

WHEN DIVERSITY WORKS

The Effects of Diversity on Team Learning and Team Performance

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Diversity is the art of thinking independently together

- Malcolm Stevenson Forbes

Abstract

The present study examined the effects of two types of perceived diversity, i.e. social category diversity and functional diversity, on team learning and team performance in health care teams. In addition, this research examined if the presence of a relational identity orientation among the team members could buffer potential negative effects of diversity. Results provided support for the assumption that perceived social category diversity has a negative impact on team learning, as well as the team's performance. Perceived functional diversity, on the other hand, positively influenced the processes of team learning and team performance. In addition, team learning appeared to partially mediate the impact of diversity on team performance. Finally, this study indicated that the presence of a relational identity orientation inhibited the negative effects of surface level heterogeneity. However, contrary to our expectations, it also seemed to buffer the positive impact of functional diversity on team learning. The results are discussed in an organizational context and suggestions are made for future research.

Keywords: DIVERSITY, TEAM LEARNING, TEAM PERFORMANCE, RELATIONAL IDENTITY ORIENTATION

Samenvatting

De huidige studie onderzocht de effecten van twee soorten waargenomen diversiteit, namelijk categorisch sociale diversiteit en functionele diversiteit, op team leren en op team prestaties binnen teams werkzaam in gezondheidszorginstellingen. Daarnaast is er in dit onderzoek nagegaan of de aanwezigheid van een relationele identiteit oriëntatie bij teamleden potentiële negatieve effecten van diversiteit kon bufferen. De resultaten steunden de veronderstelling dat waargenomen sociale categorische diversiteit een negatief effect heeft op team leren, evenals de prestaties van het team. Waargenomen functionele diversiteit, aan de andere kant, beïnvloedde de processen van teamleren en teamprestaties juist op een positieve manier. Bovendien bleek team leren de invloed van diversiteit op de team prestaties gedeeltelijk te mediëren. Ten slotte, deze studie toonde aan dat door de aanwezigheid van een relationele identiteit oriëntatie de negatieve effecten van sociale categorische diversiteit werden weggenomen. Echter, in tegenstelling tot onze verwachtingen, leek het positieve effect van functionele diversiteit op team leren gebufferd te worden door de aanwezigheid van een relationele identiteit oriëntatie. De resultaten worden besproken in een organisatorische context waarbij suggesties worden gegeven voor toekomstig onderzoek.

Trefwoorden: DIVERSITEIT, TEAM LEREN, TEAM PRESTATIE, RELATIONELE IDENTITEIT ORIËNTATIE

When diversity works: the effects of diversity on team learning and team performance

Every other week, during the FIA Formula One racing season, 600 million people worldwide watch constructor teams at work preparing and managing their team to compete in a highly competitive work environment. These teams are expected to get work done efficiently and effectively on time and under budget. The different team members have to know how to work together and get the group's work accomplished. Their potential of learning and performing determines to what extent their organization is able to cope with a continuously changing work environment.

This is a vivid example of how teams can manage a project. In such cases, as well as in more regular situations, teams are being called upon to provide organizations with new solutions. The members are expected to learn how to structure themselves, adjust to new situations, coordinate different tasks at hand and put these decisions into action. Since work environments have become more and more complex, different perspectives are needed. Therefore, diversity in teams has become to play a major role in organizations nowadays (Williams & O'Reilly, 1998). Through an increase in knowledge, expertise and perspectives, diverse teams may produce more creative and innovative solutions than homogeneous groups can and are able to provide the organization with different insights and ideas (Cox, Lobel, & Mcleod, 1991). However, research has shown that team members with divergent perspectives have more difficulty to be regarded as legitimate group members (Mannix & Neale, 1995). When there is no work environment present in which distinctive team members can share their opinions they will refrain from interacting. Diversity therefore also has proven to result in social divisions and negative outcomes that may reduce the team's performance (Milliken & Martins, 1996). Thus, research on the effects of diversity on team processes still has not revealed conclusive results. To advance our understanding of the effects of work group

diversity on team outcomes we will examine a model (see Figure 1), which elaborates on the effect of group diversity on team learning. We will then look upon the effect of team learning on group performance, highlighting the possible implications for diversity research.

Team Learning

Social and organizational psychologists have started to examine the concept of team learning more intensively since the beginning of this decade. Team learning has been defined in many ways (see Jehn & Rupert, 2008, for overview), focusing on different aspects such as the outcome as well as the process of learning. Ellis et al. (2003), for example, proposed that team learning is “a relatively permanent change in the team’s collective level of knowledge and skills produced by the shared experience of the team members” (p. 822) which stresses the *outcome* of team learning as it leads to a change of knowledge resulting from team member interactions.

Edmondson (1999) defined team learning differently as “the exploration of knowledge through experimentation, the combination of insights through reflective communication, and the expectation and specification of what has been learned through codification” (p. 353). She focused primarily on the *processes* through which team learning is established.

In the present study we define team learning as a process of reflection and interaction, in which team members actively acquire, process, and share knowledge and information, in order to improve the team’s performance (Argote et al., 2001). This definition includes both the outcomes and processes of group interaction. In addition, the focus in this definition of team learning is also on learning about other team members as individuals, i.e. social learning, which has proven to be an important component of team learning as well besides outcomes and processes of team learning (Jehn & Rupert, 2007). In line with Jehn and Rupert, we therefore relied on a three component framework of team learning. We will elaborate on these different components in the following section.

Components of team learning

Team learning is an active process (Jehn & Rupert, 2008). To be efficient, it is necessary for team members to actively search for possible solutions when facing new situations. In such situations they have to choose the best solution and put their ideas into action, which in the end should meet the desired outcomes. In order to accomplish this, members have to learn about the exact contents of their task. *Task learning* is the process of improving the team's understanding of the content of the task (Jehn & Rupert, 2008). By sharing and reflecting upon knowledge, ideas and insights through interaction with each other, the team will improve its performance. Argote et al. (2001) argue that through interaction team members share task relevant information with each other. This will lead to a deeper understanding of what the job really entails. For example, in Formula One racing each racing team consists of a team principal, a driver, engineers and technicians who work together to get the most out of the racing car. In improving the car's performance the driver, team principal and crew come together in meetings in which they put forth their specific areas of expertise and develop a systematic procedure to design a competitive car. In this process insights and different ideas are being shared that may lead to a deeper understanding of the job contents.

