

Fostering Team Creativity: Perspective Taking as Key to Unlocking Diversity's Potential

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Despite the clear importance of team creativity for organizations, the conditions that foster it are not very well understood. Even though diversity, especially diversity of perspectives and knowledge, is frequently argued to stimulate higher creativity in teams, empirical findings on this relationship remain inconsistent. We have developed a theoretical model in which the effect of a team's diversity on its creativity is moderated by the degree to which team members engage in perspective taking. We propose that perspective taking helps realize the creative benefits of diversity of perspectives by fostering information elaboration. Results of a laboratory experiment support the hypothesized interaction between diversity and perspective taking on team creativity. Diverse teams performed more creatively than homogeneous teams when they engaged in perspective taking, but not when they were not instructed to take their team members' perspectives. Team information elaboration was found to mediate this moderated effect and was associated with a stronger indirect effect than mere information sharing or task conflict. Our results point to perspective taking as an important mechanism to unlock diversity's potential for team creativity.

Keywords: team creativity, diversity, perspective taking

The importance of creativity for organizations' ability to adapt to changing environments and innovate is widely recognized (George, 2007; Zhou & Shalley, 2010). Due to the complexity of issues organizations face and more specialized work roles, creative work is frequently carried out in teams. Whenever the members of these teams differ in their task-relevant perspectives and knowledge, existing theories predict higher creativity (Jackson, 1992; West, 2002). Yet, this notion of a consistent main effect of diversity on team creativity is not backed by reliable and generalizable evidence (Hülshager, Anderson, & Salgado, 2009; Jackson & Joshi, 2011), raising the question of how to realize diversity's benefits for team creativity. In this study, we present perspective taking directed at teammates as a tool that enables diverse teams to bring out their creative potential. Perspective taking entails the attempt to understand the thoughts, motives, and feelings of another person (Parker, Atkins, & Axtell, 2008). We propose that taking the perspectives of teammates helps to realize the promise of diverse perspectives for team creativity by facilitating informa-

tion elaboration, a team process that we argue is especially conducive to it.

Although research has yet to establish the positive effect of elaboration on team creativity, we propose that it constitutes a more proximal and compelling precursor to team creativity than other concepts suggested to mediate the positive effects of diversity (van Knippenberg, De Dreu, & Homan, 2004). In contrast to task conflict and information sharing, elaboration captures the crucial elements of team members constructively discussing each other's suggestions and integrating the input different members provide. Yet, diverse perspectives do not automatically entail higher elaboration and team creativity (cf. Dahlin, Weingart, & Hinds, 2005). Instead, this requires that the members of diverse teams invest cognitive energy in understanding their teammates' approaches to the task. Due to its other-focused nature, the cognitive process of perspective taking has considerable potential to increase the creativity of diverse teams, as it may not only facilitate information exchange (cf. Krauss & Fussell, 1991) but also engender a more comprehensive evaluation of the suggested ideas and an integration of different perspectives.

Based on this reasoning, we propose that perspective taking moderates the effect of diversity on team creativity and that this effect is mediated by information elaboration (see Figure 1 for an overview of the model). Although it seems particularly suited to foster the integration of different perspectives that is central to the notion of creative synergy (Kurtzberg & Amabile, 2001) and to realizing the benefits of diversity (van Knippenberg & Schippers, 2007), perspective taking and related other- or team-focused processes play no role in current diversity models. Instead, these models focus on task- and team member characteristics as moderators of diversity's effect on team processes and outcomes (van Knippenberg et al., 2004). Moreover, our study adds an important facet to the understanding of how perspective taking affects team

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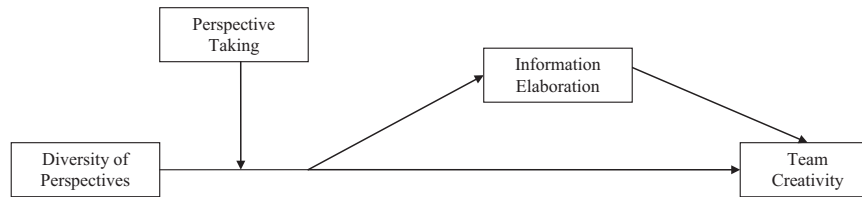


Figure 1. Research model with the interaction between diversity and perspective taking, the mediating process information elaboration, and the outcome variable team creativity.

outcomes. Its relevance for intra- and interpersonal outcomes is well established (Parker et al., 2008), and individual-level findings suggest that taking beneficiaries' perspective may inspire more creative ways of helping them (Grant & Berry, 2011). Complementing this research and extending it to the context of collaborative teamwork, we show that perspective taking among teammates may increase team creativity. Our study thus yields valuable insights into how team composition and processes interact to foster the important outcome of team creativity.

Literature Review and Hypotheses

Team Creativity

Creativity—the joint novelty and usefulness of ideas regarding products, processes, and services (Amabile, 1988; Zhou & Shalley, 2010)—is vital for organizations, and creative work is frequently done in teams. Hence, the question about our knowledge about team creativity has been raised repeatedly. Often, it is met with concern about how little is known about how teams perform creatively (George, 2007; Paulus & Nijstad, 2003). This dearth of knowledge is partly attributable to a strong research focus on individual creativity (Shalley, Zhou, & Oldham, 2004). Moreover, research on team creativity mainly concerns brainstorming where creativity is defined as divergent thinking and is measured as fluency, flexibility, originality, and elaboration (Paulus, 2000), limiting the extent to which these results inform questions regarding creativity defined as above (Zhou & Shalley, 2010). We rely on the accepted definition of workplace creativity to conceptualize team creativity as the joint novelty and usefulness of a final idea developed by a group of people. Our focus on the creativity of a final outcome highlights the importance of studying the factors that contribute to both the generation of initial ideas and their refinement.

The Potential Benefits of Diverse Perspectives

The wide use of teams for creative tasks is based on the notion that they bring a wider pool of perspectives and knowledge to the table. This diversity of perspectives forms a resource from which teams are expected to benefit on creative tasks (Jackson, 1992; K. Y. Williams & O'Reilly, 1998). Following prior work, we refer to diversity as a team characteristic denoting the extent to which members differ with regard to a given attribute (Joshi & Roh, 2009; van Knippenberg & Schippers, 2007) but not whether these differences are recognized within a team (which reflects the concept of perceived dissimilarity; Harrison & Klein, 2007). Yet, we do not single out a specific diversity attribute (e.g., age) or class of

attributes (e.g., deep-level diversity). Instead, we focus on the underlying differences in perspectives on a task as the more proximal indicator of a team's increased cognitive resources (van Knippenberg et al., 2004). In line with the word's basic meaning (the Latin *perspicere* meaning "to look through"), we use the term *perspective* to denote "a particular way of considering something" (Cambridge Dictionaries Online, n.d.). A perspective thus shapes *how* a situation is viewed, including the perceived relevance and evaluation of certain aspects of the problem and its proposed solutions.

Differences in perspectives are a common part of many diversity attributes usually classified as job-related (e.g., functional diversity; Bunderson & Sutcliffe, 2002), but recent theorizing stresses that underlying differences in task-relevant perspectives are not a function of the diversity attribute alone but arise from the combination of this attribute with a given task (van Knippenberg et al., 2004). In line with this argument, some studies indicate the task-relevance of surface-level attributes (see, e.g., McLeod, Lobel, & Cox, 1996; Thomas, 2004), and a recent meta-analysis finds a positive effect of relations-oriented diversity (e.g., gender, ethnicity) on the performance of teams in service industries (Joshi & Roh, 2009). Regardless of their specific source in a given situation, diverse perspectives reflect qualitative differences that equip teams with a broader range of approaches to the task. Thus, they are best conceptualized as diversity in the sense of variety that reaches its maximum when every member has a different perspective and is minimal when all members share a perspective (Harrison & Klein, 2007).

