what to do next, family's discuss preferences about holiday destinations, and members of a sport union decide to invest money in the clubroom. Also organizations often use small groups for decision-making purposes instead of individuals. The rationale behind this is that it is assumed that groups possess a larger and more diverse set of perspectives (Jackson, 1991). Because of differences in educational background, experience, role demands, and the like, group members may often hold a certain amount of decision-relevant information that others in the group do not possess (van Knippenberg, De Dreu, & Homan, 2004). Cross-functional teams for instance are designed within organizations because they offer a greater potential for more informed and more integrated decisions (e.g., Denison, Hart, & Kahn, 1996; Ford & Randolph, 1992; Uhl-Bien & Graen, 1998).

Although decision-making groups thus potentially can benefit from information that others in the group do not possess, and the presumed value of unique information has been acknowledged in organizations (Tindale, Kameda, & Hinsz, 2001), research findings suggest that the positive impact of unique information on group decision-making is far from obvious. Group decision-making studies have shown that groups often fail to exchange group members' unique resources (Stasser & Titus, 1985; Wittenbaum & Stasser, 1996), and that when group members do exchange their uniquely possessed information, they often fail to integrate that information in the decision (Gigone & Hastie, 1993; Scholten, van Knippenberg, Nijstad, & De Dreu, in press; Winquist & Larson, 1998). As a consequence, uniquely possessed recourses do not get the opportunity to exert all of the decisional influence they potentially have. This has stimulated

much research that seeks answers to the questions why and under what conditions groups will effectively use their distributed information. Research has for instance focused on information type and distribution (e.g., Stewart & Stewart, 2001), task features (e.g., Stasser & Stewart, 1992), group structure and composition (e.g., Gruenfeld, Mannix, Williams, & Neale, 1996), temporal features (e.g., Kelly & Karau, 1999), discussion procedures (e.g., Parks & Cowlin, 1996), communication technology (e.g., Straus, 1996), and member characteristics such as status of a group member (e.g., Franz & Larson, 2002) (see for an overview, Wittenbaum, Hollingshead, & Botero, 2004).

Inherent to the effective use of distributed information is that groups need to process the unique information held by the group members. This *information elaboration* process requires exchange of information and perspectives, individual-level processing of the information and perspectives, the process of feeding back the results of this individual level processing into the group, and discussion and integration of its implications (van Knippenberg et al., 2004). When decision-making groups aim to make a more informed and more integrated decision than any individual member can do, then it is evident that group members not only have to exchange their information and perspectives, but also have to elaborate on that information in order to reach high quality decisions. An intriguing question therefore is which factors influence elaboration of task-relevant information.

Although a number of factors can be discerned (for instance, motivation or ability to elaborate task-relevant information; Scholten et al., in press; task requirements, work group diversity, see van Knippenberg et al., 2004), the focus in this dissertation is restricted to two factors: diversity and affect. Although both factors are acknowledged as important issues (Ashkanasy, Härtel, & Daus, 2002), they have received less attention in research in distributed information then probably they should have.

Diversity refers to differences between individuals on any attribute that may lead to the perception that another person is different from self (Jackson, 1991) and might be of particular relevance to groups' use of distributed information, because it may disturb the exchange and integration of information. The term affect is used to describe dispositional tendencies to experience positive or negative feelings (Lazarus, 1991; Watson & Clark, 1984) as well as diffuse positive or negative mood states without a salient antecedent cause (cf. Forgas, 1992a). Because affect strongly influences cognitive processes such as memory, imaging, attention, judgment, planning, and decision-making (Damasio, 1994; Forgas, 1995; Williams, Watts, MacLeod, & Mathews, 1999), it may have substantial influence on groups' use of distributed information. In the chapters that follow three empirical studies are reported, designed to address effects of diversity and effects of affect on information elaboration and group decision making.

The first factor that is focused on is demographic diversity. Organizations are becoming increasingly diverse on dimensions such as gender, race, ethnicity and nationality (Jackson, 1991; Triandis, Kurowski, & Gelfland, 1994; Williams & O'Reilly, 1998). Demographic diversity may lead group members to distinguish between "us" and "them". Many workgroups offer several potential bases for these us-them distinctions (e.g., men vs. women, old vs. young, ethnic minority vs. ethnic majority) (van Knippenberg et al., 2004), and such workgroups may become more vulnerable for disturbed group processes (cf. Hambrick, Davison, Snell, & Snow, 1998) such as the exchange and integration of distributed information. Chapter 2 therefore aims to investigate the influence of demographic diversity on information elaboration and it is proposed that demographic diversity disturbs the exchange and integration (elaboration) of distributed information. More specifically, it is hypothesized that information elaboration and decision quality are stimulated more by information integration instructions in groups in

which ethnically diverse backgrounds and distributed information are combined, whereas information elaboration is stimulated less by these instructions in ethnically homogeneous groups with distributed information and in groups with fully shared information. It is also hypothesized that the relationship of distributed information, ethnic diversity, and focus on information integration with decision quality is mediated by information elaboration.

The second factor that is focused on is group member affect. Research at the individual level of analysis shows that negative affect causes individuals to use more careful, detail-oriented, and analytical processing strategies (Forgas, 1992a; Forgas & Bower, 1987; Schwarz, 1990; Schwarz & Bless, 1991). Negative affect may thus have substantial influence on the way groups process information. Chapter 3 aims to investigate the influence of dispositional negative affect on group information elaboration and group decision-making and it is argued that the bottom-up processing style engendered by group members' dispositional negative affect should be conducive to group's effective use of distributed information. More specifically, it is hypothesized that groups in which information is distributed among group members engage more in information elaboration and make better decisions when they are higher in dispositional negative affect, whereas the information elaboration of groups with fully shared information is less contingent on dispositional negative affect. It is also hypothesized that the relationship of distributed information and dispositional negative affect with decision quality is mediated by information elaboration.

While the focus in Chapter 3 is on dispositional affect, the focus in Chapter 4 is on affect as mood state. The same analysis of the positive effects of negative affect on information processing is followed here, however, it is reasoned that dispositional differences may influence how people deal with a temporary mood state (Ciarrochi & Forgas, 1999). More specifically, it is hypothesized that

groups make better use of their distributed information and therefore make better decisions when they are in a negative mood rather than a positive mood, but that these effects are moderated by dispositional distress.

Finally, in Chapter 5, the empirical results are summarized and directions for future research are discussed.

2.

Demographic Diversity and Distributed Information in Group Decision Making: The Importance of Information Elaboration

Demographic diversity may interfere with groups' use of distributed information. This is not so much because diversity interferes with groups' ability to reach agreement, but because diversity disturbs the exchange and integration (elaboration) of distributed information. We find evidence for this proposition in an experiment (N = 63 groups) in which ethnically diverse groups are shown to benefit more from instructions emphasizing elaboration than ethnically homogeneous groups when dealing with distributed information, whereas neither ethnic diversity or elaboration instruction affected decision making performance in groups with fully shared information. Moreover we show that these effects are mediated by a behavioral measure of group information elaboration.

Introduction

Organizations tend to rely on small groups rather than individuals when important decisions have to be made, based on the assumption that groups possess a broader range of informational resources than individuals (Ilgen, 1999; Tindale, Kameda, & Hinsz, 2001). This may presumably enhance decision-making because of the way groups are able to process task-relevant information (Hinsz, Tindale, & Volrath, 1997; van Knippenberg, De Dreu, & Homan, 2004). However, research has shown that groups often fail to exchange their members' unique informational resources (Gruenfeld, Mannix, Williams, & Neale, 1996; Phillips, Mannix, Neale, & Gruenfeld, 2004; Stasser & Titus, 1985; Wittenbaum & Stasser, 1996), and that when they do so, they often fail to put the resources to good use and integrate them in coming to a decision (Gigone & Hastie, 1993; Scholten, van Knippenberg, Nijstad, & De Dreu, in press; Winquist & Larson, 1998).

There are indications that demographically (e.g., ethnically) diverse groups may have even greater difficulty in using their distributed information (e.g., Sawyer, Houlette, & Yeagley, 2006). Demographical diversity in group decision-making would be problematic, because it would lead to conflict that undermines the performance of the group (e.g., Jehn, Northcraft, & Neale, 1999; Pelled, Eisenhardt, & Xin, 1999). However, this is not to say that the absence of conflict creates a favorable situation for demographically diverse groups to use their distributed information and to come to good decisions. While the notion that (demographic) diversity may be associated with conflict would seem to suggest that more diverse groups may have a harder time reaching agreement, in the present study we argue that it is not so much groups' ability to reach agreement that may suffer from (demographic) diversity, but rather groups' ability to exchange and integrate decision-relevant information. Inherent to the effective use

of distributed information is elaboration of task-relevant information – that is, exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task (van Knippenberg et al., 2004). Yet, research suggests that decision making groups' focus lies on reaching agreement (van Ginkel & van Knippenberg, 2004; van Ginkel, van Knippenberg, & Tindale, 2005). For instance, group members are inclined to pool their preferences (Pennington & Hastie, 1990), and they tend to focus on information they believe other group members also have (Wittenbaum, Stasser, & Merry, 1996). They may thereby rely on the "consensus implies correctness" heuristic (Chaiken & Stangor, 1987) and infer that the group has made a good decision.

Given decision-making groups' tendency to focus primarily on reaching agreement, it seems likely that, if anything, diverse groups will maintain this focus. This focus on reaching agreement may distract from the integration of new and unique perspectives into the group's decision, however (van Ginkel & van Knippenberg, 2004), and this is particularly likely to occur in demographically diverse groups when group members' openness to information and perspectives introduced by other group members is likely to be lower (van Knippenberg et al., 2004). Decision making in demographically diverse groups with distributed information will therefore suffer most from lack of elaboration of that new information.

In an experiment, we show this in three ways: First using an information elaboration intervention allows us to consider information elaboration as a moderating factor. Second, using an information elaboration measure allows us to consider it as a mediating factor. Third, by comparing demographically diverse groups with distributed information with demographically diverse groups with fully shared information, we may test our argument that elaboration of new and unique information is disturbed in particular in demographically diverse groups.

We focused on ethnic diversity as demographical background dimension, because this is a readily visible and/or audible dimension used as basis for categorization in society at large that may therefore be a dimension that relatively easily elicits social categorization processes (cf. Fiske, 1998). Moreover, in an increasingly ethnically diverse work force, ethnic diversity is associated with a lot of diversity-related problems (e.g., discrimination, glass ceiling, etc.; cf. van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998).

Distributed Information and Demographic Diversity

Diversity may be seen as a characteristic of a social grouping (i.e., group, organization, society) that reflects the degree to which there are objective or subjective differences between people within the group (van Knippenberg & Schippers, 2007). Readily visible similarities and differences (e.g., in race, age, and gender) may form the basis for categorizing self and others into groups, thereby creating us-them distinctions (Milliken & Martins, 1996; van Knippenberg & Schippers, 2007). Research has shown that people tend to place more trust in ingroup than in outgroup members, see ingroup members as more valid sources of information, and are more willing to cooperate with them (Brewer, 1979; Brewer & Brown, 1998; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987; van Knippenberg, 2003). As a result, communications from ingroup members are more likely to be attended to and elaborated, and thus more likely to influence the thoughts and actions of the individual than are communications from outgroup members (Mackie, Worth, & Asuncion, 1990; van Knippenberg, 1999; van Knippenberg & Wilke, 1992; cf. Bhappu, Griffith, & Northcraft, 1997).

Decision making groups may focus too much on finding common ground, because in group decision making reaching agreement is a more clearly recognized goal than exchange and integration of information (van Ginkel & van

Knippenberg, 2004; van Ginkel et al., 2005). Also, a combination of distributed information and demographical diversity might be a very uncomfortable situation for group members. Lack of feelings of similarity (cf. Festinger, 1954; see also Gruenfeld et al., 1996; Phillips, Northcraft, & Neale, 2006) may strengthen groups' tendency to focus on agreement (cf. De Dreu, Giebels, & van de Vliert, 1998; Gruenfeld et al., 1996; Pennington & Hastie, 1990). On the one hand, of course, reaching agreement is a necessary task for decision-making groups (Whyte, 1989). But on the other hand, for high performance on distributed information tasks it is necessary for group members to exchange information, to carefully consider information and its implications, and to discuss and integrate the implications, a process that has also been referred to as group information elaboration (van Knippenberg et al., 2004). Agreement can often be reached by "easy compromise" (cf. De Dreu & Carnevale, 2003), which thus may go at the expense of processing (distributed) information.

Group information processing may even be more distorted when a strong faultline is present, that is if group members fall into two distinct non-overlapping subgroups (Lau & Murnighan, 1998), based on demographical and informational differences (i.e., Dutch economists and Chinese psychologists). Research has shown that information elaboration (Homan, van Knippenberg, van Kleef, & De Dreu, in press), or communication processes closely aligned to information elaboration (Sawyer et al., 2005) are less disturbed when diversity dimensions cross-cut each other (i.e., a Dutch economist, a Chinese psychologist, a Dutch psychologist, and a Chinese economist). Nevertheless, we argue that to secure high decision quality even cross-categorization is not enough, because "being different" still may make groups extremely vulnerable to ineffective group functioning (cf. Hambrick, Davison, Snell, & Snow, 1998). Not only may group members feel less comfortable to communicate if they are more dissimilar (cf.

familiarity; Gruenfeld et al., 1996; Jehn & Shah, 1997), they may also be less open to new information. We therefore propose that demographically diverse groups need more stimulation to elaborate on task-relevant information than demographically homogeneous groups.

To test the hypotheses that demographically diverse groups are less likely to engage in elaboration of distributed information than demographically homogeneous groups, we provided half the groups in the current study with an instruction that emphasizes information exchange and integration. This intervention allowed us to consider the role of information elaboration as a moderator. It also allowed us to show that demographically diverse groups with distributed information will elaborate less on task-relevant information of their own accord and that these groups will profit more from an instruction that emphasizes exchange and integration of information. Because information elaboration will be mostly disturbed when demographically diverse groups have to deal with new information, we expect this intervention to have differential effects on the decision quality of groups with distributed information and groups with fully shared information. A comparison of information elaboration and decision-making in groups in which information is already fully shared before discussion may thus further substantiate our argument about the role of information elaboration in groups with distributed information and demographically diverse backgrounds. This leads to the following hypotheses:

Hypothesis 1: Information elaboration is stimulated more by information integration instructions in groups in which ethnically diverse backgrounds and distributed information are combined, whereas information elaboration is stimulated less by these instructions in ethnically homogeneous groups with distributed information and in groups with fully shared information.

Hypothesis 2: Decision quality is stimulated more by information

integration instructions in groups in which ethnically diverse backgrounds and distributed information are combined, whereas decision quality is stimulated less by these instructions in ethnically homogeneous groups with distributed information and in groups with fully shared information.

Finally, the relationship of ethnic diversity, distributed information, and explicit information integration instructions with elaboration of task-relevant information (Hypothesis 1) was expected to mediate the relationship of ethnic diversity, distributed information, and explicit information integration instructions with decision quality (Hypothesis 2).

Hypothesis 3: Elaboration of task-relevant information mediates the interaction of ethnic diversity, distributed information, and information integration instructions on decision quality.

We tested these hypotheses in an experimental study of decision-making groups, which allowed conclusions about causality and enabled us to assess the group processes leading to the final decision through behavioral coding of group interaction (Weingart, 1997; Wittenbaum, Hollingshead, & Botero, 2004).

Method

Participants and Design

One hundred ninety two students (130 male and 62 female) participated in the study for monetary compensation (15 euro, approximately 18 US dollars). The majority of the participants were business administration students (94 %). Their mean age was 20.8 (*SD* = 1.54). The experiment was announced as a study about decision-making in groups. The experimental design included distributed information (distributed information versus fully shared information), and focus on information integration (instruction to focus on information integration versus

no additional instruction), which were manipulated as between-groups variables, and ethnic diversity as a quasi-experimental factor based on participants random assignments to groups. Participants were asked at the end of each session to write down their ethnical background. Groups in which not all of the three participants had the same ethnical background were coded as ethnically diverse and groups in which all of the three participants had the same ethnical background were coded as ethnically homogeneous. In the ethnically diverse groups, 75 % of the participants with a non-Dutch ethnical background had a Surinam, Antillean, Indonesian, Chinese, Turkish, or Moroccan ethnical background (note that in the Netherlands the majority of the ethnical minorities consist of these groups).

Participants were randomly assigned to 64 groups of three, and groups were randomly assigned to experimental conditions. Dependent variables were information elaboration and decision quality.

Decision Task

The experimental task was a three-person decision task that was an altered version of The Windy City Theatre Exercise (Thompson & Bloniartz, 1996). Participants received a case in which the general manager of the theatre considered the viability of adding matinees to the scheduled performances. Participants were told that they were a team of staff members who had proven in the past that they were very capable to compose an exciting product package and make it profitable, and that they for that reason had to make a proposal how to make the matinees successful. Topics they had to make decisions about involved for example choice of target groups, promotion strategies, and ticket prices. The task provided an opportunity for group members to integrate (different) information.

Manipulation of Distributed Information

Information was distributed according to the procedure developed by Stasser and Titus (1985; see also Gruenfeld et al., 1996). General information (e.g., information about the purpose of the task) was shared in both conditions. In the distributed condition, each group member received a package of information with some unique information, while in the fully shared condition in contrast, they all received the full set of decision-relevant information. Thus, while at the group level groups in both conditions possessed the exact same pool of information, group members in the distributed information condition all possessed some information not known to their fellow group members, whereas all group members possessed the same (full) set of information in the fully shared condition.