Interacting not only leads to better task relevant knowledge, it may also lead to better process learning. *Process learning* is the process of how team members interact through which work routines are created and procedures about how to organize their work are developed (Jehn & Rupert, 2008). The primary focus of this process is that team members get to know about how to do their work efficiently (Gibson & Vermeulen, 2003). Based on exchanged information within the team, each member has improved knowledge about who to turn to for relevant information. Jehn and Rupert refer to the development of a transactive memory in which the team members create a system where important information is stored

and recalled. Knowledge of each team member is combined with a shared awareness about who has the necessary skills and abilities. When this system is used properly it will lead to improved team outcomes. Applying this to our example of the Formula One team: when performing in a race, each team member has to know quickly who to turn to for solutions when facing problems with the tires, aerodynamics of the car or other problems of that nature. The car will experience considerable setback against the competition when this knowledge is not available and the team will fail in achieving its goals in the end. By working together team members get to know about who has what specialization and which team members have access to what information. It will ensure better insight for the employees and accordingly it will facilitate work.

In addition to task- and process learning, another type of team learning may have an important influence on the team's outcomes. Getting to know about other team members' personality characteristics has proven to be a positive predictor of creating team cohesion, attitudes and team outcomes (Anderson, 2006). Also learning about each other's backgrounds and social lives may facilitate in the growth of friendship relationships. These relationships can have an important effect on group effectiveness (Rispens, 2006). This process through which team members get to know each other better as individuals and in which they learn to interpret each other's behavior in the context of personal life and personality is referred to as social learning (Jehn & Rupert, 2008). Working in a Formula One team means working in a stressful environment including financial pressure and time limits. Tense situations can develop in which conflicts may arise. Knowing each other personally may decrease or prevent this and may very well help in dealing with stressful environments.

The aforementioned definitions indicate that ideas and insights are being shared among team members, which leads to improved team learning. This sharing of information, while the group is working on its task, simultaneously helps to ensure optimal levels of team

performance (Stasser, 1992). Also, Mannix and Neale (2005) indicated that “the role of the distinctive individual or individuals in influencing other members of a team, and how they interact with other members to exert that influence, are particularly important in predicting a team’s performance” (p. 46). It determines the context for the team member’s behavior and plays an important role in group processes and performance. This indicates that the effects of team learning are highly related to team performance. Therefore, in the following, the potential effects of diversity on team learning similarly are linked to team performance.

Group Composition

The extent to which teams have the potential to learn partly depends on how teams are composed (Jehn & Rupert, 2008). We define a team as a small group of people who are committed to a common purpose, goals and working approaches for which they hold themselves mutually accountable (c.f. Katzenbach & Smith, 1999). Much research on the composition of teams has focused on the influence of homogeneity and heterogeneity within working teams. Diversity in its broadest sense has been defined as the perception that fellow group members are different (Jackson, 1992; Mannix & Neale, 2005). Literature on diversity has predominantly distinguished between social category diversity, which are observable or readily detectable attributes such as race or ethnic background, age, or gender and functional diversity. Functional diversity refers to less visible or underlying attributes such as education, technical abilities, functional background and tenure in the organization or socioeconomic background (Cummings et al., 1993).

A reason for making this distinction is that both forms of diversity can lead to different underlying processes and different learning outcomes. Visible differences between individuals can elicit responses that can be ascribed to biases, prejudices or stereotypes. Diversity in less visible characteristics however, can result in significantly different perspective taking on key

issues and problems through different experiences and ideas (Jackson et al., 1991). We will elaborate on these underlying processes in the following section.

Perceived social category diversity, team learning and team performance

Research on social category diversity within organizations has mainly focused on the Social Identity Theory (SIT; Turner, 1982) or on the Self-Categorization Theory (SCT; Tajfel, 1981; Turner, 1987) which both offer insights in the processes of interaction between members from different social groups (Mannix & Neal, 2005). SIT proposes that an individual's identity is determined by the groups to which he or she belongs. That is, people derive self-esteem from their membership and it is therefore important that the group is highly valued by him or her. The term social identity also refers to that part of an individuals' self concept that is derived from this group membership. Accordingly individuals have a desire to maintain a positive self concept, which they acquire through a process of social comparison (Hogg & Abrams, 1988). SCT hereby states that people categorize themselves into an ingroup or outgroup by emphasizing the perceived similarities of the target to the characteristics of the ingroup or outgroup (Hogg & Terry, 2000). As these characteristics match, cooperation between the different group members will improve. Taking these concepts into consideration we can understand why social category diversity has often been linked to an increase in relationship conflicts (Jehn et al., 1999) and work-related task conflicts (Pelled et al., 1999) within teams.

First of all, as social category characteristics are fundamental to categorization processes, surface level diversity may lead to social divisions (Milliken & Martins, 1996). When team members in a Formula One racing team, for example, perceive each other as different mainly based on surface level characteristics, this may promote unfriendly interactions as well as the disliking of other team members. Individuals who feel excluded may avoid discussions and simultaneously reduce their sharing of viewpoints. This lack of

communication will impede the sharing of task relevant knowledge, which limits the potential of task learning.

Social category heterogeneity is also likely to influence process learning. Members who differ on certain social category characteristics probably have different experiences and values (Dougherty, 1992). Different experiences and values consequently may result in different opinions in how to coordinate the task at hand. This will enhance the use of separate routines and procedures in accomplishing its tasks, which will prevent team members from learning about process relevant knowledge.