The conceptual link between these cognitive resources of diverse teams and higher team creativity is frequently made (e.g., Jackson, 1992; West, 2002). Different perspectives and knowledge form the core of the *value-in-diversity* hypothesis (McLeod et al., 1996)—a value that is deemed especially beneficial for conceptual tasks (McGrath, 1984), including creative tasks. Despite seeming conceptually straightforward, however, this link between team diversity and creativity is not supported by conclusive empirical evidence. Although a recent meta-analysis of team-level predictors of creativity and innovation has found a small but significant effect of job-related diversity (Hülshager et al., 2009), the wide credibility interval for this effect points to the need to consider contingency factors. Similarly, a recent review has concluded that for creative tasks, the effects of job-related diversity are mixed (Jackson & Joshi, 2011).

Moderators of the Diversity Effect

This inconsistency is not limited to research on team creativity but echoes a more general problem to empirically support the

theoretical assumptions of a diversity main effect (van Knippenberg & Schippers, 2007). Hence, recent research stresses the need to study the boundary conditions surrounding the effects of diversity and the processes underlying them. The most comprehensive framework in this regard to date is the categorization–elaboration model (CEM; van Knippenberg et al., 2004). It integrates the social categorization and information–decision making perspective on diversity and outlines a set of moderators of diversity’s effect on team outcomes. According to the CEM, teams benefit from their diversity when members differ in task-relevant perspectives and knowledge and engage in information elaboration. Elaboration is argued to be the core team process underlying diversity’s benefits and is defined as the exchange, discussion, and integration of ideas, knowledge, and insights relevant to the team’s task (van Knippenberg et al., 2004). Social categorization and intergroup bias may harm diverse teams by disrupting elaboration. Yet, the absence of these disruptions alone does not guarantee elaboration. Instead, team member attributes (ability, motivation) and task demands (complexity, required creativity) additionally affect whether diverse knowledge and perspectives are elaborated on.

Research has provided initial support for task characteristics as moderators of the effect of different viewpoints on team creativity (cf. Kratzer, Leenders, & van Engelen, 2006) and has identified leadership styles as an additional set of external factors that shape this effect (Shin & Zhou, 2007). Moreover, openness to experience (Homan et al., 2008) and need for cognition (Kearney, Gebert, & Voelpel, 2009) have been found to enhance the performance of diverse teams on conceptual tasks. The facilitative effect of these individual-level dispositions that affect team members’ motivation and arguably experience in processing a wide variety of information for related team outcomes is indicative of the role that these factors may play for creative tasks. Yet, although these types of moderators are clearly relevant, this research leaves the question of which processes team members themselves can engage in to improve their teams’ information processing patterns and reap the rewards of diversity unanswered.

The Moderating Role of Perspective Taking

The widely acknowledged importance of integrating diverse viewpoints for high (creative) performance (Taggar, 2001; cf. Gardner, Gino, & Staats, 2012) highlights the need to consider processes focused on the team and its members as facilitators of elaboration and creativity. This points to perspective taking between teammates as a potent but so far neglected moderator of diversity’s effect on team creativity. As a multi-faceted concept that is used across disciplines, the definitions of perspective taking vary in the experiential aspect targeted by perspective taking (i.e., perception, cognition, affect; Kurdek & Rogdon, 1975) and whether it is seen as a stable disposition (Davis, 1980) or a situationally malleable process (e.g., Parker et al., 2008). Yet, these definitions converge on perspective taking as a cognitive process that entails trying to understand or considering another’s viewpoint (Caruso, Epley, & Bazerman, 2006; Parker et al., 2008; Sessa, 1996) by “deliberately adopting their perspective” (Caruso et al., 2006, p. 203; Galinsky & Ku, 2004; Parker et al., 2008). Given our interest in the processes that help teams benefit from their diversity, we define perspective taking following Parker et al. (2008) as a cognitive process through which “an observer tries to

understand, in a nonjudgmental way, the thoughts, motives, and/or feelings of a target, as well as why they think and/or feel the way they do” (p. 151).

As a cognitive process that is directed at an external target, perspective taking can facilitate social interaction. Taking another’s perspective reduces stereotyping and in-group favoritism (Galinsky & Moskowitz, 2000), fosters cooperative behavior (Parker & Axtell, 2001), elicits creative ideas to help others by attuning to their needs (Grant & Berry, 2011), and improves emotional regulation (Parker et al., 2008). In teams, perspective taking has been argued to aid team situation model construction and tacit coordination (Rico, Sánchez-Manzanares, Gil, & Gibson, 2008), and team members’ trait perspective taking has been linked to less person-oriented conflict perceptions (Sessa, 1996). Perspective taking has mostly been considered as an individual-level cognitive process. Yet, there are arguments to suggest that in teams, perspective taking can acquire the qualities of an emergent group process (Morgeson & Hofmann, 1999) for which members show high levels of convergence (Chen, Mathieu, & Bliese, 2004). In a team, perspective taking not only occurs in a social setting but also affects the likelihood that other members reciprocate in kind. In this vein, other-rated perspective taking has been linked to higher communication satisfaction (Park & Raile, 2010), which in turn may improve a person’s mood, motivation, and liking of the other—all of which are argued to promote perspective taking (Parker et al., 2008). In line with these arguments, initial evidence supports this proposed reciprocity in dyads (Axtell, Parker, Holman, & Totterdell, 2007) and teams (Calvard, 2010).

We argue that perspective taking, as an emergent team process, helps teams to capitalize on their diversity on creative tasks by fostering the sharing, discussion, and integration of diverse viewpoints and information. Perspective taking is in part an inferential process (Parker et al., 2008), but it can affect how much persons seek (cf. Tjosvold & Johnson, 1978) and share information and perspectives. This is particularly important for diverse teams that have been found to not consider the full range of information available to them (Dahlin et al., 2005). Trying to comprehend a teammate’s perspective creates informational needs that may be satisfied through active inquiry or by monitoring what team members say. Yet, even when team members share information and perspectives, knowledge barriers may hinder cross-functional understanding (Carlile, 2002; Dougherty, 1992). By affecting how messages are framed (Boland & Tenkasi, 1995; Krauss & Fussell, 1991), perspective taking may alleviate these difficulties.

Furthermore, diverse perspectives come with differences in evaluative standards that may impair communication (Cronin & Weingart, 2007). Failing to see the value of others’ ideas can lead to destructive criticism that disrupts communication (cf. R. A. Baron, 1988). Taking another’s perspective entails considering their evaluative standards and may facilitate more constructive appraisal of their ideas. This may foster the process of elaborating on each other’s ideas, which is required to develop truly creative ideas (Titus, 2000). Finally, increased diversity heightens the demands for teams to integrate their ideas and viewpoints (Taggar, 2001). Analyzing another person’s viewpoint may lead to a cognitive reframing that helps this integration of perspectives and ideas that has been linked to creativity (Hargadon & Bechky, 2006).

Arguably, perspective taking will not be equally beneficial for homogeneous teams. In the absence of different approaches to the task, perspective taking is unlikely to reveal novel insights or opportunities to integrate different viewpoints. It might even reinforce the existing perspective on a problem and constrain the exploration of new approaches (cf. Smith, 2003). Furthermore, perspective taking is a resource-demanding cognitive process (Roßnagel, 2000). If perspective taking is less likely to lead to new insights in homogeneous teams, this increase in cognitive load is not offset by the benefits of perspective taking we outlined for diverse teams. In sum, we propose the following:

Hypothesis 1: Perspective taking moderates the effect of diversity of perspectives on team creativity, such that diversity has a more positive effect on creativity when team members engage in perspective taking than when they do not engage in perspective taking.