Manipulation of Focus on Information Integration

Participants in the focus on integration condition received additional instructions informing them that it was essential to collaborate to make a proposal, that they had to communicate about their decisions preferences, and that they had to discuss differences as well as similarities and benefit from these. Thus, they had to exchange and integrate information to finally reach consensus. Participants in the control condition were just told that they had to discuss a proposal.

Procedure

Groups were seated in a small room, where participants were asked for permission to record the group interaction on audio-video tapes. All participants received a folder containing general information about the decision task and specific unique information about financial, sales, or advertising/promotion items. After participants read the information, each participant had to generate ideas how to make the matinees successful in order to familiarize them with the case. After a

short session in which they told each other their ideas, they received instructions for the decision task. Groups discussed a proposal until they reached agreement or until allotted time (15 minutes) ran out. Then, each group member was asked to write down the discussed group proposal. Finally, participants were asked to fill out a questionnaire and they were paid and thanked.

Dependent Measures

Manipulation check for focus on information integration. We used a five-item questionnaire to check the adequacy of the manipulation of focus on information integration (i.e.: "*In the instruction it was mentioned that …you had to take advantage of differences in viewpoints*"). Answers could be given on 5-points scales (1 = disagree and 5 = agree). To assess interrater agreement we used the $a_{wg(1)}$ value (instead of the more frequently used $r_{wg(1)}$ index), following the recommendations of Brown and Hauenstein (2005). The $a_{wg(1)}$ value for the manipulation check on focus on information integration was .83, indicating strong agreement, so these variables were aggregated to the group level (α = .82, M = 3.25, SD = 0.73).

Information elaboration. The group interaction during the discussion of the proposal was recorded on audio-video tapes. Group information elaboration was coded on a three-point scale. The scale was anchored with specific behavioral standards observed in the videos, which pointed directly to the exchange, discussion, and integration of the information. A score of "3" was given when the group elaborated thoroughly, that is when the three group members actively discussed possible options, considered these at length, asked for opinions and elaborated on them, and convinced each other by arguments. A score of "2" was given when the group elaborated moderately, that is when group members mentioned possible decisions and agreed with each other without any further

discussion, when they asked for each others' opinion and agreed with it without any further discussion, or when group members were mainly calculating and counting without any elaboration on information. A score of "1" was given when the group elaborated little, that was in the absence of mentioning options, when group members hardly talked to each other, or when no decisions were made (M = 1.79, SD = 0.72). One judge rated all videos, and the second rated 20 % to cross-validate our ratings (i.e., a subset of videos which were randomly selected from conditions). Both judges were blind to the experimental conditions. The intercoder reliability (i.e., correlation) was high, $r = .88$, $p < .001$.

Decision quality. Decision quality was operationalized as the amount of arguments/explanations, illustrations, and extensions in a proposal. An example of an argument/explanation is: "Promotion at old people's homes, old people rather go out in the afternoon than in the evening". An example of an illustration is: "Cooperation with companies, for example get a free ticket with a happy meal at McDonald". An example of an extension of an earlier idea is: "Give gradual discount: school with group of 50 children gets more discount then school with 30 children". The proposals were rated on 5-points scales (1 = very low quality and 5 = very high quality). One judge rated all 189 proposals, 20 % were rated by a second judge to cross-validate ratings (i.e., a subset of proposals which were randomly selected from conditions). Both judges were blind to the experimental conditions. The intercoder reliability was high, $r = .82$, $p < .001$. In the analyses we used the ratings of the judge who had rated all the proposals. To decide whether we could aggregate individuals' reports of the group proposal to the group level we again used the $a_{wg(1)}$ value. The $a_{wg(1)}$ value was .74, indicating strong agreement, so individual reports of the discussed group proposal were treated as group proposals (M = 2.32, SD = 1.11).

Results

Preliminary Analysis

We removed one group because of missing video data. There was no evidence that the gender of participants or the gender composition of their groups had effects on the results. These variables therefore are not discussed further.

Manipulation Check

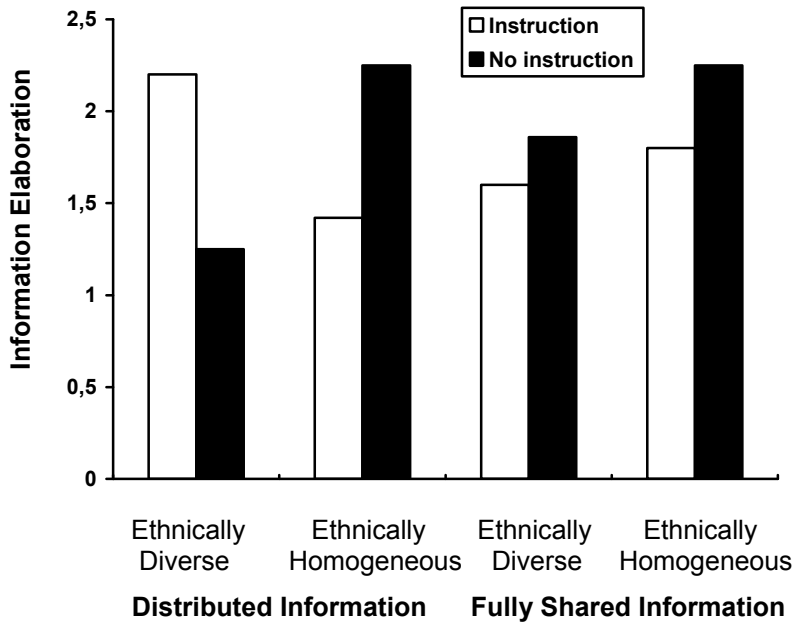
Focus on information integration. A 2 x 2 x 2 ANOVA was conducted to check the manipulation of focus on information integration. The results showed a main effect for instruction only, such that groups in the focus on information integration condition showed higher scores on focus on information integration (M = 3.84, SD = .38) than groups in the control condition (M = 2.63, SD = .44), $F(1, 55) = 126.69$, $p < .001$, $\eta^2 = .70$. The manipulation of focus on information integration was successful.

Information Elaboration

A 2 x 2 x 2 ANOVA showed a two-way interaction of focus on information integration and ethnic diversity on information elaboration, $F(1, 55) = 8.17$, $p < .01$, $\eta^2 = .13$, which was qualified by the three-way interaction of distributed information, focus on information integration, and ethnic diversity on information elaboration, $F(1, 55) = 5.29$, $p < .05$, $\eta^2 = .09$ (see Figure 2.1). Simple effects analysis revealed that focus on information integration affected information elaboration in the distributed information condition, in which ethnically diverse groups elaborated more on information in the focus on information integration condition than in the control condition, $F(1, 58) = 7.62$, $p < .01$, $\eta^2 = .12$ (see Table 2.1 for means, standard deviations, and confidence intervals).

Figure 2.1

Interaction Effect of Distributed Information, Ethnic Diversity, and Focus on Information Integration on Information Elaboration



Simple effects analysis also revealed that ethnically homogeneous groups with distributed information elaborated less on information in the focus on information integration condition than in the control condition, $F(1, 58) = 8.13$, $p < .01$, $\eta^2 = .12$. In addition, we found that in the control condition ethnically diverse groups with distributed information elaborated less on information than ethnically homogeneous groups with distributed information, $F(1, 58) = 9.30$, $p < .01$, $\eta^2 = .14$, and in the focus on information integration condition, ethnically diverse groups with distributed information elaborated more on information than ethnically homogenous groups with distributed information, $F(1, 58) = 6.05$, $p <$

Table 2.1

Means, Standard Deviations, and Confidence Intervals for the Interaction between Distributed Information, Focus on Information Integration, and Ethnic Diversity

	Ethnically Diverse								Ethnically Homogeneous							
	Focus on Information Integration				No Focus on Information Integration				Focus on Information Integration				No Focus on Information Integration			
			CI				CI				CI				CI	
	M	*SD*	lower	upper	*M*	*SD*	lower	upper	*M*	*SD*	lower	upper	*M*	*SD*	lower	upper
Information Elaboration																
Distributed	2.20	0.84	1.61	2.79	1.25	0.46	0.78	1.72	1.42	0.67	1.04	1.80	2.25	0.71	1.78	2.72
Fully Shared	1.60	0.55	1.01	2.19	1.86	0.69	1.36	2.36	1.80	0.63	1.38	2.22	2.25	0.71	1.78	2.72
Decision Quality																
Distributed	2.60	1.32	1.68	3.51	1.54	0.75	0.82	2.26	1.75	1.14	1.16	2.34	3.20	1.05	2.48	3.93
Fully Shared	1.93	0.49	1.02	2.85	2.52	1.23	1.75	3.30	2.43	0.89	1.79	3.08	2.83	1.00	2.11	3.56

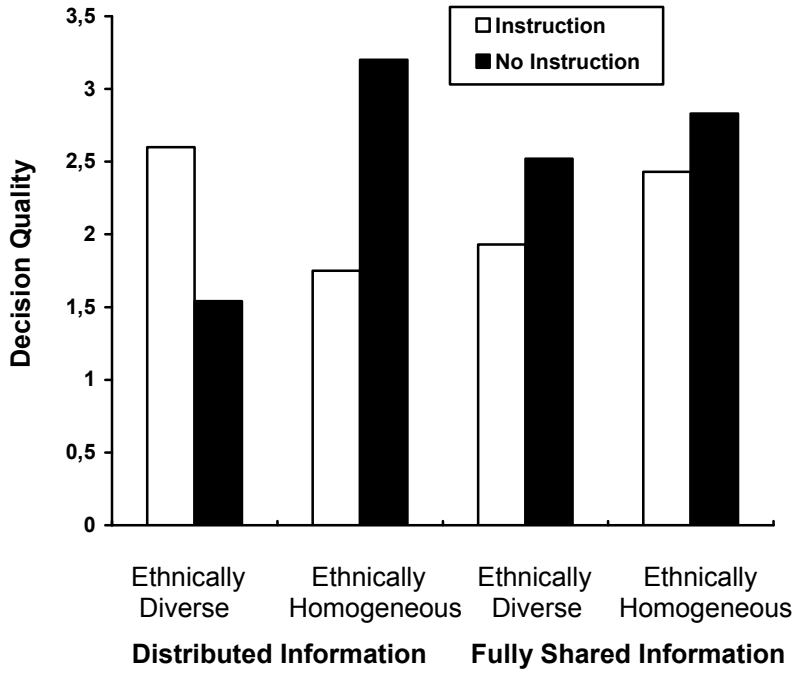
.05, η^2 = .09. As expected, no effects of focus on information integration were found in the fully shared information/ethnically diverse condition, $F(1, 58) = .33$, *ns*., η^2 = .01, nor in the fully shared information/ethnically homogeneous condition, $F(1, 58) = 1.77$, *ns*., η^2 = .03. Hypothesis 1 was thus confirmed, although the reverse effect of focus on information integration in ethnically homogeneous groups with distributed information was not necessarily implied by our analyses.

Decision Quality

A 2 x 2 x 2 ANOVA showed a two-way interaction of focus on information integration and ethnic diversity on decision quality, $F(1, 55) = 4.72$, $p < .05$, η^2 = .08, which was qualified by the three-way interaction of distributed information, focus on information integration, and ethnic diversity on decision quality, $F(1, 55) = 6.39$, $p < .05$, η^2 = .10 (see Figure 2.2). Simple effects analysis revealed that focus on information integration only affected performance in the distributed information condition, in which ethnically diverse groups performed better in the focus on information integration condition than in the control condition, $F(1, 58) = 4.53$, $p < .05$, η^2 = .07. This is consistent with Hypothesis 2. Simple effects analysis also revealed that ethnically homogeneous groups with distributed information performed worse in the focus on information integration condition than in the control condition, $F(1, 58) = 9.67$, $p < .01$, η^2 = .14. In addition, we found that in the control condition ethnically diverse groups with distributed information performed worse than ethnically homogeneous groups with distributed information, $F(1, 58) = 10.80$, $p < .01$, η^2 = .16, and in the focus on information integration condition ethnically diverse groups with distributed information performed better than ethnically homogenous groups with distributed information , $F(1, 58) = 3.96$, $p = .05$, η^2 = .06.

Figure 2.2

Interaction Effect of Distributed Information, Ethnic Diversity, and Focus on Information Integration on Decision Quality



As expected, no effects of focus on information integration were found in the fully shared information/ethnically diverse condition, $F(1, 58) = .83$, *ns*., $\eta^2 = .01$, nor in the fully shared information/ethnically homogeneous condition, $F(1, 58) = .52$, *ns*., $\eta^2 = .01$. Hypothesis 2 was thus confirmed, although again it should be noted that the reverse effect of focus on information integration in ethnically homogeneous groups with distributed information was not necessarily implied by our analyses.

Mediation Analysis

Hypothesis 3 predicts that effects on decision quality would be mediated by information elaboration. In the previous, we already showed that experimental conditions influenced decision quality as well as information elaboration. Moreover, information elaboration was positively correlated with decision quality ($r = .62$, $p < .01$).

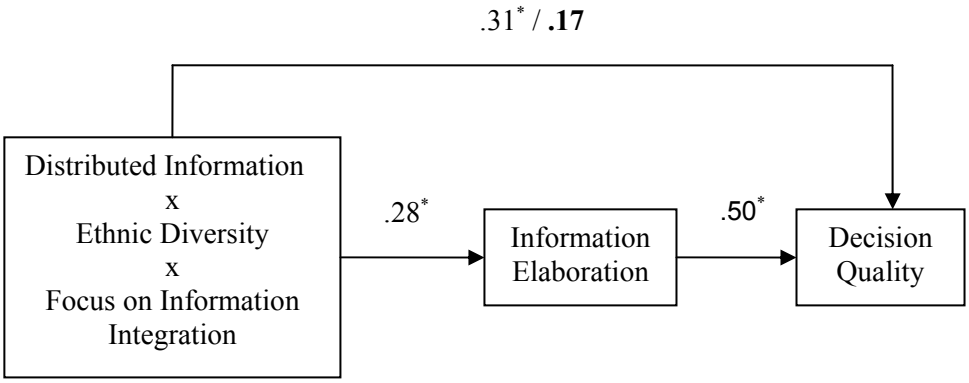
To test whether information elaboration mediated the interaction between distributed information, focus on information integration, and ethnic diversity on decision quality, we used regression analyses following the guidelines of Baron and Kenny (1986). We dummy-coded distributed information (-.5 for distributed information and .5 for fully shared information), focus on information integration (-.5 for instruction to focus on information integration and .5 for control condition), and ethnic diversity (-.5 for homogenous background and .5 for diverse background), and we computed cross-products between the dummy-coded independent variables for the three two-way interactions and the three-way interaction. We centered information elaboration, following the recommendations of Aiken and West (1991). In step 1, we entered distributed information, focus on information integration, ethnic diversity, the three two-way interactions and the three-way interaction into the regression equation. This showed a significant three-way interaction of distributed information, focus on information integration, and ethnic diversity on decision quality, $\beta = .31$, $p < .05$, $b = 2.71$, $SE\ b = 1.07$. In step 2, we entered information elaboration into the regression equation. This yielded a significant relationship between information elaboration and decision quality, $\beta = .50$, $p < .001$, $b = .77$, $SE\ b = .18$. Moreover, the three-way interaction of distributed information, focus on information integration, and ethnic diversity on decision quality was not significant anymore, $\beta = .17$, *ns*., $b = 1.48$, $SE\ b = .98$. A Sobel test indicated that the reduction in size of effect was significant, $z = 2.02$, p

< .05.

We concluded that, as predicted in Hypothesis 3, information elaboration mediated the three-way interaction effect of focus on information integration, distributed information, and ethnic diversity on decision quality (see Figure 2.3).

Figure 2.3

Interaction Effect of Distributed Information, Ethnic Diversity, and Focus on Information Integration: Mediation of Information Elaboration



Note. Numbers above the arrows represent standardized coefficients (betas). Beta's in bold are based on regression equations including the connected mediator.
*$p < .05$.

Discussion

Research has shown that groups are not always good users of their informational resources (Gruenfeld et al., 1996; Phillips et al., 2004; Stasser & Titus, 1985; Wittenbaum & Stasser, 1996). Groups with diverse ethnical backgrounds might even be more prone to ineffective use of distributed information, because they have to integrate different informational pieces across salient ethnic backgrounds (Earley & Mosakowski, 2000). Diversity might not so much interfere with groups' ability to reach agreement, but it may disturb openness to new (distributed) information, which is essential to elaboration of task-relevant information. Even the cross-categorization of sub-groups (Homan et al., in press; Sawyer et al., 2005) might not be enough to ensure effortful group information processing. We proposed that lack of elaboration of task-relevant information – more than failing to reach agreement – impedes the high-quality decision-making performance of groups in which group members with diverse ethnic backgrounds have to deal with new information. In support of this proposition we showed by stimulating information elaboration through additional task instructions that groups with distributed information and diverse ethnic backgrounds elaborated information more (Hypothesis 1) and reached better decisions (Hypothesis 2) with a focus on information exchange and integration than without. Consistent with our information processing analysis, the relationship of ethnic diversity and focus on information exchange and integration with decision quality was mediated by information elaboration (Hypothesis 3). Further substantiating our analysis, ethnic diversity and focus on information exchange and integration were not related to information elaboration and decision quality in groups with fully shared information, suggesting that it is the exchange and integration of unique information and not the reaching of an agreement per se that

is hampered by ethnic diversity. This study therefore points to the crucial role of groups' information elaboration process in group decision-making when ethnically diverse groups have to deal with distributed information.

