

Managing diverse teams by enhancing team identification: The mediating role of perceived diversity

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Abstract

While diversity provides a greater pool of knowledge and perspectives, teams often do not realize the potential offered by these additional informational resources. In this study we develop a new model seeking to explain when and how teams that are diverse in terms of educational background utilize the afforded informational variety by engaging in deeper elaboration of task-relevant information. We found that collective team identification moderated the relationship between educational team diversity and elaboration of task-relevant information, such that under high (low) levels of team identification, educational diversity was positively (negatively) related to information elaboration. As expected, this moderating effect was shown to be mediated simultaneously through two different types of perceived team diversity. We found that the *negative* path was mediated through a perceived diversity measure reflecting a split into subgroups, whereas the *positive* path was mediated through a perceived diversity measure reflecting perceived *educational heterogeneity*. Taken together, this study contributes to the team diversity literature by shedding light on the important role of collective team identification in unlocking the potential of objective educational team diversity, by uncovering the underlying mechanisms accounting for this effect, and by demonstrating the usefulness of distinguishing between different types of perceived diversity.

Keywords

information elaboration, perceived diversity; team diversity; team identification

Team diversity – defined as a characteristic of a social grouping that reflects the degree to which there are differences between people within a group (van Knippenberg & Schippers, 2007) – holds much promise for team work. Theoretically, the potential of diverse teams is attributed to two core elements, the greater pool of task-relevant information and expertise that diverse groups may have at their disposal, and the utilization of those through elaboration of information relevant to the task (van Knippenberg, De Dreu & Homan, 2004). However, while assembling teams that are diverse in terms of knowledge and information is often regarded as a necessary means to foster a cross-fertilization of ideas (Dahlin, Weingart & Hinds 2005), research also suggests that the mere presence of diversity in a team is not a sufficient condition for utilizing it (van Knippenberg & Schippers, 2007). Focusing on a type of team diversity that provides a variety of informational resources in a direct way, namely educational diversity (i.e., differences between team members with regard to the academic field in which they obtained their highest degree), this study examines conditions that facilitate the utilization of these differences through elaboration of task-relevant information.

Previous research has shown that the realization of potential benefits inherent in diversity may be dependent upon several moderators (van Knippenberg & Schippers, 2007), including factors such as team design, leadership type, and team climate (Guillaume, Dawson, Otaye-Ebede & Woods, 2017). One theme that emerges from the extensive research on moderators and mediators in the diversity literature is that a key condition for the utilization of task relevant information in diverse teams is whether - and with what type of mindset - objective differences present in a team are being perceived by the members of the team (Harrison, Price, Gavin & Florey, 2002; Hentschel, Shemla, Wegge & Kearney, 2013; Homan, Hollenbeck, Humphrey, van Knippenberg, Ilgen & van Kleef, 2008; Wegge, Jungmann, Liebermann, Shemla, Ries & Diestel,

2012). Past research has already provided support for the notion that if differences are to be meaningful, they must be perceived (Harrison et al., 2002; Wayne & Liden, 1995). However, there is also evidence that objective differences in teams are not always linked with the differences that individuals perceive, and that perceived diversity captures more – and possibly different aspects – than mere actual differences (Meyer, Shemla & Schermuly, 2011).

A key to understanding the effects of team diversity therefore rests in advancing our knowledge regarding the link between objective and subjectively perceived diversity (Mayo, van Knippenberg, Guillen & Firfiray, 2016; Shemla & Meyer, 2012). In an attempt to contribute to this effort, we argue that a critical step towards understanding this link requires distinguishing between different types of perceived diversity. Based on a broad review of the literature, Shemla, Meyer, Greer and Jehn (2016) recently developed a new taxonomy to clarify the meaning and measurement of perceived diversity. They identified three different types of perceived diversity: *perceived self-to-team dissimilarity*, *perceived subgroup splits*, and *perceived group heterogeneity*. Their review also revealed that perceived self-to-team dissimilarity (this measure is associated with relational demography studies; e.g. Guillaume, Brodbeck & Riketta, 2012) and perceived subgroup splits (this measure is associated with faultline research, e.g. Thatcher & Patel, 2011) mostly have been linked to negative effects for individuals and groups, whereas perceived group heterogeneity has been shown to exert both positive and negative effects on group outcomes. In the present study we apply these new insights by empirically analyzing the relationship between two types of perceived diversity, which we term – following Shemla et al. (2016) – *perceived educational subgroup splits* and *perceived educational team heterogeneity* and information elaboration. Whereas the former type denotes a subjective evaluation of the extent to which the team is categorized into different educational subgroups, the latter refers to

the extent to which members construe their team to be composed of individuals who are different from each other in their education.

We examine the importance and usefulness of this distinction by testing a new team-level model in which the relationship between objective educational team diversity and the elaboration of task-relevant information in teams is moderated by collective team identification and mediated by these two types of perceived diversity (see Figure 1).