Lastly, researchers have argued that social identity processes and social categorization processes may lead to higher levels of relationship conflict (Jehn et al., 1999). The presence of social diversity characteristics may lead to discomfort and tensions between different team members. Individuals may develop a preference for similar team members and unsociable behavior against dissimilar team members may be supported (Henry et al., 2005). Consequently, we expect perceived social category diversity to have a negative effect on social learning.

Similar to this reasoning, some studies have found social category diversity to have a negative effect on team performance (Jackson et al., 2003). Perceived social category diversity will lead to negative intragroup processes (Mannix & Neale, 2005) and team members will therefore be less willing to cooperate with others. Following this, we expect perceived surface level diversity to have a negative impact on team performance. Ellis et al. (2003) indicated that team learning results in a change of knowledge through the sharing of information, which can be seen as an aspect of team learning (Edmondson, 1999). According to Edmondson this change of knowledge will improve the team's capability to adapt to its environment and thus perform better within this environment. It shows that the process of team learning influences the effect of diversity on the performance of the team. This is also in

line with research of Wilson (2007) who has found team learning to be an important underlying process in promoting team performance, innovation and effectiveness of the organization. Based on this discussed research, we expect team learning to have a mediating role in the relationship between social category diversity and performance of the team.

In sum, we expect that social category diversity impedes the process of team learning. Specifically, an increase in perceived heterogeneity in social category characteristics will have a negative effect on a) task learning, b) process learning and c) social learning. Similarly, perceived social category diversity will have a negative impact on team performance. And lastly, team learning is expected to mediate the relationship between perceived social category diversity and team performance.

Hypotheses 1: Perceived social category diversity will have a negative effect on a) task learning, b) process learning and c) social learning.

Hypotheses 2: Perceived social category diversity will have a negative impact on team performance.

Hypotheses 3: The negative relationship between social category diversity and team performance is mediated by team learning.

Perceived informational diversity, team learning and team performance

As previously mentioned, informational diversity refers to heterogeneity in less visible characteristics, such as education and functional background (Cummings et al., 1993). Because diversity in underlying attributes is not easily detected, we think that the effects of perceived functional diversity on team learning will be different compared to perceived social category diversity. Functional diversity is to a greater degree work related, unlike social category diversity that focuses more on social relations between individuals. The idea is that functionally diverse teams will possess a more extensive range of task-relevant knowledge

compared to homogeneous teams. In addition, different opinions and perspectives will force the team to discuss task-relevant information more thoroughly; teams will not stop debating when they initially agree on work-related decisions, which is a great advantage (Knippenberg et al, 2004). Simultaneously, different perspectives will lead to more creative thinking and solutions (Bantel & Jackson, 1989). We think these open discussions of different viewpoints across team members will ensure favorable environments for team learning to occur.

More specifically, because these discussions will be task-related we think that perceived functional diversity will have a positive effect on task learning. This exchange of task relevant knowledge will facilitate the development of the previously mentioned transactive memory (Jehn & Rupert, 2008), which leads to better insights in job related processes. Team members will learn about each other's strengths and weaknesses and they will consequently know whom to turn to for relevant information. Therefore, we expect perceived informational diversity to positively influence process learning. Lastly, we expect that these task-related discussions will not have any influence on social learning. Since the focus will be on task related topics, team members will not specifically learn about each other's personal lives.

Similarly, perceived functional diversity seems to benefit the team's performance through an increased range of knowledge, expertise and perspectives. When these different opinions are well managed and discussed, the team will have more potential in creating innovative solutions (Ancona & Caldwell, 1992). In line with this reasoning we expect functional diversity to have a positive impact on team performance. Since performance partly depends on the learning ability of the team, we also expect team learning to mediate the relationship between functional diversity and performance.

In sum, we expect that perceived informational diversity will have a positive influence on a) task learning and b) process learning, and will have no effect on c) social learning. In

addition, we expect perceived informational diversity to have a positive effect on team performance. Team learning will mediate the relationship between functional diversity and team performance.

Hypotheses 4: Perceived informational diversity will have a positive effect on a) task learning and b) process learning but no effect on c) social learning.

Hypotheses 5: Perceived informational diversity will positively influence team performance.

Hypotheses 6: The relationship between perceived functional diversity and team performance is mediated by team learning.

In sum, we think that work group diversity can have both positive and negative consequences. When differences in expertise and functional backgrounds are salient to the team members it may potentially lead to positive learning and performance outcomes. When, however, differences in social category characteristics are prevalent we expect diversity to result in negative team learning outcomes and reduced performance. The key question is how the negative effects of perceived social category diversity can be reduced. Past research (Van der Zee & Van der Gang, 2007) has indicated that individual difference variables can be important predictors in influencing positive affective reactions in a diverse working context. Recently, Vos and Van der Zee (2009), for that matter, have argued that a relational identity orientation among individuals, which refers to the extent to which individuals frame social contexts in terms of relationships with others (Brewer & Gardner, 1996), may also influence outcomes in a diverse working context. In the next section, therefore, we will argue that a relational identity orientation may have a positive impact on the negative relationship between social category diversity and team learning.

Relational identity orientation and team learning

When differences in social category differences are prevalent team members will have lower willingness to cooperate with each other (Vos & Van der Zee, 2009), which may result in negative team learning outcomes and reduced performance. We suggest that an important explanatory factor in this regard is the identity orientation level, a framework proposed by Brewer and Gardner (1996). They propose that people can have three different conceptions of themselves in terms of their evaluations of group memberships – i.e. a personal, relational and collective identity orientation. A *personal identity orientation* is a conception of oneself in terms of individual traits and characteristics and is primarily accompanied by self-interest motivations. A *relational identity orientation* refers to a person's conception of the self in terms of interpersonal relationships. Positive feelings about the self will be obtained through developing close relationships with other individuals. Lastly, when individuals have a *collective identity orientation* they describe themselves in terms of characteristics that are connected to the group. Their self concept is based in terms of group memberships.