Although our results revealed a considerable amount of support for this perspective, there were some unpredicted findings. Groups with distributed information and ethnically homogeneous backgrounds were apparently hindered by our emphasis on elaboration. They elaborated less on information and reached lower decision quality with information exchange and integration instructions than without such instructions. This finding might be seen in the context of groupthink-like phenomena as proposed by Janis (1982). The instruction that group members received was that they had to exchange and integrate information to finally reach consensus. The common ground that ethnically homogeneous groups share on readily visible attributes together with the part of the instruction to finally reach consensus might have led groups to elaborate too little on the information. This corroborates findings that consensus decision-making does not lead to exploring the problem (Tjosvold & Field, 2001), and that groups with a consensus norm make poorer decisions because they fail to use available information, whereby cohesiveness probably may reinforce the normative influence in a group (Postmes, Spears, & Cihangir, 2001). Thus, where our focus on information exchange and integration was beneficial for groups with distributed information and ethnically diverse backgrounds to process task-relevant information, it drove groups too soon to consensus-seeking without investing energy in elaborating on distributed information when group members already shared common ground in demographics.

A number of researchers have pointed to the detrimental role of conflict in demographically diverse groups (Jehn et al., 1999; Pelled et al., 1999), which seems to suggest that reaching agreement might be more difficult in these groups.

Without disregarding the value of including conflict measures in studies on demographic diversity, our study underscores the importance of including measures of group-level information elaboration processes as well. Moreover, we showed that even in the absence of faultlines (each group member in the distributed information condition had partially unique information and partially shared information) demographically diverse groups are vulnerable to ineffective use of new information.

Focus on information exchange and integration in groups with distributed information and ethnically diverse backgrounds did not lead to better performance than focus on information exchange and integration in groups with fully shared information and ethnically diverse backgrounds. This finding should be seen in the context of the current study, where methodological considerations require that groups with distributed information and groups with fully shared information have access to the exact same pool of information at the group level (i.e., information distribution and information available to the group should not be confounded). In organizational practice, however, groups with distributed information (e.g., cross-functional teams) will typically have access to a larger pool of information than groups in which information is fully shared (cf. van Knippenberg et al., 2004). Consequently, when the situation is conducive to the elaboration of task-relevant information, groups with distributed information should be able to outperform groups with fully shared information (e.g., Cox, 1993; Jehn et al., 1999).

Even though experiments are not conducted to establish external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), the experimental nature of the current study may raise questions about the generalizability of our findings. In this respect, it is good to note that evidence from research in applied psychology suggests that many findings from laboratory experiments generalize to the field (Dipboye, 1990; Locke, 1986; van Knippenberg & van Knippenberg, 2005).

Obviously, it would be valuable when future research would establish that the present relationships may also be observed in workgroups in organizations. While we would not take the effects of an instruction as evidence that similar effects may be obtained in the field, the present findings do hint at the possibility that group information elaboration may be stimulated by managerial interventions.

Without claiming that our focus instruction reflects the general thesis of the mental model literature that team effectiveness will improve if members have an appropriate shared understanding of the task (e.g., Cannon-Bowers, Salas, & Converse, 1993; Klimoski & Mohammed, 1994; see also Kozlowski & Bell, 2003), our focus instruction might be seen as a task representation (i.e. "any task/situation, relevant concept, norm, perspective, or process that is shared by most of the group members", Tindale, Smith, Thomas, Filkins, & Sheffey, 1996, p. 84) which improved the decision quality of ethnically diverse groups with distributed information. This corroborates findings that shared task representations that stress the need for the exchange and integration of distributed information impact group performance (van Ginkel & van Knippenberg, 2004).

It is important to note that ethnic background is not the only dimension on which group members may differ. Giving the increasing diversity of the workforce, teams may differ on dimensions such as age and gender (Harrison, Price, & Bell, 1998). In the specific context of our experiment we did not find effects for these dimensions. Ethnic diversity was the most relevant dimension in our study. Age was not of practical relevance because we used a student sample in which group members had about the same age and probably we did not found effects for gender because students might not have many study-related prejudices about the other sex. Nevertheless, in another context - the organizational field, one could predict that the results for demographic differences like age and gender are likely to be similar to the effects we obtained for ethnic diversity (cf. Milliken &

Martins, 1996; Webber & Donahue, 2001; Williams & O'Reilly, 1998) and it is therefore important to look at these dimensions as well.

In conclusion, distributed information not only to has be recognized as new and regarded as something purposeful and useful, group members also need to know how to utilize it effectively. Inherent to this effective use is the exchange and integration of information. As demographically diverse decision groups often may have difficulties in utilizing their diverse informational resources, it seems valuable for organizations to invest in managerial interventions to stimulate group information elaboration.

3.

Good Effects of Bad Feelings: Negative Affect and Group Decision Making

Extending the growing interest in the relationship between affect and workgroup processes, we propose that groups make better use of their distributed information and therefore make better decisions when they are higher on negative affect. In an experiment, we studied the influence of negative affect when information was distributed among group members and when group members had fully shared information. Results indicated that negative affect indeed stimulates group information processing and decision quality in group decision-making when information is distributed among group members.

Introduction

Organizations often use groups rather than individuals for decision-making based on the assumption that groups possess a broader range of resources than individuals (Tindale, Kameda, & Hinsz, 2001) and more diversity of insights (Jackson, 1991). This may presumably enhance decision performance because of the way groups are able to process task-relevant information (Hinsz, Tindale, & Vollrath, 1997; van Knippenberg, De Dreu, & Homan, 2004). Nevertheless, several group decision-making studies have shown that groups often fail to discuss individual group members' unique information and focus more on information known to all members before group discussion (Stasser & Titus, 1985; Wittenbaum & Stasser, 1996), and fail to recognize the relevance of unique information when it does enter group discussion (Gigone & Hastie, 1993; Winquist & Larson, 1998). A core issue for research in groups' effective use of distributed information therefore is to identify factors that are conducive to the elaboration of task-relevant information – that is, the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task (van Knippenberg et al., 2004).

To advance our understanding of this issue, in the present study we focus on a factor that has received little attention in group decision-making but that may have substantial influence on the way groups process information: group member affect. There is an abundance of evidence indicating that affect is an essential component in human functioning (Adolps & Damasio, 2001). Affect strongly influences cognitive processes such as memory, imaging, attention, judgment, planning, and decision-making (Damasio, 1994; Forgas, 1995; Williams, Watts, MacLeod, & Mathews, 1999), and it has become an area of increasing interest in its own right in research on organizational behavior (Brief & Weiss, 2002; Weiss

& Cropanzano, 1996). Although not much research has been done on the influence of affect at the group level, there is mounting evidence that it can be a useful explanatory construct in understanding workgroup processes such as prosocial and cooperative behavior (e.g., Barsade, Ward, Turner, & Sonnefeld, 2000; George, 1990). Of particular relevance to groups' use of distributed information, research at the individual level of analysis shows that negative affect causes individuals to use more careful, detail-oriented, and analytical processing strategies (Forgas, 1992a; Forgas & Bower, 1987; Schwarz, 1990; Schwarz & Bless, 1991). This points to the possibility that negative affect also influences information processing in group decision-making, and we propose that groups with distributed information make better decisions when their members are higher on negative affect.

Negative Affect and Distributed Information

Negative affect is the degree to which one feels subjective distress (Watson & Clark, 1984). In short, people score high on negative affect when they experience anger, guilt, nervousness, and so on, while they score low on negative affect in the absence of these feelings. Low negative affect is more a state of being placid and content (Watson, Clark, & Tellegen, 1988). Note that for the current purposes, high negative affect refers to the relatively mild levels of negative affect that are characteristic of healthy populations, and not to the higher levels of negative affect that may be observed in clinical samples (Watson & Clark, 1984; Watson et al., 1988). It are these mild levels of negative affect that are associated with more extensive information processing rather than with some of the dysfunctional consequences of clinical levels of negative affect. Mild affective states that are not tied to specific events in the current situation (cf. mood) tend to have a subtle but consistent influence on people's thoughts and judgments in ways

that they are not aware of (Forgas & George, 2001). Such low-intensity affective states without a salient antecedent cause may also have a more subtle influence on organizational behavior precisely because they often escape awareness (Fiedler, 1991, Forgas, 1995; Forgas & George, 2001).

Several reasons have been put forward to expect a relation between affect and information processing style. Functional explanations assume that affective states "exist for the sake of signaling states of the world that have to be responded to" (Frijda, 1988, p. 354). In that sense, negative affective states signal that the current state of affairs is problematic, that things are not going that well (Forgas & George, 2001), and they may motivate more systematic and vigilant processing (Schwarz, 1990; Schwarz & Bless, 1991). In related vein, negative affect has been proposed to motivate cognitive effort in order to improve the aversive mood state (i.e., mood repair; Clark & Isen, 1982). Whereas initially it was suggested that while negative affect may motivate cognitive effort and information processing it might also impair processing capacity (Ellis & Ashbrook, 1988), more recent research shows that mood does not simply influence cognitive effort or processing capacity (Bless, 2001) but rather that negative affect induces a particular style of processing (Bless & Fiedler, in press).

Negative affect supports a bottom-up processing style focused on the external details of the situation. Such a bottom-up processing style might be a function of accommodation (cf. Piaget, 1954) which means to modify internal structures in accordance with external constraints. Negative affect thus suggests to accommodate the internal state to the requirements of a problematic external state (Bless, 2001; Bless & Fiedler, in press; Fiedler, 2001). Recent integrative affect-cognition theories like the Affect Infusion Model (Forgas, 1995, 2002; Forgas & George, 2001) also suggest such a detail-oriented systematic processing style for negative affect. Consistent with this idea, several recent experiments found that

people experiencing mild negative affect were more accommodating and attentive to situational information. As a result, they were less likely to fall prey to the fundamental attribution error (Forgas, 1998a), and were less influenced by extraneous information in their eyewitness memories (Forgas, Laham, & Vargas, 2005).

Applying this work at the individual level to groups (Hinsz et al., 1997; van Knippenberg et al., 2004), the processing style engendered by negative affect should be conducive to group's effective use of their distributed information. Precisely this bottom-up processing style focused on new information may help groups break away from their tendency to limit group discussion largely to information that is already shared by group members before discussion. We therefore predicted that groups with distributed information would elaborate task-relevant information more and would reach better decisions when group members have a higher mean level of negative affect. Given groups' propensity to focus discussion on information that is already shared before discussion (Wittenbaum & Stasser, 1996), a bottom-up processing style focused on new information should be less important for group decision quality in groups in which task-relevant information is already fully shared before discussion. A comparison of information elaboration and decision-making with groups in which information is already fully shared before discussion may thus further substantiate our argument about the role of negative affect in groups with distributed information. This leads to the following hypotheses:

Hypothesis 1: Groups in which information is distributed among group members engage in more information elaboration when they are higher on negative affect, whereas the information elaboration of groups with fully shared information is less contingent on negative affect.

Hypothesis 2: Groups in which information is distributed among group

members reach higher decision quality when they are higher on negative affect, whereas the decision quality of groups with fully shared information is less contingent on negative affect.

Finally, the relationship of distributed information and negative affect with elaboration of task-relevant information (Hypothesis 1) was expected to mediate the relationship of distributed information and negative affect with decision quality (Hypothesis 2).

Hypothesis 3: Elaboration of task-relevant information mediates the relationship of distributed information and negative affect with decision quality.

We tested these hypotheses in an experimental study of decision-making groups, which allowed conclusions about causality and enabled us to assess the group processes leading to the final decision through behavioral coding of group interaction (Weingart, 1997; Wittenbaum, Hollingshead, & Botero, 2004). To study the influence of negative affect, we focused on dispositional differences in negative affect, because disposition is the key antecedent of an individual's cognition and affective states that may influence his or her task (Bales, 1958; Jackson, May, & Witney, 1995), and it is a basic individual attribute that group members bring to the group (Hackman, 1987; Pfeffer, 1983). Dispositional negative affect is a general tendency toward having a particular level of negative mood that in any give situation permeates all of an individual's experiences (Lazarus, 1991; Watson & Clark, 1984). Dispositional affect in particular may thus be expected to reliably predict affect-based responses over situations, and indeed it has been suggested that dispositional negative affect influences important work behaviors (Cropanzano, James, & Konovsky, 1993).

Method

Sample and Design

Two hundred seventy students (175 male and 95 female) participated in the study for monetary compensation (10 euro, approximately 12 US dollars). The majority of the participants were management students (70%). Their mean age was 20 (*SD* = 1.89). The experimental design included distributed information (distributed versus fully shared), and negative affect as a quasi-experimental factor. Participants were randomly assigned to 90 groups of three, and groups were randomly assigned to the experimental conditions. Dependent variables were information elaboration and decision quality. For one group the decisions were not available, five groups were not videotaped due to technical problems, in one group a participant did not fill out the questionnaire that measured negative affect, in two groups participants did not fill out the items that measured the manipulation check for distributed information, and two groups appeared to be outliers on the information elaboration measures. These nine groups were excluded from further analyses.

Measurement of Negative Affect

Dispositional negative affect was measured before the actual experiment by a 10-item questionnaire assessing responses on 5-points scales (1 = disagree and 5 = agree) from the PANAS (Watson et al., 1988). These scales (e.g., "distressed") have been shown to be internally consistent and exhibit trait-like stability with the instruction: "Indicate to what extent you generally feel this way" (α = .83). To determine how to aggregate negative affect to the group level, we used Steiner's 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 three categories, the additive model best represents the group task used in this study. If the team wanted to perform at a high level, all group members had to interact with each other to some degree (in the distributed information condition more than in the fully shared condition), thereby increasing group's pool of information. Because individual negative affect combines additively to information elaboration, the average of the group member's scores was used to represent negative affect at the group level (M = 1.78, SD = .27) (see also Barrick, Stewart, Neubert, & Mount, 1998; Moynihan & Peterson, 2001).

Note that the combination of individual negative affect within a group is supposed to have a relationship with performance instead of sharedness of negative affect within a group; for that reason, agreement on negative affect within groups is not needed.

Decision Task

The experimental task was a three-person decision task that was an altered version of Architectural Design Firm (Palmer & Thompson, 1998). Although the original task was meant as a negotiation task, the task was changed to make it a purely cooperative decision task. Participants received a case in which they had to design a house, and in which a client specified required features and a limited budget. Participants were told that they were a team of experts who had to work together to (a) make a design that met the requirements and budget of the client, and (b) earn maximum profit for the architectural firm. All participants were given information about pricing for various options they could include in the design plan, a profit schedule (indicating the amount of profit for the firm if an option would be included in the design, with some options being more profitable than others), and special extra profit information involving certain (combined) options. The highest possible joint profit was € 73,250. This information could be

distributed such that optimizing profit required the exchange, discussion, and integration of information.

Manipulation of Distributed Information

All groups received the same information, but the way in which the information was distributed among group members differed between the two conditions (see also Gruenfeld, Mannix, Williams, & Neale, 1996). General information (e.g., information about the purpose of the task) and task-irrelevant information (e.g., the children of the customers love the zoo) were shared in both conditions. In the distributed condition, each group member received a package of information with some unique information on either a finishing, land, or structural perspective on the decision-making task. In the fully shared condition, in contrast, they all received the full set of decision-relevant information. Thus, while at the group level groups in both conditions possessed the exact same pool of information, group members in the distributed information condition all possessed some information not known to their fellow group members, whereas all group members possessed the same (full) set of information in the fully shared condition.

Procedure

Groups were seated in a small room, where participants were asked for permission to record the group interaction on audio-video tapes. Participants first filled out the negative affect questionnaire. After completion, they received a folder containing general information about the decision task and specific information about their role. After participants read the information, they answered questions about their role in order to make their perspective more salient to them. Groups discussed the design until they reached agreement or until allotted time (20 minutes) ran out, and wrote down which options they had chosen with the

associated prices and profits. After that, they filled out a questionnaire. Finally, participants were debriefed and paid.

Dependent Measures

Manipulation check. To assess the success of the distributed information manipulation we used four items on 5-points scales (1 = disagree, 5 = agree). Examples of items are: "The other two group members had partly other information than I", and, "The other two group members had exactly the same information as I" (reverse coded). To assess interrater agreement we used the $a_{wg(1)}$ value (instead of the more frequently used $r_{wg(1)}$ index), following the recommendations of Brown and Hauenstein (2005). The $a_{wg(1)}$ value for the manipulation check on distributed information was .79, indicating strong agreement, so these variables were aggregated to the group level ($\alpha = .98$).

Information elaboration. The group interaction during the discussion of the proposal was recorded on audio-video tapes. We developed a five-point scale, anchored with specific behavioral standards observed in the video, which pointed directly to the exchange, discussion, and integration of the information. Inspired by research on jury decision-making (Pennington & Hastie, 1990), we operationalized information elaboration as "information-driven" discussion (when group members based their discussion on facts from the information received) rather then as "opinion-driven" discussion about certain options (when group members based their discussion on personal opinions instead of on the information received). A score of "5" was given when the group elaborated thoroughly on the information, that is when the three group members actively discussed all task-relevant options and information, considered these facts at length, asked each other for task-relevant information, and discussed it in detail. A score of "1" was given when a group hardly elaborated on the information, that is, when group members

mainly gave their opinion about certain options, discussed their opinions instead of task-relevant information, and agreed with each other without much discussion (*M* = 2.58, *SD* = 1.20). Information elaboration was coded on the group level by two judges (κ = .75, indicating good interrater reliability).