Our arguments for perspective taking as a moderator of diversity's effect on team creativity strongly build on the benefits of perspective taking for the sharing and integration of diverse viewpoints. Based on prior research suggesting its effects on information sharing (cf. Tjosvold & Johnson, 1978), more careful message framing (Krauss & Fussell, 1991), a more constructive evaluation and debate of ideas, and the potential discovery of ways to integrate different ideas and perspectives (Boland & Tenkasi, 1995), we argue that, in diverse teams, perspective taking may elicit the full range of sub-processes that jointly define elaboration (van Knippenberg et al., 2004). It is worth noting that perspective taking is unlikely to elicit equal levels of elaboration in homogeneous teams. Instead, it might lead team members to quickly recognize their shared information and viewpoints and in turn limit the extent to which they are elaborated on. In this vein, research on distributed information suggests that when information is fully shared, group discussion mainly serves to establish that all members have the relevant information (Stasser & Titus, 1985). Perspective taking may accelerate this realization. Based on our reasoning for why perspective taking moderates the effect of diversity on team creativity and on the assumed differential effect of perspective taking on elaboration in diverse teams, we propose the following:

Hypothesis 2: Perspective taking moderates the effect of diversity of perspectives on information elaboration, such that diversity has a more positive effect on elaboration when team members engage in perspective taking than when they do not engage in it.

The precise nature of the team processes that effectuate diversity's benefits is contested. Based on the CEM (van Knippenberg et al., 2004), we posit that elaboration is the key mediator of the interaction of diversity and perspective taking on team creativity. Direct empirical evidence for a relationship between elaboration and team creativity remains missing, yet prior findings on elaboration as a mediator of diversity's effect on decision making (van Ginkel & van Knippenberg, 2008, 2009) and performance in teams (Homan et al., 2008; Homan, van Knippenberg, van Kleef, & De Dreu, 2007; Kearney et al., 2009), including research and development teams (Kearney & Gebert, 2009), suggest its potential value for team creativity. Conceptually, elaboration focuses on the

constructive exchange and integration of ideas that are especially beneficial from team creativity and distinguish it from other potential precursors to creativity.

The most prominent alternative team process is task conflict, defined as "disagreements among group members about the content of the task being performed, including differences in viewpoints, ideas, and opinions" (Jehn, 1995, p. 258). Diverse perspectives are thought to elicit these disagreements that are posited to increase creativity by preventing premature consensus (Kurtzberg & Amabile, 2001) and stimulating a reevaluation of the status quo and more thorough debate (Jehn, 1997). Yet, the case for task conflict as precursor to creativity is less clear upon closer inspection. Its effects on team creativity and innovation are inconsistent (Hülshager et al., 2009), and some have argued that it is not its occurrence but the way teams solve it that determines whether conflict is beneficial (Lovelace, Shapiro, & Weingart, 2001). Moreover, its creative benefits are limited to situations in which conflict does not exceed moderate levels and does not persist into the later stages of a project (Farh, Lee, & Farh, 2010). Additionally, task conflict may elicit strong negative emotionality (Jehn, 1997) and relationship conflict (De Dreu & Weingart, 2003) that can harm team creativity (Pearsall, Ellis, & Evans, 2008). A constructive debate and integration of mutual input thus neither define nor inevitably follow from task conflict. In contrast, elaboration, for which task conflict is neither a necessary nor sufficient condition (van Knippenberg et al., 2004), comprises the processes that task conflict is argued to engender when it leads to creativity but is less prone to the undesirable side-effects of conflict.

A second process that has been posited to promote team creativity is information sharing (Milliken, Bartel, & Kurtzberg, 2003). Exposure to the ideas of others is thought to stimulate cognitive flexibility and idea generation (Brown & Paulus, 2002) and broaden a team's knowledge base (Stasser & Birchmeier, 2003). As such, it may add to a team's creativity-relevant processes and domain-relevant knowledge (Amabile, 1988) and form an important precondition for creativity. Yet, information sharing does not suffice to ensure that these benefits are realized. Whereas sharing information is a necessary condition for its integration, research shows that it does not reliably predict knowledge integration in teams (Okhuysen & Eisenhardt, 2002). In some cases, teams have even been shown to discount or disregard information (Cruz, Boster, & Rodríguez, 1997) and react negatively to the ideas of others (cf. Mueller, Melwani, & Goncalo, 2012). In sum, information sharing neither conceptually covers nor invariably elicits the necessary careful processing and integration of viewpoints. Thus, we posit that elaboration best captures the processes that perspective taking fosters in diverse teams to promote creativity:

Hypothesis 3a: Information elaboration mediates in the interactive effect of diversity and perspective taking on team creativity such that perspective taking moderates the effect of diversity on information elaboration, which in turn has a positive effect on team creativity.

Our analysis implies that task conflict is unlikely to mediate in the joint effect of diversity and perspective taking on team creativity. Perspective taking has been shown to shape conflict perceptions (Sessa, 1996) but may reduce conflict due to more careful message framing. Also, the effect of conflict on team creativity is not

unequivocally positive. Information sharing, in turn, is a likely effect of perspective taking in diverse teams but may not transmit the full benefit of perspective taking. In line with calls to test proposed effects against viable theoretical alternatives (instead of the absence of an effect; van de Ven, 2007), we tested the following:

Hypothesis 3b: The conditional indirect effect of diversity as moderated by perspective taking on creativity through information elaboration is stronger than the indirect effect observed for the alternative mediators of task conflict and information sharing.

Method

Design and Participants

We tested our hypotheses in a laboratory experiment using a 2 (diversity of perspectives: diverse vs. homogeneous) \times 2 (perspective taking: yes vs. no) between-groups design. A total of 231 students (55.8% male; mean age = 21.3 years, $SD = 2.20$) from a Dutch university were assigned to 77 three-person teams that were randomly assigned to conditions.¹ The majority of participants were students of business administration (75.8%) or economics (17.3%). In return for their participation, they received partial course credit or 10 euro (about \$15).² We videotaped all teams to allow for a behavioral coding of the mediating processes. Due to technical problems, the video data for one team and the survey data for another were missing. As there is no indication that these teams behaved differently than the others, we relied on all teams to test the effects of the manipulated factors on their creativity.³ We ran the analysis of the perspective taking manipulation check without the team with missing survey data, and all analyses involving the mediators were conducted without the team with the missing video-recording.

Experimental Task

The task was designed to observe teams while they develop a creative plan. Task materials were inspired by a group exercise unrelated to creativity (Windy City Theatre Exercise; Thompson & Bloniarz, 1996). We adapted the role instructions, task, and information to form a creativity task. In this task, participants take the roles of management team members of a theater. Together, they have to develop a creative action plan to improve the theater's position. Participants received role instructions (their managerial function) and information about the theater (location plan, schedule of plays, etc.). Teams were instructed to develop the most creative plan possible and were provided with a standard definition of creativity as joint novelty and usefulness. Moreover, we asked them to hand in one integrated plan and not a list of unconnected ideas. These instructions matched the adopted definition of team creativity. As further motivation, we promised monetary rewards to teams with the most creative plans.

Experimental Manipulations

Diversity of perspectives. We used functional role instructions to manipulate diversity of perspectives in line with our definition of it as a team characteristic denoting the existence of

differences between members in the way they view the task, information, and solutions. In the diverse condition, members were assigned the roles of the Artistic, Event, and Finance Manager, respectively. The descriptions of each managerial role in the diverse condition highlighted different aspects of the solution that were important for the respective role and stressed that team members should ensure that these aspects were realized in the final plan. Whereas the Artistic Manager had to ensure high creative reputation, the Event Manager was concerned with high service levels and community involvement, and the Finance Manager had to pay special attention to financial performance. Apart from the role instruction, all information about the theater was fully shared across conditions. As such, our manipulation closely resembles the notion of functional assignment diversity in the sense that different viewpoints are derived from different functional accountabilities and not experience per se (Bunderson & Sutcliffe, 2002).