Brickson (1998) indicated that as individuals with a relational identity orientation are more focused on maintaining mutual relationships with others, compared to a personal or collective identity orientation, cognitive understanding of other team members who differ on surface level characteristics may be promoted. More positive feelings may grow toward other members who have different norms and values, which may result in friendly behavior and less mutual tensions. Previous research has shown that a relational identity orientation enhances cooperation tendencies in diverse work groups (Vos & Van der Zee, 2009). In a similar vein this may encourage the sharing of relevant knowledge and promote discussions among the team members. To realise this and to reduce thinking in terms of categories, which impedes the process of team learning, we expect that a relational identity orientation will have a moderating effect on the relationship between social category diversity and team learning.

More specifically, we expect that the negative effect of perceived social category diversity on the different components of team learning will be buffered by a relational identity orientation.

Hypotheses 7: Relational identity orientation has a positive moderating effect on the negative relationship between social category diversity and the different components of team learning.

Method

Sample and procedure

Data for this study were collected among members of teams who worked in 25 different care institutions in the Netherlands. In total 339 people were asked to participate, from which 259 members working in 44 different teams responded (response rate = 76%). The teams ranged in size from 4 to 15 people with an average of 5.9. The mean age of the respondents was 41.9 years (SD = 11.6) and 22 percent of the respondents were men. There was substantial variation in tenure: 8 percent administrative; 25 percent practical care; 10 percent management; 40 percent teaching and 17 percent of the respondents worked in supportive tenures. All the information for this study was gathered through printed questionnaires. The teams that participated were chosen in consultation with a network organization located in the north of the Netherlands. The coordinators of the teams were approached and asked if they were willing to cooperate in this study. An email was sent to them in which the nature of the research was explained. If they agreed to participate, they were asked to inform their team members. Next, printed versions of the questionnaire were sent to the teams which were filled out manually. Once the respondents had completed the survey, they sent the results back to the researcher by mail. Participation was voluntary and confidentiality was guaranteed.

Measures

The questionnaire consisted of open-ended questions and self-report Likert-type items (1= *strongly disagree* and 7= *strongly agree*) that we randomly ordered to alleviate bias.

When appropriate, we averaged the items for the scale to produce a composed score for each team member.

Perceived diversity. To measure the perceptual *social category diversity* we used three items developed by Ellemers, Kortekaas and Ouwerkerk (1999): ‘The members of this team have many resemblances’, ‘The members of this team are totally different from each other’ and ‘The members of this team are very similar to me’ ($\alpha = .68$). We reversed scored items 1 and 3.

We added three items to measure perceptual *functional diversity* (Oosterhof, 2008). These items are: ‘Each member of this team has expertise in different areas’, ‘Each team member has specific knowledge of a part of the task of the team’, ‘Each team member has specific knowledge of the task of the team, which no other team member has’. Cronbach’s alpha was .61.

Team learning. To measure team learning we used scales for task learning, process learning and social learning that were developed by Rupert and Jehn (2006) and adjusted by Rupert and Jehn in 2008. The 5 items used for measuring *task learning* measured how team members felt that knowledge, expertise and ideas were shared among the team members with regard to the tasks that had to be performed. The scale of task learning consisted of items such as: ‘By cooperating as a team we learn more about the content of the task’, ‘As a team we improve our performance by learning about the task’ ($\alpha = .84$).

Process learning was measured by 5 items, which measured the extent to which the team members felt like their team learned about how their work should be organized and carried out. This scale consisted of items such as: ‘By discussing how to do our job we learn

how to improve our performance’ and ‘We adjust our work processes when they seem ineffective’ ($\alpha = .78$).

We measured *social learning* by using 7 items which measured the degree to which team members knew each other personally and how they thought this would affect their working conditions. Example items are: ‘We learn from each other about non-work related issues’ and ‘By knowing each other personally we improve our potential to perform as a team’. Cronbach’s alpha was .65.

A principal component factor analysis with varimax rotation on the items supported the division of team learning in task learning, process learning and social learning (Table 1). Item 4 on the process learning scale seemed to score low on the corresponding component so this item was deleted from the following analyses.

Insert table 1

Team performance. We relied on a team performance scale developed by Van der Vegt et al. (2003) to measure how the individual team members valued the performances of the teams. The questions consisted of twelve Likert scale items on which the respondent could rate the performances of the team on a scale ranging from 1 to 10 on topics such as quality of work, realizing deadlines, efficiency of mutual cooperation and the overall level of performance. Cronbach’s alpha was .94.

Relational identity orientation. A subscale of the *Identity Orientation Scale* was used developed by Vos, Van der Zee and Buunk (2009), which distinguishes between the three levels of conceptualizations of the self, namely personal, relational and collective self. The items that were used to measure relational identity orientation, in which the self conception is based on representations of relationship with others, consisted of items like ‘I like to be

valued by others who are important for me', 'I think that close others have much influence on my identity' and 'It is important for me to maintain social relations with others'. Cronbach's alpha was .75.

Results

Table 2 shows the number of participants, means, standard errors and correlations of all the relevant variables. Regarding social category diversity significant negative relations were found between social category diversity and the different components of team learning. More specifically, a negative relationship was found between social category diversity and task learning. Furthermore, social category diversity was negatively related to process learning as well as to social learning. Finally, social category diversity and team performance appeared to correlate negatively.

We found functional diversity to be positively related to team learning. Functional diversity showed significant positive relationships with task learning and process learning as well as with social learning. In addition, functional diversity was also positively related to team performance.

Insert table 2

Interestingly, table 2 clearly shows that there was no significant relationship present between social category diversity and functional diversity, which indicates that the perception of social category diversity and functional heterogeneity in the team function independently from each other.

We also found significant positive relationships between the different components of team learning and team performance. Task learning and team performance were positively related, as was process learning and team performance as well as social learning and team

performance. In sum, these correlation patterns appeared to be in line with our hypotheses. In the next section we will test our hypotheses more specifically.

Testing the hypotheses

First we are interested in what the influence is of both social category diversity and functional diversity on the different components of team learning and on team performance. Next, we will take a closer look on the possible moderating role of relational identity orientation on the relationship between both forms of diversity with the different components of team learning. Finally we will examine the mediating role of team learning on the relationship between social category and functional diversity and team performance.