Decision quality. Decision quality was operationalized as the amount of profit the groups earned. Groups had to write down their chosen design options on a form, with corresponding prices and profits and (by summing up) their total joint profit. For simplicity's sake, we divided this joint profit associated with the group decision by thousand before analyzing (*M* = 69.47, *SD* = 2.58).

Results

Treatment of the Data

Regression analyses were conducted to test the manipulation check for informational diversity and the three hypotheses. We dummy-coded distributed information (-.5 for distributed information and .5 for fully shared information). We centered negative affect and computed the cross-product between the centered negative affect variable and the dummy for distributed information, following the recommendations of Aiken and West (1991).

Manipulation Check

Regression analysis with distributive information, negative affect, and their cross-product on the manipulation check for distributive information, showed a main effect of distributed information, β = -.93, $p < .001$. Groups in which all the group members had fully shared information indicated less diversity of information (*M* = 1.81, *SD* = 0.70) than groups in which information was distributed among group members (*M* = 4.57, *SD* = 0.28). No effects of negative

affect were found, β = -.02, *ns.*, and also, there was no interaction effect of distributed information and negative affect β = -.02, *ns.* We concluded that the manipulation of distributed information was successful.

Information Elaboration

To test whether negative affect was more strongly related to elaboration in groups with distributed information than in groups with fully shared information, as predicted in Hypothesis 1, we entered distributive information, negative affect, and their cross-product into the regression equation. As expected, the interaction between negative affect and distributed information on information elaboration was significant (see Table 3.1).

In line with Hypothesis 1, groups with distributed information engaged in more information elaboration when they were higher on negative affect. Simple slope analysis showed that this effect was significant, β = .60, $p < .001$. Information elaboration in groups with fully shared information was not significantly affected by negative affect, β = .07, *ns.* (see Figure 3.1).

Main effects of negative affect on information elaboration and distributed information on information elaboration were also found. Groups higher on negative affect elaborated more on information. Groups with distributed information elaborated less on information than groups with fully shared information.

Table 3.1

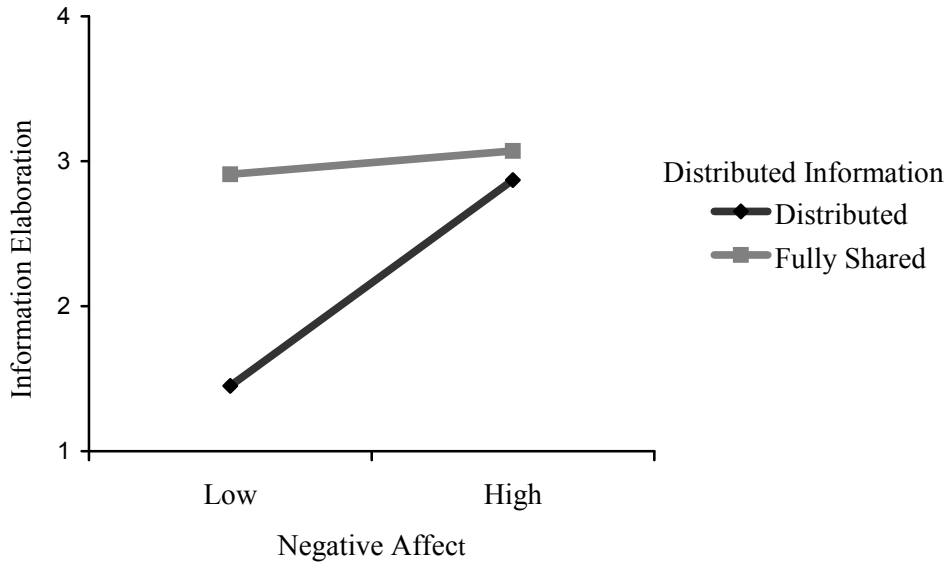
Regression Analysis for Information Elaboration (IE), Decision Quality, Mediation of Information Elaboration

	Information Elaboration			Decision Quality 1			Decision Quality 2		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Distributed Information (DI)	.83	.23	.35**	2.95	.60	.47***	1.52	.56	.24**
Negative Affect (NA)	1.46	.42	.33**	2.05	1.09	.18	- .69	1.03	- .06
DI X NA	- 2.33	.85	- .27**	- 6.12	2.18	- .27**	.70	2.37	.03
IE							1.40	.25	.53***
NA X IE							- 1.51	.82	- .17
DI X IE							- 1.35	.53	- .24*

Note. $R^2 = .32$ for Step 1; $\Delta R^2 = .22$ for Step 2 ($ps < .001$). * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 3.1

Interaction Effect of Distributed Information and Negative Affect on Information Elaboration



Decision Quality

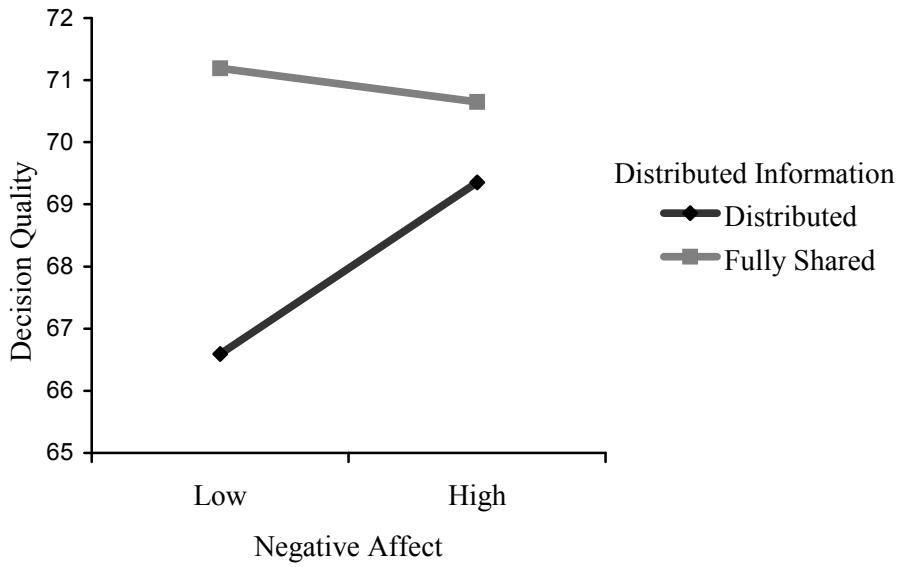
To test whether negative affect was more strongly related to decision quality in groups with distributed information than in groups with fully shared information, as predicted in Hypothesis 2, we entered again distributive information, negative affect, and their cross-product into the regression equation. As expected, the interaction between negative affect and distributed information on decision quality was significant. In line with Hypothesis 1, groups with distributed information reached higher decision quality when they were higher on negative affect. Simple slope analysis showed that this effect was significant, $\beta =$

.44, $p < .01$. Decision quality in groups with fully shared information was not affected by negative affect, $\beta = -.09$, *ns*. (see Figure 3.2).

A main effect of distributed information on decision quality was also found. Groups with distributed information reached lower decision quality than groups with fully shared information.

Figure 3.2

Interaction Effect of Distributed Information and Negative Affect on Decision Quality

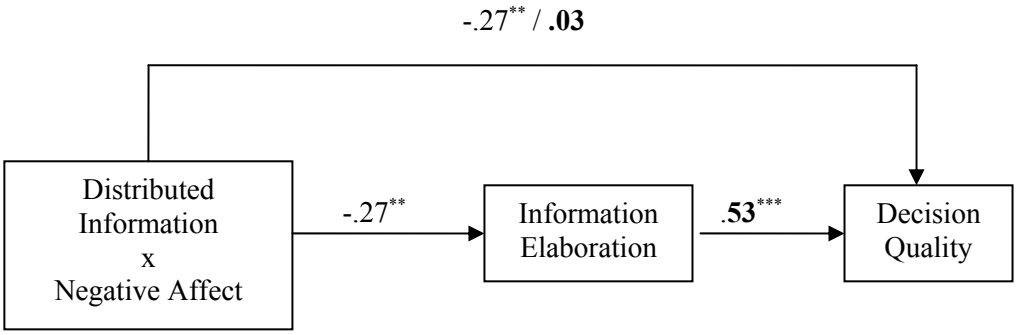


Information Elaboration and Decisions: Mediational Analysis

Information elaboration was positively correlated with decisions quality (r = .65, p < .001). To test whether elaboration mediated the interaction between negative affect and distributed information on decision quality (Hypothesis 3), we used regression analyses following the guidelines of Baron and Kenny (1986). We centered information elaboration, following the recommendations of Aiken and West (1991). Because distributed information was correlated with information elaboration (r = .36, p < .01) and negative affect was also correlated with information elaboration (r = .33, p < .01), we computed the cross-product between negative affect and information elaboration as well as the cross-product between distributed information and information elaboration following the recommendations of Hull, Tedlie, and Lehn (1992) and Yzerbyt, Muller, and Judd (2004) for the proper use of covariates in mediational analyses. Then we first entered distributed information, negative affect, and their cross-product. Second, we entered distributed information, negative affect, their cross-product, information elaboration, its cross product with distributed information, and its cross-product with negative affect. This yielded a significant relationship between information elaboration and decision quality. Moreover, the interaction of distributed information and negative affect on decision quality was not significant anymore. A Sobel test indicated that the reduction in size of the effect was significant, z = 2.47, p < .05. We concluded that, as predicted in Hypothesis 3, information elaboration mediated the interaction of distributed information and negative affect on decision quality (see Figure 3.3).

Figure 3.3

Interaction Effect of Distributed Information and Negative Affect on Decision Quality: Mediation of Information Elaboration



Note. Numbers above the arrows represent standardized coefficients (betas). Betas in bold are based on regression equations including the connected mediator.
** $p < .01$. *** $p < .001$

Discussion

Research has shown that groups with distributed information are often bad decision makers (Wittenbaum & Stasser, 1996). The main effect of information distribution on information elaboration and decision-making observed in the present study corroborates this point: groups with distributed information tended not to use the information available to them to the extent that groups with fully shared information did (cf. Stasser & Titus, 1985). Extending this earlier research, we proposed that groups with distributed information make better use of the

information available to them when their members are higher in negative affect. In support of this proposition, groups with distributed information higher in negative effect elaborated information more (Hypothesis 1) and reached better decisions (Hypothesis 2). Consistent with our information processing analysis, the relationship of negative affect with decision quality was mediated by information elaboration (Hypothesis 3). Further substantiating our analysis, negative affect was unrelated to information elaboration and decision quality in groups with fully shared information. This study therefore points to the positive effects of negative affect on group decision-making and the importance of including negative affect in group research.

Negative affect in groups with distributed information did not lead to better performance than negative affect in groups with fully shared information. This finding should be seen in the context of this current study, where methodological considerations require that groups with distributed information and groups with fully shared information have access to the exact same pool of information at the group level (i.e., information distribution and information available to the group should not be confounded). In organizational practice, however, groups with distributed information (e.g., cross-functional teams) will typically have access to a larger pool of information than groups in which information is fully shared (cf. van Knippenberg et al., 2004). Accordingly, in such situations negative affect may actually help groups with distributed information to outperform groups that are more homogeneous in terms of their information. An important next step would therefore be to study the effects of negative affect on team decision-making in organizations comparing groups with different levels of information distribution.

Results of the present study are not necessarily limited to dispositional negative affect. Negative affect might also be caused by situational factors (i.e., be

a state rather than a trait; George 1991; Watson et al., 1988). Such situational factors include environmental factors such as weather or noise (Weiss & Cropanzano, 1996) as well as more work-related factors such as the team leader's mood state (Sy, Côté, & Saavedra, 2005). Negative affect may thus also be a more context-specific influence on group performance, and indeed one that may be to a certain extent under managerial control (cf. Sy et al., 2005). It should be noted however, that work by George (1989, 1991) has shown that trait affect and state affect do not always exert the same influence on work behaviors. More definite conclusions about the influence of state negative affect on groups' use of their distributed information should thus await further testing, and an important avenue for future research would therefore be to find out whether temporary negative affective states caused by situational factors provoke the same positive effects on group information processing and group decision-making as dispositional negative affect.

There seems to be an implicit assumption in research and practice in organizational behavior that positive affect is preferable over negative affect when it comes to desirable organizational outcomes, and findings in research in group affect of more cooperation and coordination as a function of positive affect (Barsade et al., 2000; Sy et al., 2005) seem to corroborate this notion. Yet, at the same time the present findings suggest that an upbeat mood, while no doubt more enjoyable than a negative affective state, is not always preferable to a negative mood when it comes to the quality of group performance, and findings of greater task effort (Sy et al., 2005) and creativity (George & Zhou, 2002) as a function of negative affect further substantiate the conclusion that negative affect and positive affect might have their own specific beneficial influence, though each on different processes and depending on contextual factors (George & Zhou, 2002; Isen & Baron, 1991). While negative affect may not influence social processes like

cooperation and coordination (cf. McIntyre, Watson, Clark, & Cross, 1991; Watson, Clark, McIntyre, & Hamaker, 1992), negative affect may exert more influence on task effort and information processing. Leaders and managers should therefore be careful not to assume too readily that negative affective states should be a cause for concern. Indeed, in some circumstances negative affect might be there for a reason and signal a need for action (cf. Frijda, 1988) that is to the organization's benefit (e.g., in times of crisis).

Even though experiments are not conducted to establish external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), the experimental nature of the current study may raise questions about the generalizability of our findings. In this respect, it is good to note that evidence from research in applied psychology suggests that many findings from laboratory experiments generalize to the field (Dipboye, 1990; Locke, 1986; van Knippenberg & van Knippenberg, 2005). Obviously, however, from the perspective of establishing the generalizability of the current findings too it would be worthwhile to extend the current analysis in future research to include evidence from groups in organizations.

In conclusion, our study provides evidence that negative affect may play an important and perhaps counter-intuitive role in group decision-making. These findings provide a useful point of departure for future research in the role of negative affect in group decision-making and related group processes. An issue that recently has started to attract attention, for instance, is the fact that group members may consciously misrepresent and frame information in goal-congruent ways when communicating it to the group (Wittenbaum et al., 2004). Attention to the role of (negative) affect in this respect may help understand under which circumstances group decisions are more likely to be influenced by such "spinning" of information. Research at the individual level has shown that negative affect lowers the susceptibility to misinformation (Forgas et al., 2005). Decision-making

groups higher in negative affect may thus be less vulnerable to attempts at spinning of information by some of their members. In addition, risk-taking in decision-making groups might be influenced by negative affect. Research in affective influences on risk intention at the individual level (Williams, Zainuba, & Jackson, 2003) has shown that individual decision makers with higher negative affect perceive risk-related gains more negatively and tend to avoid risk. Elaborating on that, higher negative affect in decision-making groups may lead to more cautious decision-making in risk situations. The influence of negative affect in group decision-making may thus extent beyond groups' use of distributed information, and our understanding of group decision-making, and group performance in general, may stand a lot to gain by the systematic investigation of these potential influences of negative affect on group decision-making and performance.

4.

Dispositional Distress and Mood in Group Decision Making

Extending the growing interest in the relationship between mood and workgroup processes, we propose that groups make better use of their distributed information and therefore make better decisions when they are in a negative mood rather than a positive mood, but that these effects are moderated by group members' dispositional distress. In an experiment (N = 114 groups) we studied the influence of distress when groups were in a happy or sad mood. Results indicated that a sad mood stimulated group information processing and decision quality, but only when groups were lower on distress.

Introduction

Organizations often use groups rather than individuals for decision-making based on the assumption that groups possess a broader range of resources than individuals (Tindale, Kameda, & Hinsz, 2001) and more diversity of insights (Jackson, 1991). This may presumably enhance decision performance because of the way groups are able to process task-relevant information (Hinsz, Tindale, & Vollrath, 1997; van Knippenberg, De Dreu, & Homan, 2004). Nevertheless, several group decision-making studies have shown that groups often fail to discuss individual group members' unique information and focus more on information known to all members before group discussion (Stasser & Titus, 1985; Wittenbaum & Stasser, 1996), and fail to recognize the relevance of unique information when it does enter group discussion (Gigone & Hastie, 1993; Winquist & Larson, 1998). A core issue for research in groups' effective use of distributed information therefore is to identify factors that are conducive to the elaboration of task-relevant information – that is, the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the group's task (van Knippenberg et al., 2004).

To advance our understanding of this issue, in the present study we focus on a factor that has received little attention in group decision-making but that may have substantial influence on the way groups process information: group member affect. Research at the individual level of analysis shows that a negative mood causes individuals to use more careful, detail-oriented, and analytical processing strategies (Forgas, 1992a; Forgas & Bower, 1987; Schwarz, 1990; Schwarz & Bless, 1991). This points to the possibility that negative affect also influences information processing in group decision-making. However, there are some indications that affective influences tend to be reduced when individuals have a

strong personal disposition to respond in a particular way (Ciarrochi & Forgas, 1999; Fiedler, 1991; Forgas, 1995; Forgas, 1998b; Forgas & Fiedler, 1996; Mayer & Salovey, 1988; Smith & Petty, 1995). This study examined the possibility that the extent to which group members are dispositionally prone to experience distress moderates the potential beneficial effects of a negative mood in group decision-making. We propose that groups with distributed information make better decisions when they are in a negative mood rather than a positive mood, but only when group members are lower on dispositional distress.