Importantly, this manipulation focused on the distribution of different perspectives (roles) between team members. In practice, these distributional differences accrue to a broader range of perspectives at the team level. With an experimental manipulation, we have the chance to avoid a potential confound of the distribution of differences with differences in the amount or range of perspectives available to a team. Realizing this opportunity, comparable previous studies on informational diversity and distributed information (e.g., Homan et al., 2007; Stasser & Titus, 1985) provided teams with equal amounts of information across conditions but manipulated its distribution within the teams causing members of homogeneous teams to have more information at their individual disposal. Parallel to this, we decided to keep the amount of role information containing the goal criteria constant on the team level. Hence, in order to avoid a potential confound of the diverse teams having a clearer picture of the desired solution, the role in the homogeneous condition contained the goal information from all three diverse roles. To keep the instructions comparable in length, the role descriptions in the diverse condition stressed certain parts of the information that were redundant with the information given to everyone. This manipulation covers the two main definitional

¹ Students registered for the study online, so their assignment to teams was not strictly random. Yet, they reported low familiarity with their teammates in the post-experimental survey ($M = 1.47$, $SD = 0.85$) on a scale ranging from 1 (*not familiar at all*) to 5 (*very familiar*). Repeating our analyses with familiarity as a control did not alter the pattern of findings.

² Including the number of members who received money as a control in the analyses did not alter the pattern of our results. Accordingly, all analyses are reported without this control.

³ Analyzing the effect of diversity and perspective taking on the teams' creativity without the teams with partially missing data did not change the nature or significance of the effects.

⁴ Teams may also differ on specific diversity attributes or combinations of attributes other than our manipulated diversity. Although randomly assigning teams to conditions should prevent that these differences systematically co-vary with our manipulation, we re-ran the analyses while controlling for diversity in terms of nationality, sex, field of study (Blau's index), age (standard deviation), and the two- and three-dimensional fault-lines based on these attributes (using van Knippenberg, Dawson, West, & Homan's, 2011, measure). As including these controls did not alter the pattern of our results, all analyses are reported without them.

criteria of diversity as a team-level characteristic that indicates to which degree team members differ on a particular attribute.⁴

Perspective taking. Perspective taking was manipulated at the team level at the onset of the team task. Teams in the perspective taking condition were verbally instructed to try to take each other's perspectives as much as possible and were asked to jointly review a page of written instructions on what perspective taking entailed. These instructions told participants to try to view the situation from the positions of the other team members and specified examples of perspective taking such as trying to understand how others view the situation and trying to ask themselves what is important to the other person. As a further incentive to engage in perspective taking, participants were informed that these would help to increase their performance. Teams in the non-perspective taking condition received only the instructions for the team task.

Measures

Creativity. In line with prior work, we defined *creativity* as the joint novelty and usefulness of a plan or idea (Zhou & Shalley, 2010). This means that ideas that are high on only one of the two defining features (novelty and usefulness) but very low on the other are not considered creative. Hence, we coded each team's plan for both novelty and usefulness ($r = .59, p < .001$) and multiplied them to obtain an overall creativity measure (see Zhou & Oldham, 2001, for a similar procedure). To assess *Novelty*, we divided each plan into its constituent ideas (whenever it contained multiple), and two independent coders rated each idea included in the plan on a 5-point scale ranging from 0 (*not novel at all*) to 4 (*very novel*). As teams were instructed to develop one final plan that could consist of one or multiple, interrelated ideas, we averaged the scores of the ideas within one plan to obtain the overall novelty score. The same set of coders coded the plans' *Usefulness* in different random order than novelty. As different ideas could jointly impact the usefulness of a plan with regard to a goal, they coded usefulness on the basis of the entire plan on a 7-point scale ranging from 0 (*harmful*) to 6 (*very useful*).⁵ Coders were instructed to assess usefulness with regard to the three main goals included in the instructions across conditions (creative reputation, financial performance, community involvement and service levels). Plans that were useful with regard to all three goals received the maximum score of 6, plans that were harmful with regard to all goals received a score of 0, and plans that were useful for some (but less so for other) goals received intermediate scores. We trained coders using the data from 19 pilot teams (not included in the analysis). To adjust for scaling differences, we divided novelty and usefulness by their standard deviations before calculating their product as the overall creativity score. The high intraclass correlation coefficients (*ICCs*) and r_{wg} values indicate high inter-rater reliability and agreement (usefulness: $ICC(1) = .79, ICC(2) = .88$, mean $r_{wg} = .93$; novelty: $ICC(1) = .82, ICC(2) = .90$, mean $r_{wg} = .89$; Bliese, 2000; James, Demaree, & Wolf, 1984).⁶

Manipulation check diversity of perspectives. Our diversity manipulation aimed to provide members of diverse teams with diverging views on what is important and what is relevant information. In order to ascertain the effectiveness of this manipulation, we analyzed participants' answers to (a) what they considered particularly important to achieve in the team task and (b) which initial ideas they had for it. Participants answered these questions

during their individual preparation for the team task. The answers to what participants considered important were coded for whether they contained aspects reflecting the Artistic, Event, or Finance Manager's perspective. We used this information to calculate Blau's coefficient of heterogeneity as an indicator of the diversity with which team members pursued each aspect, and we averaged this indicator across the three perspectives to yield a single index of the diversity of viewpoints within a team. In order to test whether our manipulation also led members of diverse teams to assign differential relevance to certain information sources out of the overall set of information, we coded the initial ideas for which information sources they were based on. Although all members received all information sources, certain sources were thematically related to certain perspectives (e.g., the calendar of plays to the Artistic Manager, sales overview to the Financial Manager, etc.). For each member, we calculated the proportion of ideas that were based on information related to the artistic, event, and financial perspective and used the standard deviation of these proportions as an index of an individual preferential reliance on certain types of information. We averaged this index across a team's members to obtain a team-level indicator.

Manipulation check perspective taking. To ensure the effectiveness of the perspective taking manipulation, participants indicated the degree to which they engaged in it on a five-item scale (Cronbach's $\alpha = .72$). We relied on their self-assessment because perspective taking is a cognitive process and as such not directly observable. Example items included the following: "During the group discussion, I tried to take the perspective of the other members of my team." Answers were given on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). To avoid priming participants in the non-perspective taking conditions with the concept of perspective taking, they completed this scale after the team task. High levels of agreement between team members' reported degree of perspective taking (mean $r_{wg(j)} = .92$) and acceptable aggregate reliability (Cronbach's $\alpha = .68$) and reliability ($ICC(1) = .23, ICC(2) = .47$) justify averaging the individual responses to the team level in line with the proposed consensus model (Chen et al., 2004).

Information elaboration. A different set of two independent coders coded elaboration (and the other mediators) from the videos in different random order. As a team process that has no individual-level equivalent, elaboration was coded at the team level on a 7-point scale with specific anchors for each scale point. The scale was based on a scale by van Ginkel and van Knippenberg (2008), who studied team decision making with a hidden profile task. For our creativity task lacking a single, demonstrably correct answer and with mostly shared information, coding for the sharing, discussion, and integration of unshared, critical information was not possible. We thus adapted the coding scheme (see the Appendix for a detailed description).

⁵ The different coding formats for novelty and usefulness are attributable to different degrees of variation that can be meaningfully distinguished with regard to the plans. Sensitivity analyses using a 7-point scale for novelty instead did not alter our findings.