To test hypotheses 1, 2, 4, 5 and 7 we made use of multiple regression analysis in which we added social category diversity, functional diversity and relational identity orientation as predictors in the first step to test the main effects. Subsequently, in step two, we tested the two-way interaction terms between the different variables. Finally, the three-way interaction term was added in step three. This integral model was used for each component of team learning as well as performance in which, before we tested the model, the predictors were standardized to minimize the possible consequences of multicollinearity (Aiken & West, 1991). Table 3 shows us the results of the analyses.

Perceived social category diversity. In accordance with our first main hypothesis, in which an increase in perceived heterogeneity in social category diverse characteristics will have a negative effect on the different components of team learning, significant negative effects were found for each of the components of team learning. More specifically, a negative effect was found for the influence of social category diversity on *task learning* ($B = -.07, p < .05$), which confirms hypothesis 1a. Higher perceived differences on social category characteristics will have a negative effect on task learning. An increase in perceived social category diversity also impeded *process learning* ($B = -.15, p < .05$), which is in line with

hypothesis 1b. And finally, an increase in perceived differences on social category characteristics negatively influenced social learning ($B = -.21, p < .001$). This confirms hypothesis 1c, which states that perceived social category differences will deteriorate social learning within the team. In addition, table 3 shows us that social category diversity negatively influenced *team performance* ($B = -.33, p < .001$). This is in line with hypothesis 2, which states that perceived social category diversity impedes the potential performances of teams.

Insert table 3

Perceived functional diversity. We expected functional diversity to have a positive influence mainly on task learning and process learning but not on social learning. Indeed our analyses showed support of a positive effect of functional category diversity on *task learning* ($B = .08, p < .05$). When diversity on the functional category is present, task learning within the team will improve (hypothesis 4a). Functional diversity also, in line with hypothesis 4b, had a significant positive effect on *process learning* ($B = .12, p = .001$). As expected functional diversity will promote process learning. Finally, we assumed that functional diversity will not influence the different team members' social learning (hypothesis 4c). However, the results indicated a significant positive effect of functional diversity on *social learning* ($B = .16, p < .001$). So it seems that functional diversity also aids to the process of social learning.

Finally, table 3 shows us that functional diversity seemed to positively influence the *performances of the team* ($B = .18, p < .01$) which confirms hypothesis 5.

Relational identity orientation as a moderator

We expected that a relational identity orientation would moderate the negative influence of social category diversity on team learning. As predicted a significant interaction effect was found between social category diversity and relational identity orientation on task learning ($B = .18, t = 2.63, p < .01$) and a marginally significant interaction effect was found on social learning ($B = .17, t = 1.84, p < .10$). Simple slopes analysis showed a consistent pattern of effects for scores on relational identity orientation for low (-1 SD) versus high (+1 SD) scores on relational identity orientation. More specifically, the negative influence of social category diversity on *task learning* appeared only to be prevalent for individuals that scored low on relational identity orientation ($B = -.29, t = -3.42, p < .05$). For individuals that score high on relational orientation orientation, the relation between social category diversity and task learning was not prevalent ($B = .03, t = .38, ns$). Furthermore, the negative relationship between social category diversity and social learning was also significant for members who scored low on relational identity orientation ($B = -.37, t = -4.64, p < .001$). However, when team members scored high on relational identity orientation this negative relationship disappeared ($B = -.14, t = -1.83, ns$). This pattern clearly indicates that a relational identity orientation buffers the negative effects of social category diversity on task learning and social learning. In other words, when a relational identity orientation is adopted by team members the negative influence of perceived social category differences on task and social team learning will disappear.

Interestingly, we also found an interaction effect of functional diversity and relational identity orientation on task learning and process learning. The significant positive influence of functional diversity on task learning was prevalent for members who scored low on relational identity orientation ($B = .29, t = 3.33, p < .001$). When, however, individuals scored high on relational identity orientation this positive effect disappeared ($B = .03, t = .33, ns$). The same pattern was also found for the relationship between functional diversity and process learning.

When scoring low on relational identity orientation, functional diversity had a positive effect ($B = .45, t = 5.27, p < .001$). But this significant effect was not prevalent when team members scored high on relational identity orientation ($B = .01, t = .16, ns$).

In addition, we also found that a relational identity orientation had a significant negative effect on the positive relationship between functional diversity and team performance ($B = -.14, t = -2.51, p < .05$). Simple slopes analysis showed a positive influence of functional diversity on team performance when individuals score low on relational identity orientation ($B = .36, t = 4.13, p < .001$). However, this effect disappeared when they score high on relational identity orientation ($B = .04, t = .53, ns$). These results indicate that focusing on maintaining close relationships with others may reduce the advantages of having different team members with unique task relevant knowledge on the performances of the team.

We can conclude from these results that the positive influence of functional diversity on team learning and performance will be lost when a high relational identity orientation is adopted by the team members. In sum, whereas a relational identity orientation seems to buffer the negative effects of the perception of social category diversity, it seems to impede the positive influences of perceived functional diversity on the different components of team learning and performance.

Team learning as a mediator

Hypotheses 3 and 6 propose that team learning functions as a mediator in the relationship between both forms of diversity and the performances of the team. We examined the possible mediating role of task, process as well as social learning for the negative relationship between social category diversity and team performance and the positive relationship between functional diversity and team performance. According to Baron and Kenny (1986) a mediation effect is realized when four conditions are recognized: first there

needs to be a relation between the predictor (diversity) and the mediator (task, process or social learning). Secondly, the predictor needs to be related to the dependent variable (team performance). Third, the mediating variable needs to be related to the dependent variable. And lastly, the effect of the independent variable on the dependent variable must decrease when controlled for the mediator.

Perceived social category diversity. Regarding the first and second condition, the previous described results show that social category diversity is significantly related to all three components of team learning and team performance. Furthermore, task learning, as well as process learning and social learning all had significant positive direct effects on team performance ($r = .47, p < .001$; $r = .56, p < .001$; $r = .36, p < .001$ respectively), indicating that the third condition is also met.