Dispositional Distress, Mood, and the Use of Distributed Information

The presumed value of unique information has not been overlooked in organizations (Tindale, Kameda, & Hinsz, 2001), nor in the group performance literature (Stasser, 1999). However, research findings suggest that the positive impact of unique information on group decision-making is far from obvious. Gigone and Hastie (1993, 1996) noted that common information shapes individual opinions which in turn shape collective judgments (common knowledge effect). Stasser, Taylor, and Hanna (1989) demonstrated that decision-making groups are more likely to discuss shared than unshared information (collective sampling; see also Larsen, Christensen, Abbott, & Franz, 1996; Larson, Foster-Fishman, & Keys, 1994; Stasser & Stewart, 1992; Wittenbaum, 1998). Moreover, when unique information does surface in group discussion, its impact seems muted (Gigone & Hastie, 1993; Winquist & Larson, 1998). This has stimulated much research that seeks answers to the questions why and under what conditions groups will effectively use their distributed information. Research has for instance focused on information type and distribution (e.g., Stewart & Stewart, 2001), task features (e.g., Stasser & Stewart, 1992), group structure and composition (e.g., Gruenfeld, Mannix, Williams, & Neale, 1996), temporal features (e.g., Kelly & Karau, 1999),

discussion procedures (e.g., Parks & Cowlin, 1996), communication technology (e.g., Straus, 1996), and member characteristics such as status of a group member (e.g., Franz & Larson, 2002) (see for an overview, Wittenbaum, Hollingshead, & Botero, 2004).

One factor that has apparently been overlooked in this research, but which might be of particular relevance to groups' use of distributed information, is group member affect. There is an abundance of evidence indicating that affect is an essential component in human functioning (Adolps & Damasio, 2001). Affect strongly influences cognitive processes such as memory, imaging, attention, judgment, planning, and decision-making (Damasio, 1994; Forgas, 1995; Williams, Watts, MacLeod, & Mathews, 1999), and it has become an area of increasing interest in its own right in research on organizational behavior (Baron, 1990; Brief & Weiss, 2002; Weiss & Cropanzano, 1996). Hence, the impact of affect on information processing is a central concern for researchers interested in cognitive processes (e.g., Erber & Tesser, 1992; Smith & Petty, 1995).

Research at the individual level suggests that bad moods are associated with systematic elaboration of information (for an overview, see Clore, Schwarz, & Conway, 1994). Several reasons have been put forward to expect a relation between affect and information processing style. Functional explanations assume that affective states "exist for the sake of signaling states of the world that have to be responded to" (Frijda, 1988, p. 354). In that sense, bad moods signal that the current state of affairs is problematic, that things are not going that well (Forgas & George, 2001), and they may motivate more systematic and vigilant processing (Schwarz, 1990; Schwarz & Bless, 1991). In related vein, a bad mood has been proposed to motivate cognitive effort in order to improve the aversive mood state (i.e., mood repair; Clark & Isen, 1982). Whereas initially it was suggested that while a bad mood may motivate cognitive effort and information processing it

might also impair processing capacity (Ellis & Ashbrook, 1988), more recent research shows that mood does not simply influence cognitive effort or processing capacity (Bless, 2001) but rather that a bad mood induces a particular style of processing (Bless & Fiedler, in press).

A bad mood supports a bottom-up processing style focused on the external details of the situation. Such a bottom-up processing style might be a function of accommodation (cf. Piaget, 1954) which means to modify internal structures in accordance with external constraints. A bad mood thus suggests to accommodate the internal state to the requirements of a problematic external state (Bless, 2001; Bless & Fiedler, in press; Fiedler, 2001). Recent integrative affect-cognition theories like the Affect Infusion Model (Forgas, 1995, 2002; Forgas & George, 2001) also suggest such a detail-oriented systematic processing style for negative affect. Consistent with this idea, several recent experiments found that people experiencing mild negative affect were more accommodating and attentive to situational information. As a result, they were less likely to fall prey to the fundamental attribution error (Forgas, 1998a), and were less influenced by extraneous information in their eyewitness memories (Forgas, Laham, & Vargas, 2005). Applying this work at the individual level to groups as information processors (cf. Hinsz et al., 1997; van Knippenberg et al., 2004), the processing style engendered by a bad mood should be conducive to group's effective use of their distributed information.

However, dispositional differences may influence how people deal with temporary affective states (Ciarrochi & Forgas, 1990). Despite arguments for greater attention to the interaction of trait and state aspects of affect (Mayer & Salovey, 1988; Salovey & Mayer, 1990), few studies thus far have looked at how personality characteristics may moderate mood effects. The Affect Infusion Model (Forgas, 1995) suggests that affect infusion is most likely when people adopt an

open, constructive processing strategy, such as systematic or substantive processing, or heuristic processing. In contrast, affect infusion is unlikely when individuals use a targeted, predetermined information strategy, such as direct access of stored information or motivated processing in the pursuit of specific goals. According to this model, the adoption of a processing style depends on a combination of factors such as task complexity, disposition, motivation, affective state, and cognitive capacity. In line with the Affect Infusion Model, Forgas (1998) found that mood effects on an intergroup negotiation task were reduced for individuals who scored high on traits as need for approval and Machiavellianism. Pointing directly to the role of dispositional affect, Ciarrochi and Forgas (1999) found that trait anxiety moderated the effects of aversive moods on intergroup judgments.

In the current study we examined the possibility that people's dispositional tendency to experience distress (i.e., nervousness, tension, jittery, and so on) reduces the potential beneficial effects of a negative mood in group decision-making. We propose that the tendency to experience distress is conducive to task-irrelevant cognitive activities that impair the quality of task performance (e.g., Eysinck, 1979; Sarason, 1984). In line with Ciarrochi and Forgas (1999), we argue that a bad mood is likely to activate a controlled, motivated processing strategy in people high in dispositional distress, leading them to feel more vulnerable and act more defensively (cf. Spielberger, 1983). Continuously coping with distressed feelings may absorb cognitive capacity and interfere with task-oriented thinking (Sarason, Sarason, & Pierce, 1990). This obstruction occurs because forming intentions (i.e., need to defend oneself) selectively activates intention-relevant information and inhibits competing information (cf. Forgas & George, 2001; Marsh, Hicks, & Bink, 1998).

In terms of the Affect Infusion Model (Forgas, 1995), mood-dependent

effects will occur to a lesser extent when information processing is dominated by a personal objective and when all cognitive activities serve such a predetermined goal (e.g., Fiedler, 2001). Although people higher on distress may very well experience positive and negative moods, dealing with upset feelings may have priority and that may limit the extent to which their mood influences the way they process information.

Elaborating on this, we propose that groups with distributed information elaborate task-relevant information more and reach better decisions when group members are in a negative mood rather than a positive mood, but only when they have lower levels of dispositional distress. This leads to the following hypotheses:

Hypothesis 1: Groups engage in more information elaboration when they are in a negative mood rather than a positive mood, but only when group members are lower on dispositional distress.

Hypothesis 2: Groups reach higher decision quality when they are in a negative mood rather than a positive mood, but only when group members are lower on dispositional distress.

The relationship of mood and dispositional distress with elaboration of task-relevant information (Hypothesis 1) was expected to mediate the relationship of mood and dispositional distress with decision quality (Hypothesis 2).

Hypothesis 3: Elaboration of task-relevant information mediates the relationship of mood and dispositional distress with decision quality.

For exploratory reasons we also investigated whether the predicted interaction effects would differ if group members were instructed to reach good joint decision outcomes versus good individual decision outcomes, because recent perspectives suggest that sharing and withholding of information are deliberate processes in the interest of group members' goal attainment (Wittenbaum et al., 2004). This may mean that information exchange between group members, and

subsequently decision quality, might suffer when group member' goals are not purely cooperative. Moreover, recent developments in mood research suggest that mood effects may also depend in part on whether one has a cooperative or a competitive goal (Sanna, Parks, & Chang, 2003). Sanna et al. showed that when participants had a cooperative goal, cooperation was increased by a negative mood and competition by a positive mood. However, when participants had a competitive goal, a negative mood led to more competition and a positive mood to more cooperation. This may mean that group information elaboration, which might be seen as a form of cooperation, is more contingent on the interaction of dispositional distress and mood when group members have to reach good individual outcomes than when they have tot reach good joint outcomes. A comparison of information elaboration and decision-making between groups in which members have to reach good individual outcomes versus good joint outcomes may thus extent our analysis of the interactive effect of mood and dispositional distress.

We tested these hypotheses in an experimental study of decision-making groups, which allowed conclusions about causality and enabled us to assess the group processes leading to the final decision through behavioral coding of group interaction (Weingart, 1997; Wittenbaum et al., 2004).

Method

Participants and Design

Three hundred fifty one students (213 male and 138 female) participated in the study for monetary compensation (15 euro, approximately 18 US dollars). The majority of the participants were business administration students (91 %). Their mean age was 20 (SD = 2.30). The experiment was announced as consisting

of two un-related experiments. The experimental design included mood (happy versus sad) and task instruction (joint outcomes versus individual outcomes), which were manipulated as between-groups variables, and distress as a quasi-experimental factor based on participants random assignments to groups.

Participants were randomly assigned to 117 groups of three, and groups were randomly assigned to experimental conditions. Dependent variables were information elaboration and decision quality. Two groups were not videotaped due to technical problems and one group did not fill out the questionnaire that measured distress. These three groups were excluded from further analyses.

Measurement of Dispositional Distress

Dispositional distress was measured before the actual experiment by a 3-item questionnaire (i.e., jittery, tense, nervous) assessing responses on 5-points scales (1 = disagree and 5 = agree) with the instruction: "Indicate to what extent you generally feel this way" (α = .82). These items refer to a cluster of high activation, negatively valenced affective states (Carroll, Yik, Russell, Feldman Barrett, 1999; Feldman Barrett & Russell, 1998; Russell, 1980; Schlosberg, 1952, 1954; Yik, Russell, & Feldman Barrett, 1999).

To determine how to aggregate distress to the group level, we used Steiner's 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 three categories, the additive model best represents the group task used in this study. If the team wanted to perform at a high level, all group members had to interact with each other to some degree, thereby increasing group member's pool of information. Because individual distress combines additively to information elaboration, the average of the group member's scores was used to represent distress at the group level (M = 2.31, SD = .38) (see also Barrick, Stewart,

Neubert, & Mount, 1998; Moynihan & Peterson, 2001). Also note that because this analysis focuses on the mean level of an individual disposition, agreement (i.e., sharedness) at the group level is not required, and there is no reason to compute measures of within-group agreement.

Manipulations

Mood. Imagery tasks, adapted from Larsen and Ketelaar (1991) were used as mood-induction procedures. This form of affect induction is common in studies involving experimental mood manipulations (e.g., Delp & Sackeim, 1987; Larsen & Sinnett, 1991; Salovey & Birnbaum, 1989; Williams, 1980; Wright & Mischel, 1982). We used a happy and a sad mood-induction, because these moods are often used to induce positive and negative affect (Bless, Clore, Schwarz, Golisano, Rabe, & Wölk, 1996; Forgas, 1992b, 1994; Forgas, Laham, & Vargas, 2005).

Each induction condition involved having participants read two written scenarios designed to induce the intended affect. We asked participants to create a vivid image of themselves in each situation described by the scenarios. In the happy mood condition participants were asked to imagine themselves winning 50,000 euro in a lottery and imagine themselves falling in love. In the sad mood condition they were asked to imagine themselves having lost a good friend and being sick in bed and feeling lonely. Each participant had 4 minutes to read and imagine the first scenario and another 4 minutes to read and imagine the second scenario. So, participants always received two scenarios of the same affective tone, and within a group all three participants always received the same scenarios.

Decision Task. The experimental task was a three-person decision task that was an altered version of Architectural Design Firm (Palmer & Thompson, 1998). The task was changed to make it a distributive information task. Participants received a case in which they had to design a house, and in which a client

specified required features and a limited budget. In the joint outcomes instruction condition, participants were told that they were a team of staff members who had to work together to (a) make a design that met the requirements and budget of the client, and (b) earn maximum profit for the architectural firm they were working for, and which they would share equally. In the individual outcomes condition, participants were told that each of them was contractor and owner of a business and that they had to work together to (a) make a design that met the requirements and budget of the client, and (b) earn maximum profit for their own gain. All participants were given information about pricing for various options they could include in the design plan, a profit schedule (indicating the amount of profit for the firm if an option would be included in the design, with some options being more profitable than others), and special extra profit information involving certain (combined) options. The highest possible joint profit was € 34,250. This information was distributed such that optimizing profit required the exchange, discussion, and integration of information. Thus, groups in both conditions possessed the exact same pool of information, only the instruction to reach joint outcomes or individual outcomes differed between conditions.

Procedure

Groups were seated in a small room, where participants were asked for permission to record the group interaction on audio-video tapes. Participants were told that one part of the experiment concerned leadership and emotions and that another part concerned group decision-making. Participants first filled out the circumplex questionnaire. After completion, they read the affective scenarios with instructions that we wanted to know if leaders would be more effective if they use emotions and if they have a strong recall on their emotions. We told participants that they would be asked to recall the scenario later and that if they could actually

"get into the feeling" of each scene as they read and imagined it, then they should better remember the feelings. Each of them received a scenario to get deeply involved in a happy or a sad mood during 4 minutes, followed by a second scenario of the same affective tone for another 4 minutes. Then, they had to write down the feelings they remembered during the imagination sessions. Next, they had to fill out a questionnaire concerning their feelings at the moment. After completion, they received a folder containing general information about the decision task and specific information about their role. When all group members had read the information, groups discussed the design until they reached agreement or until allotted time (25 minutes) ran out, and wrote down which options they had chosen with the associated prices and profits. After that, they filled out a questionnaire. Finally, participants were debriefed and paid.

Dependent Measures

Manipulation checks for mood. To assess the success of the mood manipulation we used six items on 5-point scales (1 = disagree, 5 = agree). Examples of items are: "At this moment I am feeling sad", and, "At this moment I am feeling happy" (reverse coded). To assess interrater agreement we used the $a_{wg(1)}$ value (instead of the more frequently used $r_{wg(1)}$ index), following the recommendations of Brown and Hauenstein (2005). The $a_{wg(1)}$ value for the manipulation check on mood was .80, indicating strong agreement, so these variables were aggregated to the group level ($\alpha = .97$).

Manipulation checks for task instructions. To assess the success of the task instruction manipulation we used six items on 5-point scales (1 = disagree, 5 = agree). Examples of items are: "I have to earn joined profit: everyone gets one third", and, "I have to earn profit for my own gain" (reverse coded). The $a_{wg(1)}$ value for the manipulation check on task instruction was .78, indicating strong

agreement, so these variables were aggregated to the group level ($\alpha = .98$).

Information elaboration. The group interaction during the discussion of the proposal was recorded on audio-video tapes. We developed a five-point scale, anchored with specific behavioral standards observed in the video, which pointed directly to the exchange, discussion, and integration of the information. Inspired by research on jury decision-making (Pennington & Hastie, 1990), we operationalized information elaboration as "information-driven" discussion (when group members based their discussion on facts from the information received) rather then as "opinion-driven" discussion about certain options (when group members based their discussion on personal opinions instead of on the information received). A score of "5" was given when the group elaborated thoroughly on the information, that is when the three group members actively discussed all task-relevant options and information, considered these facts at length, asked each other for task-relevant information, and discussed it in detail. A score of "1" was given when a group hardly elaborated on the information, that is, when group members mainly gave their opinion about certain options, discussed their opinions instead of task-relevant information, and agreed with each other without much discussion ($M = 2.52$, $SD = 1.30$). Information elaboration was coded on the group level by two judges ($\kappa = .70$, indicating good interrater reliability).

Decision quality. Decision quality was operationalized as the amount of profit the groups earned. Groups had to write down their chosen design options on a form, with corresponding prices and profits and (by summing up) their total joint profit. For simplicity's sake, we divided this joint profit associated with the group decision by thousand before analyzing ($M = 28.40$, $SD = 3.50$).

Results

Treatment of the Data

Regression analyses were conducted for the manipulation checks for mood and task instruction, and the test of the three hypotheses. We dummy-coded mood (.5 for a sad mood and -.5 for a happy mood) as well as task instruction (.5 for joint outcome instructions and -.5 for individual outcome instructions). We centered distress and computed cross-products between distress and mood, distress and task instruction, mood and task instruction, and distress, mood, and task instruction, following the recommendations of Aiken and West (1991).

Manipulation Checks

Regression analysis with mood, task instruction, distress, and all cross-products on the manipulation check for mood showed a main effect of mood, $\beta = .86$, $p < .001$. Groups in the sad mood condition indicated to feel more sad ($M = 3.05$, $SD = 0.43$) than groups in the happy mood condition ($M = 1.79$, $SD = 0.35$). No effects of distress, $\beta = .02$, *ns.,* task instruction, $\beta = .03$, *ns.,* the interaction between distress and task instruction, $\beta = .09$, *ns.*, the interaction between mood and distress, $\beta = -.04$, *ns.*, or the interaction between mood and task instruction $\beta = .06$, *ns.*, were found. Also there was no interaction effect of task instruction, mood, and distress on the manipulation check for mood, $\beta = -.08$, *ns.* We concluded that the manipulation of mood was successful.