⁶ As moderate scores of usefulness/novelty were given more often than extreme values, we based our r_{wg} values on the expected variance of a triangular null distribution (James et al., 1984).

In line with the definition of elaboration, the different scale levels detailed to which degree members mentioned different perspectives and information, whether other teammates acknowledged this, whether different perspectives and information were discussed and used to build on each other's suggestions, and whether teams tried to integrate different perspectives and information. Examples of integration attempts included statements linking multiple perspectives and constructive remarks about potential improvements of suggested ideas. A value of 1 was given to teams that immediately began to develop ideas with little or no systematic discussion of the different perspectives and information. A score of 7 was assigned to teams in which all perspectives and information were mentioned and fully discussed by its members, different information and perspectives were used to build on each other's suggestions, and team members attempted to integrate different information and perspectives. The measure thus assessed to which extent teams engaged in all the consecutive processes detailed in the elaboration concept and assigned the highest score to teams showing the full range of these interrelated sub-processes. The coders trained using the coding scheme with the pilot team videos and exhibited high agreement (mean $r_{wg} = .93$) and inter-rater reliability ($ICC(1) = .85$, $ICC(2) = .92$).

Information sharing. Prior research indicates differences between the likelihood and the effect of sharing initially unshared information compared to initially shared information (Stasser & Titus, 1985; cf. Homan et al., 2007). Thus, we coded information sharing separately for the information on the theater that was fully shared across conditions and for the members' perspectives that were unshared in the diverse condition. Two independent coders coded each video separately for the extent to which all three members mentioned each information source ($ICC(1) = .76$, $ICC(2) = .86$, mean $r_{wg} = .93$) or perspective ($ICC(1) = .60$, $ICC(2) = .75$, mean $r_{wg} = .87$). The measures for sharing information and perspectives reflect the number of members that on average discussed a certain piece of information or perspective with a maximum of 3 for teams in which all members discussed all information sources or all perspectives.

Task conflict. In line with the definition of task conflict as the existence of disagreements about viewpoints, ideas, and opinions pertaining to the task (Jehn, 1995), task conflict was coded from the videos as the number of disagreements about task-related

ideas, opinions, and information by two independent coders ($ICC(1) = .65$, $ICC(2) = .78$, mean $r_{wg} = .75$).

Procedure

Upon arrival at the laboratory, participants were told that they were going to take part in a study on how teams come up with creative ideas and informed about their task. They first read written instructions that provided a brief description of the setting, the management team member role, and an array of information about the theater including a calendar of plays, a location plan, a floor plan, and an overview of costs, ticket sales, and target groups. As part of their individual preparation, they had to answer two open questions asking (a) what was particularly important for them to consider during the team task and (b) their initial ideas for the plan. After 20 min, they were asked to work on the team task that required them to develop a final, integrative creative action plan for the theater. Teams in the perspective taking condition also received the perspective taking instructions. Teams had 20 min to complete the team task that we videotaped. After 10 min, the experimenter entered with the final answer sheet and reminded them to come up with one integrative, creative plan. Afterwards, participants individually filled out a brief survey before they were debriefed, paid or awarded their credit, and dismissed. Altogether, the experimental sessions lasted 1 hr.

Results

Table 1 displays the descriptive statistics and inter-correlations for the variables in our study. We tested our hypotheses using regression analyses with dummy-coded variables to reflect the teams' assignment to the experimental conditions (0 = homogeneous; 0 = non-perspective taking) and mean-centered the mediating variables. To forego the problems of the causal steps approach to testing mediation (R. M. Baron & Kenny, 1986) and of parametric tests of the product of the paths' coefficients, we used a non-parametric bootstrapping method to test indirect effects. For the mediated moderation proposed in Hypothesis 3a, we relied on a procedure by Edwards and Lambert (2007), and we tested the differences in conditional indirect effects through different medi-

Table 1
Descriptive Statistics and Correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Diversity	0.50	0.50	—									
2. Perspective taking	0.52	0.50	.04	—								
3. Perspective taking manipulation check	3.92	0.46	-.10	.72**	—							
4. Diversity manipulation check information preference	0.34	0.13	.61**	-.01	-.05	—						
5. Diversity manipulation check goals	0.30	0.16	.76**	.08	-.12	.43**	—					
6. Sharing information	2.11	0.42	.01	.09	.02	-.16	-.03	—				
7. Sharing perspectives	1.08	0.52	.23*	.19	.15	-.01	.17	.12	—			
8. Task conflict	4.17	2.95	.14	-.26*	-.27*	-.01	.09	.20	-.07	—		
9. Information elaboration	3.53	1.40	.08	.27*	.22	-.04	.02	.31**	.56**	-.36**	—	
10. Team creativity	10.01	6.04	.13	.14	.15	.08	.06	-.02	.24*	-.24*	.53**	—

Note. Diversity and perspective taking are dummy-coded variables (0 = homogeneous; 0 = non-perspective taking). All correlations are reported at the team level.

* $p < .05$. ** $p < .01$.

ators proposed in Hypothesis 3b with a procedure by Preacher and Hayes (2008).

Manipulation Checks

Diversity of perspectives. We conducted two analyses of variance to test for the effect of diversity and perspective taking on the teams' heterogeneity in what their members saw as important and the index for the members' preferential use of perspective-related information, respectively. Each analysis yielded a main effect of diversity as the only significant effect. Teams in the diverse condition showed significantly higher degrees of heterogeneity in what their members saw as important ($M = 0.42, SD = 0.07$) than homogeneous teams ($M = 0.18, SD = 0.12$), $F(1, 73) = 101.61, p < .001, \eta_p^2 = .58$. Likewise, members of diverse teams exhibited a significantly higher preference for basing their ideas on certain information sources ($M = 0.43, SD = 0.12$) than members of homogeneous teams ($M = 0.26, SD = 0.10$), $F(1, 68) = 40.52, p < .001, \eta_p^2 = .37$. These results suggest a successful manipulation of diversity of perspectives.

Perspective taking. An analysis of variance testing for the effect of perspective taking and diversity on the teams' perspective

taking scores yielded only the expected significant main effect of perspective taking. In the perspective taking condition, teams reported significantly higher values ($M = 4.24, SD = 0.38$) than in the non-perspective taking condition ($M = 3.58, SD = 0.33$), $F(1, 72) = 80.38, p < .001, \eta_p^2 = .54$. These differences in situational perspective taking are not due to differences in dispositional perspective taking. In fact, individuals did not differ between conditions in their dispositional perspective taking (all F s < 1), which was assessed at the end of the post-experimental survey with the scale by Davis (1980; seven items, Cronbach's $\alpha = .68$). These findings point to a successful perspective taking manipulation.