Insert Figure 1 about here

A successful test of this model could offer two important contributions to the literature on team diversity. First, by examining the role that collective team identification can play in moderating the link between objective team diversity and elaboration of task-relevant information, we extend prior attempts to better understand *when* team diversity has more or less positive effects on team functioning (van Knippenberg et al., 2004). Second, this model could further our understanding of the role of diversity perceptions in driving the impact of objective team diversity on team functioning. We expect that high levels of collective team identification can result in a positive relationship between objective educational diversity and elaboration of task-relevant information, and that this moderated relationship will be mediated through perceived educational *team heterogeneity* (e.g., the positive path). At the same time, low levels of collective team identification will yield a negative relationship between objective educational diversity and elaboration of task-relevant information in teams, and this effect will be mediated by perceived educational subgroup splits (e.g., the negative path).

Theoretical background and hypotheses

Team diversity and elaboration of task-relevant information

Due to the increasing globalization of business practices, demographic developments, and changes in organizational structure, diversity has come to play a central role in organizational life. At the same time, structural changes in organizations have contributed to the growing importance of informational diversity in teams. In response to today's fast-paced change and mounting pressure to innovate, many organizations increasingly rely on teams that are diverse with respect to educational backgrounds (Kozlowski & Bell, 2003). The utilization of informationally diverse teams that include members from different educational backgrounds is often seen as a means to ensure that the team will consider various task-relevant perspectives and to provide organizations with the enlarged range of skills, knowledge and perspectives that are needed to attain high levels of competitiveness on increasingly complex tasks and services. Nevertheless, realizing the promise of team diversity has proven itself to be an intricate challenge, as a large body of evidence has shown that both objective and perceived diversity can also result in negative or non-significant effects on team outcomes (Bell, 2007; Hoever, van Knippenberg, van Ginkel & Barkema, 2012; Joshi & Roh, 2009; Stahl, Maznevski, Voigt & Jonsen, 2010; Steffens, Shemla, Wegge, & Diestel, 2014; van Knippenberg & Schippers, 2007; Wegge, Roth, Neubach, Schmidt & Kanfer, 2008). Hence, leveraging the potential that this diversity entails has become a key concern for managers.

Researchers draw on two different theoretical positions to explain the mixed effects of diversity. The information-decision-making perspective proposes that diversity may positively influence team processes and team functioning via the utilization of an increased range of knowledge and expertise, while the opposing, pessimistic hypothesis states that diversity may

result in social divisions and negative intra-group processes such as dysfunctional forms of conflict that impede performance (Mannix & Neale, 2005). However, the accumulation of mixed findings and null relationships between diversity and team outcomes has led many researchers to reject the assumption of inherently negative or positive types of diversity (van Knippenberg & Schippers, 2007). More complex models are needed to help to understand when and why diversity might benefit or harm team work. One such model that seeks to answer this question is the Categorization-Elaboration Model (CEM) (van Knippenberg et al., 2004). It combines the predictions of the self-categorization perspective with those of the information-decision-making approach. The model posits that diversity does not automatically lead to intergroup bias and that any diversity dimension can elicit both information-decision-making and social categorization processes. Importantly, the CEM suggests that positive consequences of diversity will arise only if conditions exist that facilitate elaboration of task-relevant information.

Elaboration, a central behavioral construct in the CEM framework, is defined as “the exchange of information and perspectives, individual-level processing of the information and perspectives, the process of feeding back the results of this individual-level processing into the group, and discussion and integration of its implications” (van Knippenberg et al., 2004, p. 1011). Elaboration is critical for diverse teams’ success since it is not simply the presence, but the *utilization* of the greater pool of task-relevant information and expertise that such groups may have at their disposal that enables them to, at times, outperform homogeneous teams. Indeed, several studies provide evidence that elaboration plays a central role in mediating the positive relationship between team diversity and team outcomes (e.g., Homan, van Knippenberg, Van Kleef & De Dreu, 2007; Kearney & Gebert, 2009; Kearney, Gebert & Voelpel, 2009; Resick, Murase, Randall & DeChurch, 2014).

Collective team identification as a moderator

Extensive research has been dedicated to exploring the conditions that influence whether and to what extent diverse teams engage in elaborated processing of the full range of knowledge, experience, and perspectives. These conditions include factors such as team design (e.g., task characteristics, team size) leadership (e.g., leadership style, leader prototypicality), team climate (e.g., trust, psychological safety), and individual differences (e.g., openness, need for cognition; Guillaume et al., Woods, 2017). One theme that emerges from this extensive research is that a key condition for the elaboration of task relevant information in diverse teams is whether objective differences present in a team are being recognized by the members of the team, and whether those are being perceived with a mindset that allows team members to utilize them efficiently (Kooij-de Bode, van Knippenberg & van Ginkel, 2008; Goncalo, Chatman, Duguid & Kennedy, 2015; van Knippenberg van Ginkel & Homan, 2013). Past research has provided support for the effects of objective diversity being mediated by perceived diversity and for the notion that if differences are to be meaningful, they must be perceived (Harrison et al., 2002; Homan et al., 2008; Wayne & Liden, 1995). For example, Harrison and his colleagues found that perceived diversity mediated the impact of actual group diversity on social integration, and Wayne and Liden (1995) observed that demographic supervisor- subordinate similarity influenced performance through perceived similarity.