Regression analysis with task instruction, mood, distress, and all cross-products on the manipulation check for task instruction showed a main effect of task instruction, $\beta = .98$, $p < .001$. Groups in the joint outcome condition indicated more often that they had to reach joint outcomes ($M = 4.42$, $SD = 0.26$) than groups in the individual outcome condition ($M = 1.45$, $SD = 0.30$). No effects of

distress, β = .02, *ns.*, mood, β = .02, *ns.,* the interaction between distress and task instruction, β = .01, *ns.*, the interaction between mood, and distress, β = .02, *ns.*, or the interaction between mood and task instruction β = -.00, *ns.*, were found. Also there was no interaction effect of task instruction, mood, and distress on the manipulation check for task instruction, β = -.00, *ns.* We concluded that the manipulation of task instruction was successful.

Information Elaboration

To test whether the interaction between mood and distress affected information elaboration, as predicted in Hypothesis 1, we entered task instruction, mood, distress, and all cross-products into the regression equation. The interaction between mood and distress was significant (see Table 4.1). Simple slope analysis showed that groups lower on distress engaged more in information elaboration in a sad mood than groups higher on distress in a sad mood, β = -.28, $p < .05$, while groups lower on distress in a happy mood did not differ from groups higher on distress in a happy mood β = .22, *ns.* Moreover, groups lower on distress engaged more in information elaboration in a sad mood than in a happy mood, β = .37, $p < .01$, while groups higher on distress in a sad mood did not differ from groups higher on distress in a happy mood, β = -.14, *ns.* (see Figure 4.1). This confirmed Hypothesis 1.

The three-way interaction between task instruction, mood, and distress, which we tested for exploratory reasons, was not significant. Only a main effect of task instruction on information elaboration was found. Groups with an individual outcome instruction elaborated less on information ($M = 1.93$, $SD = 1.05$) than groups with a joint outcome instruction ($M = 3.10$, $SD = 1.28$).

Table 4.1

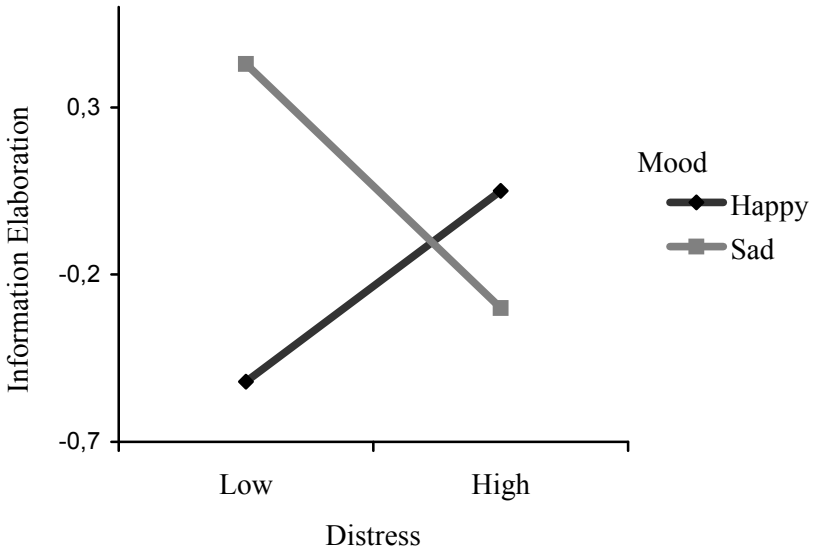
Regression Analysis for Information Elaboration, Decision Quality, Mediation by Information Elaboration

	Information Elaboration			Decision Quality 1			Decision Quality 2		
	B	*SE B*	β	*B*	*SE B*	β	*B*	*SE B*	β
Task Instruction (TI)	1.19	.22	.46***	3.46	.58	.50***	1.25	.49	.18*
Mood (MD)	.30	.22	.11	.33	.58	.05	- .18	.44	- .02
Distress (DS)	- .11	.29	- .03	- .57	.78	- .06	- .58	.63	- .06
TI X MD	- .04	.44	- .01	.25	1.17	.02	.54	.97	.04
TI X DS	- .30	.59	- .04	-.86	1.57	- .05	- .62	1.27	-.03
MD X DS	- 1.72	.59	- .24**	- 3.97	1.57	- .21*	- 1.23	1.25	- .07
TI X MD X DS	.33	1.17	.02	3.65	3.13	.10	1.85	2.54	.05
IE							1.93	.22	.72***
MD X IE							.08	.44	.01
DS X IE							.29	.52	.05
MD X DS X IE							1.03	1.03	.08

Note. R^2 = .29 for Step 1; ΔR^2 = .35 for Step 2 (*ps* < .001). * $p < .05$. ** $p < .01$. *** $p < .001$

Figure 4.1

Interaction Effect of Mood and Dispositional Distress on Information Elaboration



Decision Quality

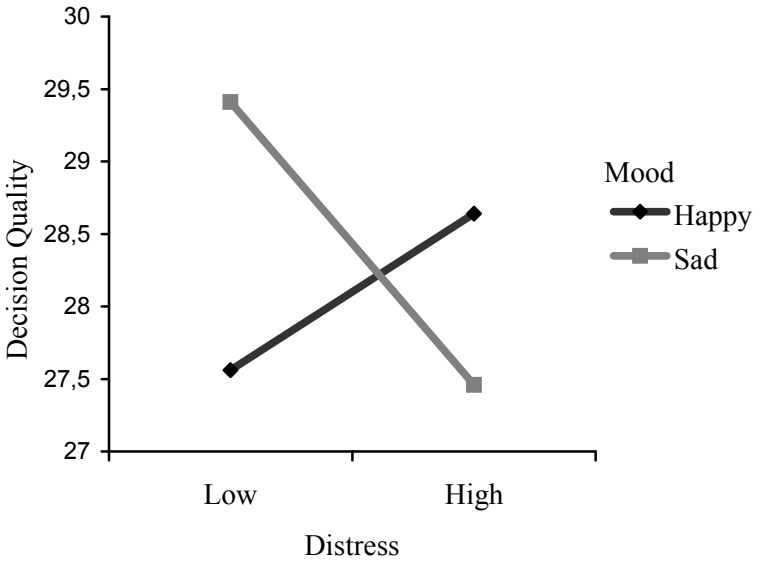
To test whether the interaction between mood and distress affected decision quality, as predicted in Hypothesis 2, we entered task instruction, mood, distress, and all cross-products into the regression equation. The interaction between mood and distress was significant. Simple slope analysis showed that groups lower on distress reached higher decision quality in a sad mood than groups higher on distress in a sad mood, $\beta = -.28$, $p < .05$, while groups lower on distress in a happy mood did not differ from groups higher on distress in a happy mood $\beta = .15$, *ns*. Moreover, groups lower on distress reached higher decision

quality in a sad mood than in a happy mood, β = .26, $p < .05$, and groups higher on distress in a sad mood did not differ from groups higher on distress in a happy mood, β = -.17, *ns.* (see Figure 4.2). This confirmed Hypothesis 2.

The three-way interaction between task instruction, mood, and distress on decision quality, which we tested for exploratory reasons, was not significant. Only a main effect of task instruction on decision quality was found. Groups with an individual outcome instruction reached lower decision quality ($M = 26.75$, $SD = 3.10$) than groups with a joint outcome instruction ($M = 30.07$, $SD = 3.08$).

Figure 4.2

Interaction Effect of Mood and Dispositional Distress on Decision Quality

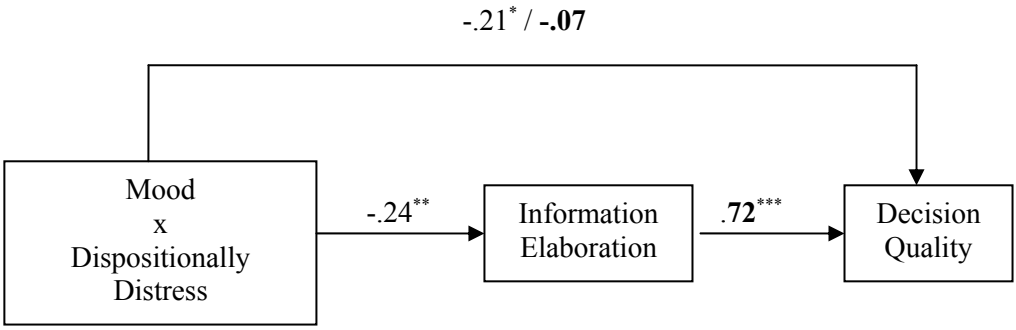


Information Elaboration and Decisions: Mediational Analysis

We established a correlation between information elaboration and decision quality while controlling for task instruction, mood, distress, the three two-way interactions, and the three-way interaction (r = .69, p < .001). To test whether information elaboration mediated the interaction between mood and distress on decision quality (Hypothesis 3), we used regression analyses following the guidelines of Baron and Kenny (1986). We centered information elaboration following the recommendations of Aiken and West (1991). Because task instruction was correlated with information elaboration (r = -.45, p < .001), we computed the cross-product between mood and information elaboration as well as the cross-product between distress and information elaboration following the recommendations of Hull, Tedlie, and Lehn (1992) and Yzerbyt, Muller, and Judd (2004) for the proper use of covariates in mediational analyses. Then we first entered task instruction, mood, distress, and their cross-products. Second, we entered task instruction, mood, distress, their cross-products, information elaboration, its cross-product with mood, its cross-product with distress, and the cross-product between information elaboration, mood, and distress. This yielded a significant relationship between information elaboration and decision quality. Moreover, the interaction of mood and distress on decision quality was not significant anymore. A Sobel test indicated that the reduction in size of the effect was significant, z = 2.44, p < .05. We concluded that Hypothesis 3 was confirmed. Information elaboration mediated the interaction of mood and distress on decision quality (see Figure 4.3).

Figure 4.3

Interaction Effect of Mood and Dispositional Distress on Decision Quality: Mediation by Information Elaboration.



Note. Numbers above the arrows represent standardized coefficients (betas). Betas in bold are based on regression equations including the connected mediator.
* $p < .05$. ** $p < .01$. *** $p < .001$

Discussion

Research has shown that groups with distributed information are often not able to take advantage of the unique knowledge and of expertise their members, resulting in suboptimal decisions. Much research has been done to gain more insight in when groups will effectively use their distributed information (see for an overview, Wittenbaum et al., 2004). Extending this earlier research, we proposed that groups with distributed information make better decisions when they are in a negative mood rather than a positive mood, but only when group members are

lower on dispositional distress. In support of this proposition, we found that groups lower on distress engaged more in information elaboration and reached higher decision quality in a negative mood than groups higher on distress in a negative mood. We also found that groups lower on distress elaborated more on information and reached higher decision quality in a negative mood than in a positive mood, while positive and negative mood effects on information elaboration and decision quality did not differ when groups were higher on distress. These findings support Hypotheses 1 and 2. Consistent with our information processing analysis, the relationship of negative affect and distress with decision quality was mediated by information elaboration. This finding supports Hypothesis 3. This study therefore points to the positive effect that negative mood may have on group decision-making when group members' dispositional distress is taken into account, and the importance of including negative mood and potential dispositional moderators of mood effects in group research.

For exploratory reasons we also investigated whether the interaction effects of mood and dispositional distress differed if group members were instructed to reach good joined outcomes versus good individual outcomes, but we did not find a three-way interaction effect of task instruction, mood, and dispositional distress on information elaboration, or on decision quality. However, we did find a main effect: groups with an instruction to reach good individual outcomes elaborated less on information and reached lower decision quality than groups with an instruction to reach good joint outcomes. This finding corroborates the proposition of Wittenbaum and colleagues (2004) that if group members have competitive goals, they may deliberately select or withhold information that they believe will help them to attain their goals during group discussion. Hence, if group members' goals are not purely cooperative, information exchange and

subsequently decision quality will suffer.

Theoretical Implications

Negative mood had a different influence on group processes and group performance as a function of dispositional distress. Negative mood increased the extent to which groups lower on dispositional distress elaborated on information and reached good decision quality. In contrast, negative mood decreased the extent to which groups higher on dispositional distress elaborated on information and reached good decision quality. An obvious question is whether group members high on dispositional distress responded to the negative mood manipulation with disproportionate intensity, producing something like a reversed effect. This could make sense as it has been stated often that it are mild levels of negative affect that are associated with more extensive information processing (e.g., Forgas, 1998b; Forgas & George, 2001) rather than higher levels of negative affect that may be observed in clinical samples (Watson & Clark, 1984; Watson, Clark, & Tellegen, 1988). Nevertheless, our data do not support this account. The correlation between negative mood and dispositional distress was -.08, and our manipulation check for the mood manipulation did not show any effects of dispositional distress (cf. Ciarrochi & Forgas, 1999). Yet, mood affected information processing differently as a function of dispositional distress. In group members low in dispositional distress, negative mood supported more careful, detail-oriented, and analytical processing strategies (Forgas, 1992a; Forgas & Bower, 1987; Schwarz, 1990; Schwarz & Bless, 1991). In contrast, negative mood in group members high in dispositional distress probably triggered a more motivated processing style, leading them to react more defensively, and resulting in less information elaboration. This account is not only consistent with our theoretical predictions that negative affect supports a detail-oriented systematic processing style (Forgas,

1995), it is also supported by prior evidence of the role of dispositions in moderating mood effects on cognition (Ciarrochi & Forgas, 1999; Forgas, 1998b; Mayer & Salovey, 1988; Salovey & Mayer, 1990). Our research extends these findings by showing that they not only hold for individual judgment and decision-making, but also apply to group processes and performance.

In daily life, negative affect might very well be caused by situational factors. Such situational factors include environmental factors such as weather or noise (Weiss & Cropanzano, 1996) as well as more work-related factors such as the team leader's mood state (Sy, Côté, & Saavedra, 2005). Negative affect may thus to a certain extent be under managerial control (cf. Sy et al., 2005). For that reason, it is good to realize that there seems to be an implicit assumption in research and practice in organizational behavior that positive affect is preferable over negative affect when it comes to desirable organizational outcomes, and findings in research in group affect of more cooperation and coordination as a function of positive affect (Barsade, Ward, Turner, & Sonnenfeld, 2000; Sy et al., 2005) seem to corroborate this notion. Yet, at the same time the present findings suggest that an upbeat mood, while no doubt more enjoyable than a negative affective state, is not always preferable to a negative mood when it comes to the quality of group performance. Findings of greater task effort (Sy et al., 2005) and creativity (George & Zhou, 2002) as a function of negative affect further substantiate the conclusion that negative affect and positive affect might have their own specific beneficial influence, though each on different processes and depending on contextual factors (George & Zhou, 2002; Isen & Baron, 1991). While negative affect may not influence social processes like cooperation and coordination (cf. McIntyre, Watson, Clark, & Cross, 1991; Watson, Clark, McIntyre, & Hamaker, 1992), negative affect may exert more influence on task effort and information processing. Leaders and managers should therefore be

careful not to assume too readily that negative affective states should be a cause for concern. Indeed, in some circumstances negative affect might be there for a reason and signal a need for action (cf. Frijda, 1988) that is to the organization's benefit (e.g., in times of crisis). On the other hand, when leaders and managers want to use their mood states to exert influence on employees, they should take the personal characteristics of these employees into account to ensure they attain the desired effects.

Limitations and Future Directions

The items we used to measure distress refer to a cluster of high activation negatively valenced affective states (Carroll et al., 1999; Feldman Barrett & Russell, 1998; Russell, 1980; Schlosberg, 1952, 1954; Yik et al., 1999). Although it is tempting to generalize our finding that dispositional distress moderated mood effects to a moderating effect of negative affect per se, recent research on affective influences in negotiations suggests that matters may be more complicated. Feelings as guilt and worry are also negative in valence, but each have been shown to have quite different effects on behavior (Van Kleef, De Dreu, & Manstead, 2006). These findings point to the need for more research on different aspects of dispositional affect and their moderating influence on mood effects. Another intriguing question is whether another form of a negative mood, as for instance tension, exert the same effects as a sad mood as in the mood induction we used and a related question is whether dispositional distress would have the same moderating effects then. Moreover, the present study examined, in common with earlier research on mood effects, the effects of nonspecific, mild bad moods on group decision-making. More intense and more specific affective states (i.e.,emotions), may well have different effects (Forgas, 1998b). Emotions differ from moods in that they are discrete (Russell & Feldman Barrett, 1999), of

relatively high intensity and short duration (Forgas, 1992a), and intentional, that is directed at an object, person, or event (Frijda, 1988; Russell & Feldman Barrett, 1999). Would for instance anger, a negative valence and high arousal emotion, be beneficial for information processing? Would the expression of anger inhibit information sharing? Influence of specific negative emotions as for instance anger deserve serious attention in future research on group decision-making.

Even though experiments are not conducted to establish external validity (Brown & Lord, 1999; Dipboye, 1990; Mook, 1983), the experimental nature of the current study may raise questions about the generalizability of our findings. In this respect, it is good to note that evidence from research in organizational behavior suggests that many findings from laboratory experiments generalize to the field (Dipboye, 1990; Locke, 1986; van Knippenberg & van Knippenberg, 2005). Obviously, however, from the perspective of establishing the generalizability of the current findings too it would be worthwhile to extend the current analysis in future research to include evidence from groups in organizations.