Test of Hypotheses

The effect of diversity and perspective taking on team creativity. In order to test Hypothesis 1, we first regressed team creativity on the dummy-coded variables for diversity and perspective taking and then added their product to test the proposed moderation (see Table 2). The model containing only the dummy variables for the direct effects of our manipulations did not account for significant variation in the criterion team creativity ($R^2 = .04, p = .26$), and neither diversity ($b = 1.57, SE = 1.39, p = .26$) nor

Table 2
Regression Results for the Mediated Moderation Model

Predictor	<i>b</i>	<i>SE</i>	β	<i>t</i>	R^2
Model 1: Creativity					.17**
Diversity	-3.09	1.89	-.26	-1.64	
Perspective taking	-2.89	1.86	-.24	-1.55	
Diversity \times Perspective Taking	8.88	2.60	.66	3.41***	
Model 2a: Information elaboration					.19*
Diversity	-0.80	0.43	-.29	-1.87	
Perspective taking	-0.22	0.42	-.08	-0.51	
Diversity \times Perspective Taking	1.89	0.59	.61	3.20**	
Model 2b: Sharing information					.01
Diversity	0.17	0.84	.03	0.20	
Perspective taking	0.56	0.83	.11	0.68	
Diversity \times Perspective Taking	-0.20	1.16	-.04	-0.18	
Model 2c: Sharing perspectives					.09*
Diversity	-0.02	0.17	-.02	-0.11	
Perspective taking	-0.05	0.16	-.05	-0.32	
Diversity \times Perspective Taking	0.49	0.23	.42	2.13*	
Model 2d: Task conflict					.09*
Diversity	1.83	0.95	.31	1.94	
Perspective taking	-0.58	0.93	-.10	-0.62	
Diversity \times Perspective Taking	-1.88	1.30	-.29	-1.44	
Model 3a: Creativity					.40***
Diversity	-1.23	1.65	-.10	-0.74	
Perspective taking	-2.39	1.59	-.20	-1.50	
Diversity \times Perspective Taking	4.49	2.38	.33	1.88	
Information elaboration	2.32	0.44	.54	5.23***	
Model 3b: Creativity					.44***
Diversity	-0.82	1.67	-.07	-0.49	
Perspective taking	-1.99	1.61	-.17	-1.24	
Diversity \times Perspective Taking	3.95	2.38	.29	1.66	
Information elaboration	2.94	0.63	.68	4.64***	
Sharing information	-0.49	0.25	-.20	-1.95	
Sharing perspectives	-1.18	1.41	-.10	-0.84	
Task conflict	0.08	0.23	.04	0.35	

Note. Diversity and perspective taking are dummy coded variables (0 = homogeneous; 0 = non-perspective taking).
* $p < .05$. ** $p < .01$. *** $p < .001$.

perspective taking ($b = 1.65, SE = 1.39, p = .24$) were significant predictors. Adding the interaction between diversity and perspective taking to the model significantly increased the amount of explained variance ($R^2 = .17, p < .01; \Delta R^2 = .13, p < .01$), and the interaction significantly predicted creativity ($b = 8.88, SE = 2.60, p < .01$). Simple slopes analyses (Preacher, Curran, & Bauer, 2006) yielded a significant positive simple slope of diversity (i.e., the difference between diverse and homogeneous teams) in the perspective taking condition ($b = 5.79, SE = 1.79, p < .01$) but not in the non-perspective taking condition ($b = -3.09, SE = 1.88, p = .11$). In sum, the significant moderation effect and the specific pattern of effects (see Figure 2) support Hypothesis 1 and the theoretical reasoning behind it.

The effect of diversity and perspective taking on information elaboration. Hypothesis 2 predicted that perspective taking moderates the effect of diversity on elaboration. To test it, we regressed elaboration on diversity and perspective taking and then added their interaction to the model. The model containing only the predictors for our manipulated factors did not explain significant variance in elaboration ($R^2 = .08, p = .05$), although perspective taking ($b = 0.75, SE = 0.31, p = .02$), but not diversity ($b = 0.19, SE = 0.31, p = .55$), was a significant predictor. Adding the interaction between diversity and perspective taking to the model significantly increased the amount of explained variance in elaboration ($\Delta R^2 = .12, p < .01$). In this model ($R^2 = .19, p < .01$), the coefficient for the interaction was significant ($b = 1.89, SE = 0.59, p < .01$). Simple slopes analyses showed that in support of Hypothesis 2, the simple slope for diversity was significant and positive in the perspective taking condition ($b = 1.09, SE = 0.41, p < .01$) but not in the non-perspective taking condition ($b = -0.80, SE = 0.43, p = .07$). Simple slopes analyses also qualified the observed direct effect of perspective taking, which

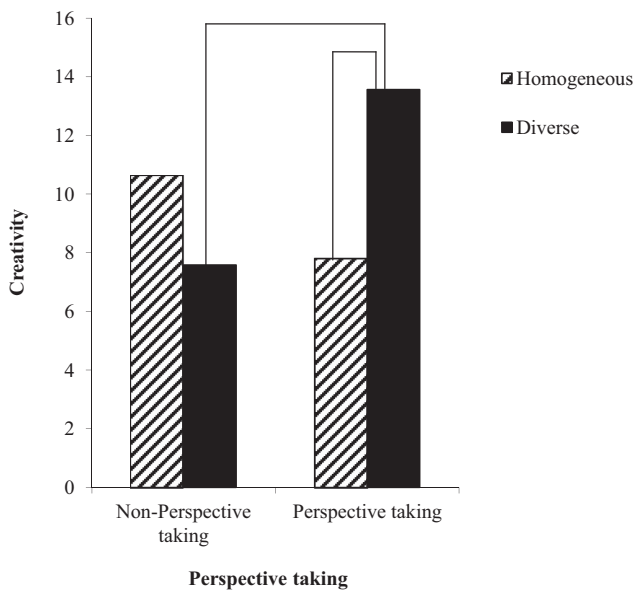


Figure 2. Interaction of diversity and perspective taking on the creativity of the team action plans. As indicated by the bars, the simple main effects of diversity in the perspective taking condition and the simple main effect of perspective taking in the diverse condition are significant.

only had a significant and positive simple slope for diverse ($b = 1.67, SE = 0.41, p < .001$) but not for homogeneous ($b = -0.22, SE = 0.42, p = .61$) teams. This suggests that the direct effect of perspective taking is solely attributable to its effect on elaboration in the diverse condition.

The mediating role of information elaboration. Support for Hypothesis 3a requires a conditional indirect effect of diversity on creativity through elaboration in the perspective taking condition and the absence of such an effect in the non-perspective taking condition. In line with our theoretical arguments, the model allowed for a moderation of the first stage of the indirect effect (from diversity to elaboration) but not of the second stage (from elaboration to creativity; Model F, Edwards & Lambert, 2007).⁷ Coefficient estimates for the model's paths were obtained by extending the regression analyses that established the moderating role of perspective taking on diversity's effect on team creativity and on the mediator elaboration in support of Hypotheses 1 and 2. To test the effect of elaboration on creativity and the strength of the direct effect of the interaction of diversity and perspective taking on creativity after accounting for elaboration, we regressed creativity on diversity, perspective taking, their interaction, and elaboration. In this model ($R^2 = .40, p < .001$), elaboration significantly and positively predicted creativity ($b = 2.32, SE = 0.44, p < .001$), rendering the effect of diversity's interaction with perspective taking non-significant ($b = 4.49, SE = 2.38, p = .06$). To assess the magnitude of the indirect effect, we relied on bias-corrected confidence intervals based on 1,000 bootstrap samples. Conditional indirect effects were computed for both levels of perspective taking and considered significant if their 95% confidence interval excluded zero. Supporting Hypothesis 3a, there was a significant indirect effect of diversity on creativity through elaboration in the perspective taking condition ($b = 2.52, 95\% \text{ CI } [0.95, 4.63]$) but not in the non-perspective taking condition ($b = -1.86, 95\% \text{ CI } [-4.97, 0.12]$), and these conditional indirect effects differed significantly ($b = 4.39, 95\% \text{ CI } [1.67, 8.70]$).