Table 4 shows the results of the mediation analyses of the fourth condition with regard to social category diversity. The relation between social diversity and team performance remained significant after being controlled for *task learning*, but the beta weight decreased from $-.49$ to $-.40$, in which 3.5 % of the explained variance can be accounted for by the indirect effect (Sobel's $Z = -2.00, p < .05$). This indicates that task learning partially mediated the relation between social learning and team performance.

Additionally process learning also mediated the relationship between social category diversity and team performance. The beta decreased from $-.49$ to $-.29$, accompanied with an explained variance of 3.9% accounted for by the indirect effect (Sobel's $Z = -3.85, p < .001$). Like task learning, *process learning* partially mediated the negative relationship between social category diversity on team performance.

Finally, with regard to social category diversity we examined the mediating role of *social learning*. Again the relation between social category diversity and team performance

was partially mediated: the beta decreased from $-.49$ to $-.38$ and in which 4.8% of the explained variance can be accounted for by the indirect effect (Sobel's $Z = -3.17$, $p < .001$).

Insert table 4

Perceived functional diversity. Previous described results indicate that functional diversity is significantly related to team learning and team performance. Additionally, task learning, as well as process learning and social learning all had significant positive direct effects on team performance ($r = .47$, $p < .001$; $r = .56$, $p < .001$; $r = .36$, $p < .001$ respectively).

Furthermore, we found that team learning partially mediated the relationship between functional diversity and team performance. Table 5 shows us the results of the analyses. *Task learning* partially mediated the relation between functional diversity and team learning; this relationship remained significant after being controlled for task learning (Sobel's $Z = 2.21$, $p < .05$). The beta weight decreased from $.28$ to $.18$, in which 2% of the explained variance was accounted for by the indirect effect.

Likewise, *process learning* partially mediated the relationship between functional diversity and team performance. The beta weight decreased from $.28$ to $.11$, where 2.8% of the explained variance was accounted for by the indirect effect (Sobel's $Z = 3.11$, $p < .01$).

Lastly, the relationship between functional diversity and team performance was partially mediated by *social learning*. The beta weight decreased from $.28$ to $.18$, in which 2% of the explained variance was accounted for by the indirect effect (Sobel's $Z = 2.67$, $p < .01$).

Insert table 5

In sum, the effects of diversity on the performance of the team seem to be partially affected by team learning. This applies to both social category diversity and functional diversity and its relationships to team performance.

Discussion

This study was aimed at obtaining more insight on the effects of diversity on group outcomes as team learning and team performance. Previous research mainly focused on how distinct categories of diversity can have a unique impact on group processes (Pelled et al., 1999). In contrast, this examination explicitly linked two types of diversity, i.e. social category diversity and informational diversity, to team learning and team performance. In addition, it was examined if the presence of a relational identity orientation among the team members could buffer potential negative effects of diversity.

The results revealed that when team members perceive each other as different on surface level characteristics like gender or age, diversity negatively influenced the team's ability to learn and their performance. However, as expected, when team members focus on deeper level characteristics diversity was found to promote team learning and positively influenced performance of the team. What we initially can conclude from these results is that, in line with previous findings (Milliken & Martins, 1996; Jehn et al., 1999), it confirms the importance of recognizing that social category diversity and functional diversity yield different group outcomes.

Effects of Identity Orientation on Team Outcomes

Team learning processes and the performance of the team will decline when team members perceive each other as different on highly visible characteristics. This may be due to the emergence of social divisions and less interaction among the individuals (Mannix & Neale, 2005) or increased conflict (Jehn et al., 1997). Perceived informational differences among team members, however, benefit the team as the individuals have more access to a

greater variety of expertise and ideas. As these kinds of differences are less prone to categorical thinking they may promote the exchange of work related knowledge. These discussions in turn will positively influence team learning processes and the team's performance. To clarify the mixed results from previous studies, this examination indicates that both forms of diversity should be taken into account as they both independently exert their own influences on team outcomes. Moreover, the focus should be on moderating or mediating variables that can enhance the benefits of functional diversity and reduce the possible negative influences of social category diversity. As Mannix and Neale (2005) indicated: "the actual evidence for input-process-output linkage is not as strong as one might like" (p. 32).

In accordance with this, the results support our claim that when a team consists of relationally oriented individuals the negative impact of surface level diversity will disappear. It means that focusing on building and maintaining close relationships with other coworkers may stimulate a positive working environment for task and social learning to occur when team members perceive each other as different on surface level characteristics. Valuing interpersonal relationships may suppress the negative consequences of surface level diversity among individuals. An explanation for this may be that when members adopt a relational orientation they have a lower tendency to judge others based on race or gender or on other stereotypical characteristics. It seems that interpersonal bonds with others can be of more importance than individual differences. Another explanation can be that individuals with a relational identity orientation are more inclined to cooperate or help others as it facilitates positive behavior intentions towards different other individuals (Vos & Van der Zee, 2009). As such, cooperating may promote the sharing of information, which can subsequently stimulate team learning to occur.

However, the results also showed a downside of a relational identity orientation. Contrary to our argumentation, nourishing close relationships with other team members seems to buffer the positive influence of informational diversity. One possible explanation for this finding may be that when team members are focused on deriving positive feelings about the self by means of developing close relationships with others, they may omit their unique viewpoints and contributions to the team. Maintaining these close relationships might be more important than putting forth contrasting ideas and opinions. It seems to reduce the beneficial effects a team can have from different perspectives through the presence of informational diversity.

Instead, a *personal identity orientation*, in which the self-perception is based on personal characteristics and traits, may evoke a tendency in which individuals promote their own unique individual goals and opinions (Brewer & Gardner, 1996). Promoting such an identity orientation may facilitate creating a working environment in which the benefits of functional diversity can emerge. As a result different ideas come forth more easily. An important condition, though, is that these different viewpoints should be well discussed and managed (Ancona & Caldwell, 1992). Future studies should further examine the role of different identity orientations on team learning behavior in diverse organizational contexts.