Another limitation concerns the fact that we used verbal manipulations of positive and negative mood wherein participants had to imagine their feelings. This raises the question of whether our findings generalize to settings in which mood is experienced in a different manner (e.g., nonverbally) (cf. van Kleef et al., 2006). One could argue that the effects would be different if people are prone to behavioral rather than self-imagination affective cues. However, the form of affect induction we used is common in studies involving experimental mood manipulations (i.e., Larsen & Ketelaar, 1991), and just as effective as behavioral mood inductions procedures using gifts, music, or films (see for an overview Gerrards-Hesse, Spies, & Hesse, 1994). Therefore, we have no reason to doubt the generalizability of the mood effects we found. However, more research is needed

to investigate whether mood effects on information processing elicit by for instance work climate or team leaders' mood state lead to the same results.

In conclusion, our study provides evidence that negative affect may play an important and perhaps counter-intuitive role in group decision-making. The present research shows that the effects of negative mood on information elaboration and decision quality in group decision-making are moderated by dispositional distress. A negative mood enhances groups' use of distributed information and decision quality, but only when group members are low in dispositional distress. The present results indicate that more research exploring the role of (negative) affect in group decision-making may be highly worthwhile and may have the potential to greatly enhance our understanding of groups' use of distributed information.

5.

General Discussion

This dissertation is about the use of distributed information in group decision-making. Organizations often use groups rather then individuals for decision-making purposes (Tindale et al., 2001), and the presumed value of unique information and perspectives is acknowledged among scholars and practitioners. However, research on group decision-making has shown that groups often fail to use effectively group members' unique information (see for an overview, Wittenbaum et al., 2004). Inherent to the effective use of distributed information is that groups need to process the unique information held by the group members and an intriguing question therefore is which factors influence elaboration of task-relevant information. Although of course a number of factors could be discerned, the focus in this dissertation was restricted to two factors that were expected to be important but have received less attention in research in distributed information then probably they should have: diversity and affect (e.g., Ashkanasy et al., 2002). Both factors were expected to substantially influence information elaboration and decision making in groups.

Below, the main findings of each chapter are briefly summarized, and directions for future research are presented. Finally, a conclusion is given.

Summary of the Main Findings and Conclusions

In Chapter 2 the focus was on demographic diversity. We proposed that lack of elaboration of task-relevant information – more than failing to reach agreement – impedes the high-quality decision-making performance of groups in which group members with diverse ethnic backgrounds have to deal with new information. In support of this proposition we showed by stimulating information elaboration through additional task instructions that groups with distributed information and diverse ethnic backgrounds elaborated information more and reached better decisions with a focus on information integration than without. Consistent with our information processing analysis, the relationship of distributed information, ethnic diversity, and focus on information integration with decision quality was mediated by information elaboration. Further substantiating our analysis, ethnic diversity and focus on information integration were not related to information elaboration and decision quality in groups with fully shared information, suggesting that it is the exchange and integration of unique information and not the reaching of an agreement per se that is hampered by ethnic diversity.

Although the importance of conflict measures in studies on demographic diversity has been acknowledged in previous research (Jehn et al., 1999; Pelled et al., 1999), our study underscores the importance of including measures of group-level information elaboration processes as well. In addition, we showed that even when faultlines do not exist (information in the distributed information condition was partially unique and partially shared) demographically diverse groups are vulnerable to ineffective use of new information. Moreover, our task instruction to focus on information integration might be seen as a task representation (Tindale et al., 1996) which improved the decision quality of ethnically diverse groups with distributed information. This confirms findings that shared task representations

that stress the need for the exchange and integration of distributed information impact group performance (van Ginkel & van Knippenberg, 2004). The present findings therefore hint at the possibility that group information elaboration may be stimulated by managerial interventions.

In Chapter 3 the focus was on dispositional negative affect. We proposed that groups with distributed information make better use of the information available to them when their members are higher in dispositional negative affect. In support of this proposition, we found that groups with distributed information higher in dispositional negative effect elaborated information more and reached better decisions. Consistent with our information processing analysis, the relationship of dispositional negative affect with decision quality was mediated by information elaboration. Further substantiating our analysis, dispositional negative affect was unrelated to information elaboration and decision quality in groups with fully shared information. This study therefore points to the positive effects of dispositional negative effect on group decision-making processes in groups with distributed information, and the importance of including dispositional negative affect in group research.

A detail-oriented systematic processing style for negative affect has been shown in research at the individual level (Forgas, 1998a; Forgas et al., 2005). These studies used mood inductions and thus found effects of state negative affect. Although dispositional affect and state affect do not always exert the same influence on work behaviors (George, 1989, 1991), our study shows that dispositional negative affect may have the same beneficial positive effects on information elaboration as negative state affect. Nevertheless, a logical important question for following research was therefore to find out whether temporary negative affective states caused by situational factors would provoke the same positive effects on group information processing and group decision-making as

dispositional negative affect. In the next study we therefore focused on mood states.

In Chapter 4 it was proposed that groups with distributed information elaborate task-relevant information more and reach better decisions when groups are in a negative mood rather than a positive mood, but only when group members are lower in dispositional distress. In support of this proposition, we found that groups lower in dispositional distress engaged more in information elaboration and reached higher decision quality in a negative mood than in a positive mood, while positive and negative mood effects on information elaboration and decision quality did not differ when groups were higher in dispositional distress. Consistent with our information processing analysis, the relationship of a negative mood and dispositional distress with decision quality was mediated by information elaboration. This study therefore points to the positive effect that negative mood may have on group decision-making when group member' dispositional distress is taken into account, and the importance of including negative mood and potential dispositional moderators of mood effects in group research.

The finding that negative mood supported more thorough information processing strategies in group members lower in dispositional distress then in group members higher in dispositional distress is consistent with our theoretical predictions that negative affect supports a careful, detail-oriented systematic processing style (Forgas, 1995), and is also supported by prior evidence of the role of dispositions in moderating mood effects on cognition (Ciarrochi & Forgas, 1999; Forgas, 1998b; Mayer & Salovey, 1988; Salovey & Mayer, 1990). Our research extends these findings by showing that they not only held for individual judgment and decision-making, but also apply to group processes and performance.

Research has suggested that negative affect and positive affect might have

their own special beneficial influence, though each on different processes and depending on contextual factors (George & Zhou, 2002; Isen & Baron, 1991). Our study suggests that managerial interventions which aim to influence employees' mood states should take the personal characteristics of these employees into account to ensure they attain the desired effects.

Finally, the integration of research on demographic diversity and affect might have fascinating implications. It would be interesting for instance to see whether demographic differences have less impact on the use of distributed information if group members are in the same mood then when they are in a different mood. It might be that demographic diversity is less influential when group members are in the same mood, because they may focus less on sex, age, or ethnical differences. A similar mood may in that vein serve as common ground. A different mood between group members on the other hand, may lead to even more disturbed group processes because there are more differences to deal with, or mood differences might be overruled by demographic differences, not exerting any influence. Some evidence for disturbed group processes caused by affective diversity is already found by Barsade and colleagues (2000), who showed that affectively diverse, low mean trait positive affect groups experienced greater task and emotional conflict and less cooperation. To develop future prospects on the integration of diversity and affect, literature on cultural differences as well as emotion literature might be helpful, because research in these fields may offer some evidence that various dimensions of diversity differ in affective behavior.

Different languages for instance may recognize different affective behaviors. That is, how emotion is represented in language and its social consequence may vary between and within cultures (Matsumoto & Ekman, 2004). The German language contains the word "Schadenfreude", which refers to pleasure derived from another's misfortunes, while there is no English translation

for this word. The English word "frustration" has no equivalent in some Arabic languages but this does not mean that these people do not feel frustrated, and also, of course, people from other cultures may sometimes derive pleasure from other people's misfortune. However, it does suggest that the identification of some feelings has some importance in that particular language and culture that it does not share with other cultures (Russell, 1991). Because language is the principal means by which we communicate, it would be interesting to see whether different weights given to different feelings that are represented in language influence group' communication and information elaboration process.

"Control your gestures. Keep your hands at your sides. The Japanese find big arm movements threatening. Speak slowly. Keep your voice calm and even." (Sean Connery to Wesley Snipes in the movie Rising Sun, as cited in Matsumoto, 1996, p. 285). This phrase illustrates that it might be an interesting point to see how group members with different demographic backgrounds interpret each other's affective signals and react to them. Emotion recognition is important for interpersonal functioning (Carstensen, Gross, & Fung, 1998), and knowing how others interpret your affective signals is a first step in avoiding conflict.

However, it is suggested that although basic emotions can be understood across cultures, people from the same culture are capable of understanding each others' emotions better than those from different cultures (Elfenbein & Ambady, 2000; see also Barsade et al., 2000). Cultures may thus differ in norms with respect to the interpretation of affective signals. In that vein, some preliminary research on demographic differences is done that shows that it is important to look at how cultural norms, such as individualism and collectivism, interact with demographical differences and influence group processes and performance (Chatman, Polzer, Barsade, & Neale, 1998).

Clear norms may thus exist in a given culture on how to interpret emotions

and how to respond to them. For instance, the danger of losing one's honor is of great concern in many Eastern cultures. Many different situations are interpreted as a shame situation which is a threat to status. Although in Western culture these situations also exist, they are less well defined and get less explicit attention. Behavior considered socially desirable and undesirable may thus differ between cultures (Mesquita & Frijda, 1992), even within Western Culture. Recent research suggest that expressions of shame may be more appropriate in (Spanish) honor culture than in (Dutch) individual culture, whereas expressions of pride may be more positively viewed in (Dutch) individualistic culture than in (Spanish) honor culture (Rodriguez Mosquera, Manstead, & Fisher, 2000).

Besides cultural differences with respect to the appropriateness of emotional expressions, also sex differences exist. It is suggested that in most workplaces the economical expressiveness of manly emotion might be the standard, but women might be valued when they conform to expectations of feminine warmth and nurturance (Eagly & Karau, 2002). Other research found that mental health professionals as well as college students endorsed the belief that women are too emotional and men not emotional enough (Heesacker, Wester, Vogel, Wentzel, Mejia-Millan, & Goodholm, 1999). Various dimensions of diversity thus clearly may differ in the perceived appropriateness of affective signals.

"Everyone knows that grief involves a gloomy and joy a cheerful countenance…. There are characteristic facial expressions which are observed to accompany anger, fear, erotic excitement, and all the other passions." (Aristotle, as cited in Russell, 1994, p. 102). Although research advocates some discussion about the degree of universality of facial expressions (e.g., Russell, 1994), it has been found for instance that the recognition rate of facial expressions is lower among Africans and Asians, and that Asians give lower emotion intensity ratings

than non-Asians (see for an overview Mesquita & Frijda, 1992). Studies also suggest that cultural differences in facial expression do not occur in the absence of others, but that facial behavior may culturally differ when people are not alone. Japanese for instance were shown to exhibit more positive feelings, while Americans showed more signs of negative affect (Ekman, 1973).

Besides cultural differences, also age differences and sex differences in facial expression recognition exist. Several studies have shown consistent age differences such that older adults are less accurate at recognizing emotions (Isaacowitz, Löckenhoff, Lane, Wright, Sechrest, Riedel, & Costa, 2007). Other studies have found sex differences such that men are less accurate and less sensitive then women in labeling facial expressions (Montagne, Kessels, Frigerio, de Haan, & Perret, 2004).

All these differences in language with respect to emotion, emotional behavior, and facial recognition, may influence how group members with different demographic backgrounds interpret each other's affective signals and react on them, and they may lead to inappropriate behavior and interpersonal difficulties in group processes. In that vein, emotional conflict in demographic diverse teams, whether they differ in age, sex, or culture, might be eminent. This is not only because such groups diverge more in values and beliefs held (Ayoko & Härtel, 2002; see also Pelled, Eisenhardt, & Xin, 1999), but because they possibly diverge more in emotional behaviors and responses as well.

Besides that it might be important for group members to recognize and understand the emotional behaviors of their fellow group members, it may also imply that it is especially important for leaders and managers of a demographic diverse work floor to respond adequately to others' and own affective signals. Research on transformational leadership for instance suggests that emotion recognition may be a necessary ability to perform transformational leadership

behavior (Rubin, Munz, & Bommer, 2005). It would be interesting to see whether leaders who are better able to recognize emotions accurately in demographic diverse workgroups are also more capable to manage differences in emotional behavior to influence group performance.

General Conclusion

Although there remain many questions still to be answered, this dissertation was able to identify two important factors that influence groups' use of distributed information: diversity and affect. It therefore points to the importance of including diversity and affect – as disposition as well as mood – in group research. More generally, it can be concluded that understanding the influence of diversity and affect on information elaboration and decision-making processes in workgroups in organizations might well prove to be crucial to organizational performance. To speak with The Stranger (Allen, 1994, p. 70):

"...the only way that things get done is by an exchange of information"

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Samenvatting
(Summary in Dutch)

"Ik snap het", zei Knorretje. "Je zou kunnen zeggen dat daden meer zeggen dan woorden." "Dat is heel mooi gezegd Knorrie. Dat zal ik nog even bij de laatste regel zetten." "En het is nog reuze origineel ook," zei Knorretje trots. "Ik heb het net bedacht." De Vreemdeling schreef op wat Knorretjes had gezegd en zette er nog een titel boven, zodat er dit op het notitieblok geschreven stond:

Regels voor Effectieve Communicatie

1. Om te communiceren moet er eerst een uitwisseling van informatie zijn.

2. Alle uitgewisselde informatie moet zo duidelijk en volledig mogelijk zijn.

3. De informatie moet zinvol zijn voor degene die hem ontvangt.

4. Vraag altijd om een bevestiging dat de informatie die je verschaft begrepen is.

5. Informatie kan op allerlei manieren verschaft worden. Hoe meer manieren je gebruikt, hoe duidelijker en geloofwaardiger hij zal zijn. De boodschap moet echter wel in alle gevallen dezelfde blijven. Het is van vitaal belang consequent te zijn. Bedenk goed: Daden zeggen meer dan woorden.

Ze stonden allemaal te kijken naar de lijst die op het notitieblok stond. “Ik snap wel waarom het vanochtend verkeerd liep,” zei Poeh. “We hielden ons niet aan de regel dat informatie zo duidelijk en volledig mogelijk moet zijn, en we deden niet aan feedback. “Precies,” zei De Vreemdeling.

Allen, vert. 1995, pp. 98-100

Dit proefschrift gaat over het gebruik van ongedeelde informatie in groepsbesluitvorming. In het dagelijkse leven is het vrij gebruikelijk dat groepen beslissingen nemen: Poeh en zijn vriendjes bespreken op welke manier ze het snelst De Vreemdeling kunnen vinden en besluiten vervolgens wat ze het beste kunnen doen, gezinsleden kiezen een vakantiebestemming, en leden van een sportclub besluiten om geld in het clubhuis te investeren. Ook binnen organisaties worden vaak groepen gebruikt om beslissingen te nemen. De gedachte hierachter is dat men aanneemt dat groepen over meer informatie en een grotere diversiteit aan inzichten beschikken dan individuen (Jackson, 1991). Vanwege verschillen in opleiding en ervaring en dergelijke, beschikken groepsleden vaak over relevante informatie die andere groepsleden niet hebben (van Knippenberg et al., 2004). Om die reden stellen organisaties bijvoorbeeld crossfunctionele teams samen, omdat zij in potentie beter geïnformeerde en beter geïntegreerde beslissingen zouden kunnen nemen (Denison et al., 1996; Ford & Randolph, 1992; Uhl-bien & Graen, 1998).

Besluitvormingsgroepen hebben dus in principe de mogelijkheid in zich om te profiteren van unieke informatie en dit wordt ook zeker door organisaties onderkend (Tindale et al., 2001). Echter, studies naar groepsbesluitvorming laten zien dat groepen onvoldoende gebruik weten te maken van de unieke informatie van de groepsleden. Groepsleden wisselen unieke informatie vaak niet uit (Stasser & Titus, 1985; Wittenbaum & Stasser, 1996), en wanneer unieke informatie wel ter tafel komt dan wordt deze niet meegenomen in de groepsbeslissing (Gigone & Hastie, 1993; Scholten et al., in press; Winquist & Larson, 1998). Unieke informatie oefent vaak dus geen invloed uit op de beslissing. Onderzoek heeft zich beziggehouden met de vragen waarom en onder welke omstandigheden groepen effectief gebruik weten te maken van ongedeelde informatie. Er zijn bijvoorbeeld studies gedaan naar soort informatie en verdeling van informatie (b.v. Stewart &

Stewart, 2001), taakkenmerken (b.v. Stasser & Stewart, 1992), structuur en samenstelling van de groep (b.v. Gruenfeld et al., 1996), tijd (b.v. Kelly & Karau, 1999), gespreksprocedures (b.v. Parks & Cowlin, 1996), communicatietechnologie (b.v. Straus, 1996), en bijvoorbeeld status van de groepsleden (b.v. Franz & Larson, 2002) (voor een overzicht, zie Wittenbaum et al, 2004).