Comparing the alternative mediators. To test the relative strength of different mediators posited in Hypothesis 3b, we repeated the analyses used to test Hypothesis 3a for each alternative mediator. Sharing the (fully shared) information about the theater did not mediate the effect of diversity on creativity in either the perspective taking condition ($b = 0.00, 95\% \text{ CI } [-0.32, 0.34]$) or the non-perspective taking condition ($b = -0.01, 95\% \text{ CI } [-0.49, 0.41]$). Sharing the (in diverse teams unshared) perspectives partially mediated the interaction of diversity and perspective taking. There was a significant positive indirect effect of diversity on creativity through sharing perspectives in the perspective taking condition ($b = 1.29, 95\% \text{ CI } [0.03, 3.05]$) but not in the non-perspective taking condition ($b = -0.05, 95\% \text{ CI } [-1.58, 0.84]$). Yet, diversity's interaction with perspective taking remained significant after adding the mediator sharing perspectives to the model ($b = 7.54, SE = 2.62, p < .01$). Lastly, there was no indirect effect of diversity on creativity through task conflict in either the perspective taking condition ($b = 0.02, 95\% \text{ CI } [-0.67, 0.77]$) or the non-perspective taking condition ($b = -0.87, 95\% \text{ CI } [-1.58, 0.84]$).

⁷ Testing an alternative model that allowed for a moderation of both stages of the indirect effect did not alter the results and showed no moderation of the indirect effect's second stage.

[-2.62, 0.03]). In line with Hypothesis 3b, the interaction between diversity and perspective taking exerted a stronger effect on information elaboration (see Table 2, Model 2a) than on each of the other plausible mediators (see Table 2, Models 2b, 2c, and 2d), and when examining all mediators simultaneously as predictors of team creativity (see Table 2, Model 3b), the only mediator exhibiting a significant unique relationship with team creativity was elaboration. To fully test Hypothesis 3b, we specified a multiple mediated moderation model (Preacher & Hayes, 2008) with simultaneous indirect effects through all four mediators.⁸ This model yielded a significant indirect effect of the interaction between diversity and perspective taking through elaboration ($b = 5.55$, 95% CI [1.87, 11.09]) but not through task conflict ($b = -0.15$, 95% CI [-1.44, 0.59]), sharing information ($b = 0.10$, 95% CI [-1.18, 1.84]), or sharing perspectives ($b = -0.57$, 95% CI [-2.94, 0.64]). The confidence intervals for the contrasts between the specific indirect effect through elaboration and those through task conflict ($C = 5.71$, 95% CI [1.82, 11.26]), sharing information ($C = 5.45$, 95% CI [1.47, 11.26]), and sharing perspectives ($C = 6.13$, 95% CI [1.87, 12.31]) excluded zero.

Discussion

We examined what team members can do to help their team to benefit from its diversity on creative tasks, as is frequently predicted (Jackson, 1992; West, 2002) but not consistently shown (Hülshager et al., 2009). The need to integrate different perspectives to achieve creative synergy points to the other-referential process of perspective taking as a potent factor in explaining when and how diverse teams perform more creatively. Our findings support the hypothesized moderating role of perspective taking on the effect of diversity on creativity and the proposed mediation of this moderated effect through information elaboration.

Theoretical Implications

By combining the literatures on diversity and perspective taking, we outline a set of conditions that help teams integrate their diverse viewpoints. Our findings thus add to the CEM as they help to clarify the contingencies that shape the inconsistent effects of diversity (van Knippenberg & Schippers, 2007) and point to an additional class of moderators of diversity's effect on elaboration and team outcomes beyond the individual (e.g., Kearney et al., 2009) and task characteristics (Kratzer et al., 2006) proposed by the CEM. Our results suggest the value of also considering team- and other-focused processes as moderators, which may be especially relevant when outcomes require integrating diverse cognitive resources. Moreover, as these team-focused processes are arguably more proximal to team information processing, they may also underlie the effect of other factors that have been found to moderate diversity's effect on team creativity. For example, transformational leadership (Shin & Zhou, 2007) may affect perspective taking as individualized consideration entails that leaders try to understand their followers' viewpoint (Moates & Gregory, 2008) and thus function as role models. Likewise, seeing value in diversity may promote diverse teams' performance (Homan et al., 2007) by raising the motivation to invest cognitive effort in considering their teammates' perspectives.

In addition, we were able to show that information elaboration mediates the positive effects of diversity on team creativity in the perspective taking condition, thus extending prior findings suggesting its benefit for other team outcomes (Homan et al., 2008, 2007; van Ginkel & van Knippenberg, 2008, 2009). Whereas idea generation is widely studied (Paulus & Nijstad, 2003), research is only starting to develop an in-depth picture of the potentially distinct processes that teams use to transform ideas into a final solution (Lingo & O'Mahoney, 2010). Our study thus adds to a more complete account of how teams perform creatively. We also ruled out that task conflict or information sharing can account for our effects. This helps to resolve an ongoing theoretical debate (van Knippenberg et al., 2004) in which different mediators are theoretically contrasted but not empirically compared. Our empirical comparison of the alternative mediators also provides a more stringent test for the posited role of elaboration, as we can show its benefits compared to viable alternatives rather than against the absence of an effect (van de Ven, 2007).

By studying the effect of perspective taking on teams, we add to a growing understanding of its effects beyond the well-established individual-level and dyadic outcomes (Parker et al., 2008). Earlier team research shows that perspective taking facilitates implicit coordination (Rico et al., 2008) and shapes conflict perceptions (Sessa, 1996). Yet, the only study we know of that links perspective taking to creativity operates at the individual level (Grant & Berry, 2011) and does not speak to its effect on team processes and outcomes in collaborative settings. Studying perspective taking as a team-level construct for which members of homogeneous and diverse teams exhibited high consensus also yields promising avenues for future research.

As a cognitive process, perspective taking may not always acquire the properties of an emergent team process. Instead, individuals might under certain conditions continue to vary in their perspective taking efforts. Studying these conditions and the effects of perspective taking diversity may help to delineate the boundary conditions of our findings. Future studies could for instance examine whether all members need to engage in this cognitively taxing process (Roßnagel, 2000) to ensure its benefits. This would also echo calls to treat team member (dis)agreement as a theoretically meaningful variable rather than a mere methodological issue (DeRue, Hollenbeck, Ilgen, & Feltz, 2010). Likewise, the temporal dynamics of perspective taking and its effects warrant further investigation. Perspective taking is unlikely to occur on an ongoing basis raising the question of whether it is especially beneficial at specific incidents in a discussion such as in case of disagreements or when reacting to others' ideas. Furthermore, if perspective taking helps uncover diverse perspectives and build a shared mental model (Rico et al., 2008), its benefits may vary across project phases and diminish with growing team tenure.

Given our focus on diversity's effect on team creativity, we specified our model at the team level. Yet, studying perspective taking in a multi-level context could expand our knowledge on its multi-faceted effects. Recent findings show that whether members

⁸ Three multiple mediated moderation models comparing each alternative mediator individually to elaboration also showed only a reliable indirect effect through elaboration. Further details are available from the first author upon request.

benefit from their teams' cognitive diversity for their individual creativity depends on their creative self-efficacy and transformational leaders (Shin, Kim, Lee, & Bian, 2012). In this vein, perspective taking may be a tool for individuals to harness their team's cognitive resources for their own creativity. Conversely, organization-level variables, such as reward structures, may affect team members' motivation to engage in perspective taking and to use the gained insights for the collective benefit.

Lastly, our findings raise the question under which conditions perspective taking occurs in diverse teams. As we manipulated perspective taking and diversity orthogonally, we cannot speak to this question, and prior findings informing it are mixed. On the one hand, anticipating differences in opinion has been linked to a more accurate understanding of another's thoughts (Tjosvold & Johnson, 1977). On the other hand, when team members are increasingly dissimilar, the cognitive effort of perspective taking may rise and be less willingly extended. In this vein, a recent study links perceived coworker dissimilarity to less positive attributions and emphatic concern (as direct effects of perspective taking; H. M. Williams, Parker, & Turner, 2007). In sum, it seems that diversity may at times hinder perspective taking. Clarifying the specific nature of this relationship is important, as perspective taking may improve the social dynamics in teams (Parker et al., 2008) and limit intergroup bias (Galinsky & Moskowitz, 2000). Combined with our results, this suggests that perspective taking may also mitigate the potential negative effects of diversity. Further research—directly measuring team viability, cohesion, and emotional conflict—is needed to establish whether perspective taking is indeed doubly useful for diverse teams.