Team Learning as Mediator

The present findings provide an explanation of how social category diversity and functional diversity can, respectively, improve or inhibit team performance by indicating the mediating role of team learning. The results showed that learning processes in teams can partially explain the effects of diversity on team performance. Team learning therefore can be regarded as an important underlying process variable in affecting concrete team performances in diverse teams, which is in line with Wilson et al. (2007). Although task, process and social learning are different concepts of team learning, they seem to be similarly related to diversity.

Stimulating these different components of team learning can influence the extent to which both forms of diversity can affect the performance outcomes of the team. As team learning only partially influenced the team's performance it may be interesting to consider other underlying processes, such as conflict, in explaining performance outcomes of groups in future research. Jehn (1997) proposed that three types of conflict may exist within working groups: task, process and relationship conflict. Task conflict, which involves disagreements over ideas and opinions relating to the task, leads to dissatisfaction and frustration among the team members, regardless of the subject or outcome of the conflict (Ross, 1989). Process conflict refers to disagreements over logistical issues of task accomplishment (Jehn, 1997) and relationship conflict focusses on interpersonal issues. The presence of these different components of conflict may lead to frustration, misspent time and effort and distraction from goal related issues (Jehn & Bendersky, 2003). Consequently, we consider conflict as an important factor that may impede from team learning to occur. Taken together, this reasoning suggests that diversity may lead to different types of conflict which can obstruct team members to learn from each other. Future research could therefore concentrate on the role of conflict processes to extent the findings in this study.

Limitations

This study has a number of limitations. First, an important shortcoming is that this study did not take the role of time into account as these types of team learning processes may evolve differently over time. As suggested by Jehn and Rupert (2008) task and process learning are more likely to occur when teams are formed, whereas social learning may develop later on as the different team members have been cooperating for a longer period of time. Using a longitudinal design could therefore enable researchers to compare the influences of different types of team learning on group performances at different stages.

A second limitation to this study is that it did not include the measurement of the formation of subgroups. When diversity leads to subgroup formation, conflicts become more prevalent and may lead to subsequent group processes (Lau & Murnighan, 1998). This may result in a loss of team performance. Therefore, a closer examination of the influences of subgroup formation is needed.

A last limitation is that the analyses were performed on the individual level where we did not take group level effects into account. The analyses that were used in this study provided us insight in the results and were sufficient in answering our hypotheses. However, the individuals are nested in teams and the effects of the variables outcomes should therefore be examined on multiple hierarchical levels. More sophisticated analyzing techniques (e.g. multilevel analysis) would be more appropriate to analyze the results.

Practical implications

Despite these limitations, we think that this study has some practical implications as it shows that diversity works under the right conditions, thereby emphasizing the importance of group composition and improving team learning behavior in a diverse working context. As indicated, teams can definitely benefit from a greater pool of knowledge when individuals with different expertise are brought together in a team. This study underlines the suggestion that different types of expertise promote team learning within the organization, which will subsequently improve the team's performance and effectiveness. It is disappointing, however, when the exchange of information that is uniquely held by different members does not occur. When individuals within a team regard each other mainly as different based on gender, age or other characteristics that are easy to detect they will refrain from interacting. This research showed that when this is the case a relational identity orientation seems to be an effective intervention mechanism in inhibiting the negative effects of surface level heterogeneity. Earlier research suggested that when team members adopt a relational identity orientation,

positive outcomes in organizations can be expected (Brewer & Gardner, 1996). In accordance, Vos and Van der Zee (2009) showed that in the context of diverse work groups promoting a relational identity appears to be successful in facilitating positive behavior intentions towards other team members. Relationally oriented individuals have a stronger tendency to help fellow work group members. Vos and Van der Zee suggested that this may be achieved by emphasizing dyadic structures or by stimulating activities aimed at the welfare of others. Then the importance of building mutual relationships will become obvious which, when surface level diversity is prevalent, will promote team learning behavior and subsequently improve its performance. In addition, for managers and Human Resource specialists therefore it seems also important to know the possible consequences concerning the selection and recruitment of new personnel. Hiring high trait relational identity orientation individuals may facilitate a more cooperation work environment, as these individuals seem more suited in working in a context of demographic differences between employees.

Conclusion

To conclude, the present study attempts to link different impacts of diversity on team learning and team performance. We showed that both social category diversity and functional diversity indeed have different effects on processes as team learning and team performance. Additionally, the present study helps to explain that using a relational identity orientation as an intervention mechanism can influence these group processes. Although further work is needed to gain more complete understanding of these different impacts, we think that this research can be of importance to organizations in relation to the composition of working groups and recruitment of personnel.

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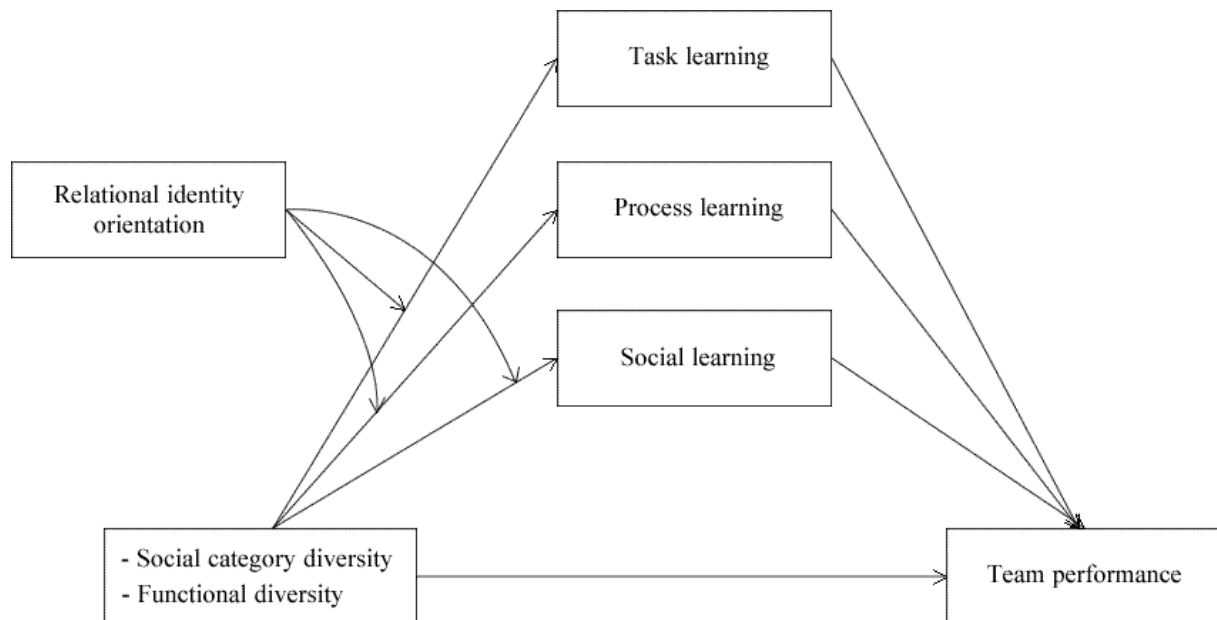
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Appendix I: Figures