Inherent aan effectief gebruik van ongedeelde informatie is dat groepen de unieke informatie van de groepsleden moeten verwerken. Dit *informatie verwerkingsproces* vereist uitwisseling van informatie en perspectieven, verwerking van informatie en perspectieven op individueel niveau, terugkoppeling van resultaten van deze individuele verwerking naar de groep, en discussie en integratie van alle implicaties (van Knippenberg et al., 2004). Omdat het doel van besluitvormingsgroepen is om als groep een meer geïnformeerde en meer geïntegreerde beslissing te nemen dan elk afzonderlijk groepslid zou kunnen doen, is het logisch dat groepsleden niet alleen hun unieke informatie en perspectieven moeten uitwisselen, maar ook dat zij deze informatie moeten verwerken om tot goede beslissingen te komen. Een intrigerende vraag is daarom welke factoren van invloed zij op de verwerking van unieke taakrelevante informatie.

Hoewel verschillende factoren van invloed kunnen zijn (b.v. motivatie of mogelijkheid om taakrelevante informatie te verwerken; Scholten et al., in press; taakbenodigdheden, diversiteit van de werkgroep, zie van Knippenberg et al., 2004) beperkt dit proefschrift zich tot twee factoren: diversiteit en affect. Beide factoren worden onderkend als belangrijke onderwerpen (Askanasy et al., 2002), maar de invloed van diversiteit en affect op het gebruik van ongedeelde informatie heeft in onderzoek tot nog toe onvoldoende aandacht gekregen.

Diversiteit verwijst naar verschillen tussen individuen en heeft betrekking op alles waarvan men verondersteld dat een ander persoon anders is dan de eigen

persoon (Jackson, 1991). Diversiteit zou met name relevant kunnen zijn voor het gebruik van ongedeelde informatie in groepen, omdat het de uitwisseling en integratie van informatie kan verstoren. De term affect wordt in dit proefschrift gebruikt om zowel de dispositie om positieve of negatieve gevoelens te ervaren te beschrijven (Lazarus, 1991; Watson & Clark, 1984), als om de diffuse positieve of negatieve stemmingen zonder duidelijke oorzaak te beschrijven (Forgas 1992). Affect beïnvloedt in hoge mate cognitieve processen zoals geheugen, verbeelding, aandacht, beoordeling, planning, en het nemen van beslissingen (Damasio, 1994; Forgas, 1995; Williams et al., 1999). Om die reden zou affect grote invloed kunnen hebben op het gebruik van ongedeelde informatie in groepen. In drie laboratoriumexperimenten werd bestudeerd in hoeverre diversiteit en affect van invloed zijn op de verwerking van taakrelevante informatie en groepsbesluitvorming.

In Hoofdstuk 2 werd gekeken naar demografische diversiteit. Organisaties zijn steeds diverser geworden met betrekking tot geslacht, ras, etniciteit en nationaliteit van hun medewerkers (Jackson, 1991; Triandis et al., 1994; Williams & O'Reilly, 1998). Demografische diversiteit kan ertoe leiden dat groepsleden onderscheid maken tussen "wij" en "zij". De basis voor dit wij – zij onderscheid is in veel groepen waarin wordt samengewerkt aanwezig (mannen versus vrouwen, oud versus jong, etnische minderheid versus etnische meerderheid) (van Knippenberg et al., 2004). Zulke werkgroepen kunnen extra gevoelig zijn voor verstoorde groepsprocessen (Hambrick et al., 1998), zoals de uitwisseling en integratie van ongedeelde informatie.

De verwachting werd geformuleerd dat groepen waarin groepsleden met een verschillende etnische achtergrond om moeten gaan met ongedeelde informatie, niet goed in staat zouden zijn om taakrelevante informatie te verwerken, wat nadelige gevolgen zou hebben voor de kwaliteit van de

groepsbeslissing. Voorspeld werd dat informatieverwerking en kwaliteit van de groepsbeslissing meer gestimuleerd worden door taakinstructies om informatie te integreren in groepen met ongedeelde informatie en een diverse etnische achtergrond, terwijl informatieverwerking en kwaliteit van de groepsbeslissing minder gestimuleerd worden door deze instructies in groepen met ongedeelde informatie en een homogene etnische achtergrond, en in groepen met volledig gedeelde informatie. Voorspeld werd tevens dat verwerking van taakrelevante informatie de interactie tussen etnisch diversiteit, ongedeelde informatie, en taakinstructie op kwaliteit van de groepsbeslissing medieert.

In overeenstemming met de voorspellingen bleek uit de resultaten dat groepen met ongedeelde informatie en een diverse etnische achtergrond informatie beter verwerkten en betere beslissingen namen met een taakinstructie om informatie te integreren dan zonder deze taakinstructie. Verder bleek dat groepen met ongedeelde informatie en een etnisch homogene achtergrond informatie minder goed verwerkten en minder goede beslissingen namen met een taakinstructie om informatie te integreren dan zonder deze taakinstructie. Het verband tussen ongedeelde informatie, etnische diversiteit, en taakinstructie met kwaliteit van de groepsbeslissing werd gemedieerd door informatieverwerking. Consistent met de voorspelling bleek verder dat etnische diversiteit en taakinstructie om informatie te integreren geen verband hielden met informatieverwerking en kwaliteit van de beslissing in groepen met volledig gedeelde informatie.

De bevinding dat etnisch homogene groepen met ongedeelde informatie minder goed informatie verwerkten en minder goede beslissingen namen met een taakinstructie om informatie te integreren dan zonder deze taakinstructie was onverwacht, en kan misschien gezien worden in de context van een "groupthink-achtig" fenomeen (Janis, 1982). De instructie was namelijk dat groepsleden

informatie moesten uitwisselen en integreren om uiteindelijk consensus te bereiken. Het is goed mogelijk dat het gemeenschappelijke wat etnisch homogene groepen hebben op grond van zichtbare zaken samen met het deel van de instructies om consensus te bereiken er bij deze groepen toe heeft geleid om zich onvoldoende te concentreren op informatieverwerking en te veel op het zoeken naar consensus.

Voorgaand onderzoek naar demografische diversiteit heeft met name het belang van conflictmetingen onderkend (Jehn et al., 1999; Pelled et al., 1999). Het onderzoek zoals beschreven in Hoofdstuk 2 laat zien dat ook informatieverwerkingsprocessen van grote invloed zijn en onderstreept dat het belangrijk is om metingen van dit proces op groepsniveau mee te nemen in diversiteitonderzoek. Verder kan de taakinstructie om informatie te integreren gezien worden als een taak representatie (Tindale et al., 1996) welk een positieve invloed had op de beslissing van etnisch diverse groepen met ongedeelde informatie. Dit bevestigt bevindingen dat gedeelde taakrepresentaties die de noodzaak om ongedeelde informatie uit te wisselen en te integreren benadrukken, groepsprestaties beïnvloeden (van Ginkel & van Knippenberg, 2004). De resultaten in Hoofdstuk 2 verwijzen daarmee naar de mogelijkheid om in organisaties interventies te ontwikkelen die de informatieverwerking in groepen stimuleren.

In Hoofdstuk 3 werd gekeken naar dispositioneel negatief affect. Mensen hebben een hoge mate van dispositioneel negatief affect wanneer de gevoelens die zij over het algemeen ervaren gekenmerkt worden door angst, schuld, nervositeit, en dergelijke. Het ontbreken van deze gevoelens geeft een lage mate van negatief affect aan en duidt meer op een staat van tevredenheid (Watson et al., 1988). Aangenomen wordt dat negatief affect een problematische toestand signaleert (Forgas & George, 2001), met als gevolg een systematische en nauwgezette

manier van verwerken (Schwarz, 1990; Schwarz & Bless, 1991). Onderzoek op individueel niveau suggereert dat negatief affect individuen aanzet tot een zorgvuldige, gedetailleerde, en analytisch verwerkingstrategie (Forgas, 1992a; Forgas & Bower, 1987).

De verwachting werd geformuleerd dat resultaten uit onderzoek op individueel niveau ook van toepassing zijn op groepsniveau, en dat de verwerkingsstijl veroorzaakt door dispositioneel negatief affect groepen zou aanzetten tot effectief gebruik van ongedeelde informatie. Voorspeld werd dat groepen met ongedeelde informatie deze informatie beter verwerken en betere beslissingen nemen wanneer zij een hogere mate van dispositioneel negatief affect hebben, terwijl informatieverwerking en kwaliteit van beslissing in groepen met volledig gedeelde informatie minder afhankelijk zijn van dispositioneel negatief affect. Voorspeld werd tevens dat verwerking van taakrelevante informatie de interactie tussen dispositioneel negatief affect en ongedeelde informatie op kwaliteit van de groepsbeslissing medieert.

In overeenstemming met de voorspellingen bleek uit de resultaten dat groepen met ongedeelde informatie en een hogere mate van dispositioneel negatief affect informatie beter verwerkten en betere beslissingen namen, en dat het verband tussen ongedeelde informatie en dispositioneel negatief affect met kwaliteit van de groepsbeslissing werd gemedieerd door informatieverwerking. Consistent met de voorspelling bleek verder dat dispositioneel negatief affect geen verband hield met informatieverwerking en kwaliteit van de beslissing in groepen met volledig gedeelde informatie. Deze studie laat dus de positieve effecten van dispositioneel negatief affect op besluitvormingsprocessen in groepen met ongedeelde informatie zien en onderstreept dat het belangrijk is om dispositioneel negatief affect in groepsonderzoek te bestuderen.

Onderzoek op individueel niveau heeft laten zien dat negatief affect een

gedetailleerde en systematische manier van verwerken kan veroorzaken (Forgas, 1992b; Forgas, 1998a; Forgas & Bower, 1987). Deze studies gebruikten stemmingsmanipulaties en vonden dus effecten van negatief affect als stemming. Alhoewel dispositioneel affect en stemming mogelijk niet altijd dezelfde invloed uitoefenen op gedrag (George, 1991), de studie in Hoofdstuk 3 laat zien dat dispositioneel negatief affect dezelfde positieve effecten op informatieverwerking kan hebben als een negatieve stemming. Desalniettemin was het een logische stap om in een volgende studie te kijken of een tijdelijke affectieve toestand dezelfde positieve effecten op informatieverwerking en groepsbesluitvorming zou hebben als dispositioneel negatief affect. In de volgende studie werd daarom gekeken naar de invloed van stemming op informatieverwerking.

In Hoofdstuk 4 werd gekeken naar stemming. De redenering dat negatief affect een positieve invloed heeft op informatieverwerking werd ook hier gevolgd, maar er werd tevens beredeneerd dat dispositionele verschillen invloed kunnen hebben op hoe mensen omgaan met een tijdelijke stemming. Volgens het Affect Infusion Model (Forgas, 1995) doen effecten van een bepaalde stemming zich namelijk minder voor wanneer verwerkingsprocessen gedomineerd worden door een persoonlijk doel, en wanneer alle cognitieve activiteit in dienst staat van een dergelijk doel (Fiedler, 2001), en ook uit onderzoek blijkt dat disposities stemmingseffecten modereren (Ciarrochi & Forgas, 1999, Forgas 1998).

De verwachting werd geformuleerd dat of een negatieve stemming groepen aan zou zetten tot effectief gebruik van ongedeelde informatie af zou hangen van de mate van dispositionele stress. Mensen hebben een hoge mate van dispositionele stress wanneer de gevoelens die zij over het algemeen ervaren gekenmerkt wordt door stress, spanning, nervositeit, en dergelijke. Door deze neiging kunnen taakirrelevante cognitieve activiteiten, zoals bijvoorbeeld de behoefte om zich te verdedigen, de boventoon voeren, wat vervolgens de

uitvoering van de taak beïnvloedt. Voorspeld werd dat groepen informatie beter verwerken en betere beslissingen nemen in een negatieve stemming dan in een positieve stemming, maar alleen als de groepsleden laag in dispositionele stress zijn. Voorspeld werd tevens dat verwerking van taakrelevante informatie de interactie tussen stemming en dispositionele stress op kwaliteit van de groepsbeslissing medieert.

In overeenstemming met de voorspellingen bleek uit de resultaten dat groepen lager in dispositionele stress informatie beter verwerkten en betere groepsbeslissingen namen in een negatieve stemming dan in een positieve stemming, terwijl positieve en negatieve stemmingseffecten op informatieverwerking en kwaliteit van de groepsbeslissing niet verschilden wanneer groepen hoger waren in dispositionele stress. Tevens in overeenstemming met de voorspellingen bleek dat informatieverwerking het verband tussen stemming en dispositionele stress met kwaliteit van de groepsbeslissing medieerde.

Deze studie laat dus de positieve effecten van een negatieve stemming op groepsbesluitvorming zien wanneer rekening wordt gehouden met de dispositie van de groepsleden om stress te ervaren, en onderstreept dat het belangrijk is om een negatieve stemming samen met potentiële dispositionele moderatoren in groepsonderzoek te bestuderen.

De bevinding dat een negatieve stemming een diepere informatieverwerkingsstrategie ondersteunt bij groepsleden lager in dispositionele stress dan in groepsleden hoger in dispositionele stress is consistent met de theoretische voorspelling dat negatief affect een zorgvuldige, gedetailleerde, en systematische verwerkingsstijl stimuleert (Forgas, 1995). Bovendien wordt deze bevinding ondersteund door eerder bewijs dat disposities stemmingseffecten op cognitie modereren (Ciarrochi & Forgas, 1999; Forgas, 1998b; Mayer & Salovey,

1988; Salovey & Mayer, 1990). Het onderzoek uit Hoofdstuk 4 voegt aan deze bevindingen toe dat ze niet alleen geldt voor beoordeling en besluitvorming op individueel niveau, maar ook van toepassing is op groepsprocessen en groepsbesluitvorming. Onderzoek heeft gesuggereerd dat negatief en positief affect elk door middel van verschillende processen en afhankelijk van de context een eigen gunstige invloed heeft (George & Zhou, 2002; Isen & Baron, 1991). De studie uit Hoofdstuk 4 laat zien dat het een goede zaak zou zijn wanneer managers in organisaties interventies toepassen om de stemming van medewerkers te beïnvloeden, zij rekening houden met de persoonlijke kenmerken van deze werknemers om zich te verzekeren van de gewenste effecten.

Tot besluit, in dit proefschrift werden twee belangrijke factoren onderkend die het gebruik van ongedeelde informatie in groepen beïnvloeden: diversiteit en affect. Dit proefschrift laat zien dat het belangrijk is om diversiteit en affect – zowel als dispositie als stemming – te bestuderen in groepsonderzoek. In zijn algemeenheid kan worden geconcludeerd dat inzicht in de invloed van diversiteit en affect op informatieverwerking en besluitvormingsprocessen in organisaties van cruciaal belang is. Om met De Vreemdeling te spreken:

> "…de enige manier om dingen gedaan te krijgen is via de uitwisseling van informatie".
>
> Allen, vert. 1995, p. 87

Dankwoord

Gedurende 4 jaar – en 7 ½ maand extra dankzij 2 zwangerschappen – heb ik de mogelijkheid gehad om op de afdeling Personeels – en Organisatie Management van de RSM Erasmus Universiteit mijn proefschrift te schrijven.

Mijn dank gaat uit naar mijn promotor Daan van Knippenberg die mij de kans gaf om aan dit project te werken. Dankzij zijn bereidheid om altijd direct als het nodig was beschikbaar te zijn voor begeleiding kon dit proefschrift, behalve tot stand komen, ook tijdig afgerond worden.

Vele mensen hebben bijgedragen aan zowel de ontwikkeling van dit proefschrift als mijn welbevinden tijdens het werk. Mijn dank gaat uit naar deze mensen voor alle inspiratie, praktische hulp, gezelligheid, en de fascinerende en grappige gesprekken over onderzoek, kinderen en andere (?) belangrijke zaken in het leven. Dit maakte het werk zoveel plezieriger!

Maar bovenal gaat mijn dank uit naar René die mij stimuleerde om weer te gaan studeren, en mogelijkheden creëerde zodat ik mij – naast de zorg voor onze twee kindjes – kon focussen op mijn werk. Zonder hem zou dit proefschrift er eenvoudigweg niet zijn.

Hanneke Kooij-de Bode
Amsterdam, juli 2007

Biography

Hanneke Kooij-de Bode (1964) graduated in 2002 cum laude in the field of Work and Organizational Psychology at the University of Amsterdam. In the same year she started her PhD project at the Rotterdam School of Management at the Erasmus University Rotterdam. The research reported in this dissertation was conducted between 2002 and 2007. Hanneke currently works as a researcher/advisor at TNO (Netherlands Organization for Applied Scientific Research).

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Distributed Information and Group Decision-Making

Effects of Diversity and Affect

Organizations tend to rely on small groups rather than individuals when important decision have to be made, based on the assumption that groups possess a broader range of informational resources and more diversity of insights than individuals. However, research on group decision-making shows that groups often fail to use effectively group members' unique information. Central in this dissertation is the relationship between distributed information, the way groups process information, and the quality of the group decision. In three experiments, the influence of demographic diversity, dispositional negative affect, and mood on groups' information elaboration process and groups' decision quality is studied. Results indicate the following: Groups with distributed information and diverse demographic backgrounds elaborate information more and reach better decisions with a focus on information exchange and integration than without such a focus. Higher dispositional negative affect within a group with distributed information stimulates information elaboration and group decision quality. A negative mood within a group with distributed information only affects information elaboration within a group and groups' decision quality positively if group members are lower in dispositional distress. In all three single experiments, information elaboration within a group mediates groups' decision quality. It is concluded that diversity and affect – as disposition as well as mood – are important issues to include in group research and implications for research in organizational behaviour are discussed.

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