Practical Implications

When faced with the question of how to boost the creativity of teams in which members have divergent approaches to the task, our results suggest that trying to foster perspective taking is one viable answer. Prior research indicates that perspective taking may be influenced by situational factors and can be trained (Parker et al., 2008; Sessa, 1996). Through its focus on perspective taking, the current study hence directs attention to a factor that is at least partially under managerial control. In order to maximize the creativity of diverse teams, managers and team leaders can consider both a direct training of perspective taking as well as a change in task and job characteristics (Parker & Axtell, 2001) to indirectly increase perspective taking. Yet, our findings indicate that perspective taking is not equally effective across all teams. Rather, the lack of a positive effect on homogeneous teams suggests that its benefits may be limited to situations in which team members have different viewpoints. Interventions in highly homogeneous teams should thus focus on increasing the variety of a team's cognitive input. Here, perspective taking may still play a role if it is directed at persons with different viewpoints outside one's team.

Moreover, our results not only present elaboration as an antecedent of team creativity but also highlight the importance of going beyond information sharing and of creating a constructive debate of the knowledge and perspectives instead of disagreements about them *per se*. Besides raising awareness of the importance of elaboration, managers may also support it by creating conditions that prior research shows facilitate elaboration in diverse teams.

Those include pro-diversity beliefs (Homan et al., 2007), a reward structure inducing a superordinate identity (Homan et al., 2008), and a shared task-understanding (van Ginkel & van Knippenberg, 2008).

Limitations and Directions for Future Research

This study was designed to test the causal effects of a set of antecedents on team creativity. The experimental procedure bolsters our confidence in the internal validity of our findings and allowed us to test the effect of two manipulated factors on the rated creativity of one comparable team product to show the mediating role of a video-coded team process. Although establishing the external validity of our findings was not our main aim (Mook, 1983), the important question of whether our results generalize to other settings can ultimately only be addressed by a series of systematic replications. Yet, there are arguments to suggest that our findings may hold across a broader range of contexts and operationalizations. In general, meta-analyses on a variety of psychological effects show that effect sizes obtained in the laboratory and field correspond substantially (Anderson, Lindsay, & Bushman, 1999). In particular, a recent meta-analysis on the diversity-performance link (including creativity) across 132 studies found no reliable effect of study setting (laboratory vs. field; van Dijk, van Engen, & van Knippenberg, *in press*). Likewise, there has been consistent support for elaboration as a mediator of the benefits of diversity across laboratory (Homan et al., 2007; van Ginkel & van Knippenberg, 2008, 2009) and field studies (Kearney & Gebert, 2009; Kearney et al., 2009) and various operationalizations of diversity. Regarding the role of perspective taking, recent results indicate its benefits for team reflexivity (Calvard, 2010), which has been linked to elaboration (van Ginkel & van Knippenberg, 2009).

Another potential limitation arises from our choice to manipulate diversity of perspectives as an underlying element of different diversity attributes across situations. Although we can rule out that our effects are instead caused by other, specific diversity attributes or faultlines formed by them (see Footnote 4), it is important to explore whether our model holds for other diversity types and combinations. Based on our rationale that the task-relevance of diversity depends on the situation, we would propose that the moderating role of perspective taking extends to specific diversity attributes insofar as they entail different approaches to the task. Likewise, recent work links the effects of deep-level diversity to the existence of surface-level diversity (Phillips & Loyd, 2006). In line with this finding, one might propose that surface-level diversity may signal deep-level diversity and thus stimulate the exploration of alternative viewpoints, whereas a lack thereof may lead to the erroneous assumption that perspectives align and stifle perspective taking. Moreover, our manipulation of diversity resembled the concept of functional assignment diversity, as it focused on the diverse, role-based accountabilities but not the experience members had with their role. Exploring the impact of experience would be interesting, as contradictory arguments can be raised regarding its effect on perspective taking. Whereas research on cognitive entrenchment (Dane, 2010) suggests that growing expertise may come at the expense of reduced flexibility, others argue that effective perspective taking requires clear, identifiable per-

spectives (a conceivable correlate of more role experience; Boland & Tenkasi, 1995).

Moreover, unlike many types of job-related diversity that also entail differences in knowledge, our diversity manipulation focused on team members' perspectives but kept the information they received constant so as to avoid confounding differences in perspectives with those in knowledge. Additional differences in knowledge can be argued to strengthen the effect of perspective taking. Research shows that teams often fail to uncover unshared information (Stasser & Titus, 1985), and studies on the mediating role of elaboration stress that this process is especially effective with regard to unshared information (e.g., Homan et al., 2007). Thus, to the extent that perspective taking not only mobilizes diverse perspectives but also helps uncover unshared information, it should put diverse teams at an even bigger advantage compared to diverse teams that do not engage in it. As such, our manipulation seems to provide a conservative test of perspective taking as a moderator of the effect of diversity on creativity. However, whether perspective taking indeed is of higher value for teams in which members also have diverse knowledge needs to be tested through future research.

Finally, our diversity manipulation might have induced different levels of cognitive load for members of homogeneous and diverse teams. We tried to minimize this possibility by matching the length of instructions and keeping the amount of information about the theater constant across participants. Yet, as small differences in cognitive load are theoretically possible, we tested whether or not these differences affected individuals' ability to perform the task. We coded all initial individual ideas for their creativity. Sensitivity analyses revealed no systematic differences in the average or maximum creativity of these ideas (all $F_s < 1$), indicating that if our manipulation caused differences in cognitive load, they did not seem to interfere with the task.

Conclusion

The importance of team creativity is widely recognized, yet our knowledge of how teams optimally use their resources for higher creativity is limited (George, 2007). Our results provide an important step toward building our understanding of this phenomenon. We outline the role of perspective taking in helping diverse teams to elaborate on their perspectives and information to develop more creative solutions. In sum, our findings suggest interesting avenues for future research and useful implications for practitioners who seek to enhance their teams' creativity.

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(Appendix follows)

Appendix

Coding Scheme Information Elaboration

The definition of information elaboration as the exchange, individual level processing, discussion, and integration of different perspectives and information specifies a set of interrelated processes that are logically ordered in a way in which the higher order sub-processes presuppose the lower order sub-processes. In line with this definition, elaboration was coded on a scale from 1 to 7 that indicates the extent to which teams engage in the full set of interrelated processes that jointly define elaboration. A score of 1 was given to teams that immediately started developing ideas with little or no systematic discussion of the information and/or the different perspectives. A score of 2 was given to teams in which members expressed most of the information about the theater and the different perspectives, but this was largely ignored by the fellow team members. Teams received a score of 3 when the information about the theater and the perspectives was expressed and acknowledged by some but not all team members. Teams received a score of 4 if all members acknowledged the information

and perspectives shared by their team members, but no attempts were made to jointly discuss or elaborate on this information. A score of 5 was awarded when all the previous conditions for a score of 4 were met, and teams additionally engaged in a constructive joint discussion in which different pieces of information and perspectives were used to elaborate on each other's ideas and suggestions. Teams were assigned a score of 6 if they additionally developed suggestions to combine at least two of the different perspectives and information sources. Finally, a score of 7 was awarded to teams that fulfilled the criteria of scale level 5 but developed suggestions to integrate all three perspectives or three different information sources on the task.

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