Figure 1.



Appendix II: Tables

Table 1. Factor Analysis Team Learning

Table 2. Number of Participants, Means, Standard Errors and Correlations

Table 3. Team Learning and Team Performance

Table 4. Mediation Social Category Diversity

Table 5. Mediation Functional Diversity

Table 1

Three-way Component Solution (with Varimax Rotation) of the Factor Analysis (Principal Component Method) of team learning

<i>Task Learning</i>	Components		
	1	2	3
1. By exchanging insights with each other, we learn about the task as a team	,50	,15	,41
2. As a team we improve our performances by learning about the task	,69	,14	,21
3. By reflecting on our knowledge of the task we improve our performances	,75	,20	,30
4. By cooperating as a team we learn about the content of the task	,79	,11	,14
5. We adjust our work processes when these seem to be ineffective	,76	,27	,19
<i>Process Learning</i>			
1. Within our team we learn about different ways to perform our work	,34	,22	,56
2. As a team we often develop procedures to improve our performances	,15	,24	,60
3. We regularly consider our working procedures to see how we can improve them	,18	-,09	,83
4. By talking about the way we perform our work we learn to improve our performances	,74	,11	,24
5. We adjust our working procedures when these seem to be ineffective	,34	-,06	,76
<i>Social Learning</i>			
1. As a team we improve our performances because we know each other personally	,44	,64	-,02
2. By knowing each other personally we increase our potential to perform	,46	,65	-,01
3. We regularly go and have lunch or a drink together, so we can get to know each other better	-,15	,54	-,20
4. We learn of each other about non-work related issues	,06	,50	,47
5. As a team we learn about social relations in our team	,18	,63	,27
6. We get to know each other better when we have a drink or lunch together	,11	,72	,15
7. As a team we go out on social activities to get to know each other better	,14	,65	,15

Note. The bold printed factors of the items of team learning score high on the corresponding components

Table 2

Number of participants, means, standard errors and correlations of the research variables

Variable	N	M	SE	1	2	3	4	5	6	7
1.Functional diversity	258	3.34	.70	-						
2.Social diversity	257	3.21	.74	.03	-					
3.Task learning	256	3.87	.55	.14*	-.13*	-				
4.Process learning	259	3.71	.58	.21**	-.25**	.59**	-			
5.Social learning	259	3.27	.80	.19**	-.26**	.38**	.25**	-		
6.Relational identity	255	3.80	.46	-.01	-.01	.14*	.08	.30**	-	
7.Team performance	255	7.01	1.08	.18**	-.33**	.48**	.55**	.36**	.13*	-

* p < .05, **p < .01

Table 3

Results of a Multiple Regression Analysis of the effects of Social Category Diversity, Functional Diversity and Relational Identity Orientation on Team Learning and Team Performance.

	<i>Predictors</i>	Task Learning		Process Learning		Social Learning		Team Performance	
		<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>
1 Main effects	Social Diversity	-.07*	.03	-.16***	.04	-.21***	.05	-.36***	.06
	Functional Diversity	.08*	.03	.14***	.04	.16***	.05	.21**	.06
	Relational Identity	.08*	.03	.05	.04	.24	.05	.14*	.06
2 2-way interaction	Social Diversity x Relational Identity	.18**	.07	.10	.08	.17†	.09	.17	.13
	Functional Diversity x Relational Identity	-.07*	.03	-.13***	.03	-.05	.04	-.14*	.06
	Social Diversity x Functional Diversity	.00	.03	.02	.04	-.01	.04	.08	.06
3 3-way interaction	Social Diversity x Functional Diversity x Relational Identity	.02	.03	-.05	.03	.00	.04	-.09	.05
1	R ²	.06**		.12***		.19***		.15***	
2	ΔR ²	.04**		.06***		.02		.03*	
3	ΔR ²	.01		.01		.00		.01	

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table 4

Mediation analysis with social category diversity (predictor), team learning (mediator) and team performance (dependent variable).

Mediator variable = M	b.(MX)	b.(YX.M)	Sobel's Z	Indirect effect P <
Task learning	.47***	-.40***	-2.00	.05
Process learning	.56***	-.29***	-3.85	.01
Social learning	.36***	-.38***	-3.17	.01

* $p < .05$, ** $p < .01$, *** $p < .001$, Y = Team performance, X = Social diversity

Table 5

Mediation analysis with functional diversity (predictor), team learning (mediator) and team performance (dependent variable).

Mediator variable = M	b.(MX)	b.(YX.M)	Sobel's Z	Indirect effect P <
Task learning	.47***	.18*	2.21	.05
Process learning	.56***	.11	3.11	.01
Social learning	.36***	.18*	2.67	.01

* p < .05, **p < .01, *** p< .001, Y = Team performance, X = Functional diversity