However, there is also evidence that objective differences in teams are not always strongly linked with the differences that individuals perceive, and that perceived diversity captures more – and possibly different aspects – than mere actual differences. Thus, similar to the discussions regarding effects of objective diversity in teams, it seems warranted to call for more complex models regarding the potential antecedents and effects of subjective diversity perceptions.

Given these inconsistencies, it is crucial to capture the factors that shape the relationship between objective diversity, perceived diversity, and information elaboration in teams. Building on self-categorization theory (Turner, Hogg, Oakes, Reicher & Wetherell, 1987), we propose that collective team identification – that is, the “psychological merging” of self and team, which induces team members to “perceive him- or herself as psychologically intertwined with the fate of the group” (Ashforth & Mael, 1989, p.21), ascribe team defining characteristics to the self, and take the collective’s interests to heart (Lin, He, Baruch, & Ashforth, 2016) – is likely to play a major role in this regard. Considering diverse members’ perspectives and ideas requires team members to be motivated to overcome conflicts, commit to a shared goal, and perceive others as equal partners for cooperation. Collective team identification can help fulfill these preconditions because it captures the motivational force that induces individuals to align with diverse others, to adopt converging goals over individual interests, and to engage in constructive interactions with others (Ellemers, De Gilder & Haslam, 2004). Further, collective team identification determines whether members will define themselves primarily as members of the team over competing social categories (see, for example, Doosje, Ellemers & Spears, 1995) and whether members will be inclined to follow team norms, exert themselves on behalf of the team despite the differences, and internalize team goals as intrinsically motivating.

Since members may identify with multiple units of affiliation (Brewer & Brown, 1998; Randel, 2002), identification with the team as a superordinate entity facilitates collaboration among diverse team members as well as the adoption of a constructive and cooperative working style that overcomes disruptive effects engendered by diversity. The more team members identify with their respective teams, the more likely they are to take the team’s perspective and to act in the team’s best interest (Dutton, Dukerich & Harquail, 1994; Mael & Ashforth, 1992). Hence,

collective team identification is critical for the ability of diverse teams to utilize the greater pool of task-relevant information and expertise at their disposal. We therefore propose:

Hypothesis 1: Collective team identification moderates the relationship between objective educational diversity and task-relevant information elaboration in teams, such that this relationship is positive when levels of collective team identification are high but negative when levels of collective team identification are low.

Different forms of perceived diversity as mediators

A central assertion of this paper is that the moderating effect of collective team identification on the relationship between objective educational diversity and information elaboration is mediated by perceived diversity. As already outlined above, here we build on the work of Shemla et al. (2016) who recently reviewed the literature on perceived diversity, providing a first systematic integration of the different conceptualizations of this construct. More specifically, these authors argue that perceived diversity has been operationalized in at least three different ways, each reflecting a unique notion regarding the focal point of the diversity perceptions being studied: Perceptions of self-to-team dissimilarity, perceptions of subgroup splits, and perceptions of team heterogeneity.

The first type, perceived self-to-team diversity, refers to the extent to which *individual* team members perceive themselves to be different from their group or unit. This perspective emphasizes processes and outcomes associated with the experience of individuals within their actual work group. Closely linked with the study of relational demography, perceived self-to-team dissimilarity typically decreases the individual's task and social exchanges, and ultimately

reduces cooperation between members and team performance (Guillaume et al. 2012; Harrison et al., 2002). As our study focusses on the team level, we did not consider this type of perceived diversity. Instead, we investigated the two remaining types of perceived diversity which are both defined at the team level of analysis. The second type, *perceptions of subgroup splits*, refers to the degree to which team members perceive their team to be split into subgroups. This type is closely linked with faultline theory, a stream of research that explores the effects of the alignment of diversity attributes into hypothetical homogenous subgroups within teams (Lau & Murnighan, 1998). As faultlines can be seen as an operationalization of comparative fit (Meyer et al., 2011), members of teams with a strong faultline are more likely to categorize fellow team members in other homogeneous subgroups as their out-group (Lau & Murnighan, 1998). Accordingly, the stronger the faultline, the higher the probability of an actual split into subgroups (Carton & Cummings, 2013) which, in turn, often leads to negative affective and behavioral reactions between members of different subgroups, including difficulties in exchanging and integrating information across the subgroup boundaries (Thatcher & Patel, 2011; cf. Meyer, Shemla, Wegge, & Li, 2015). This type of perceived diversity assesses the global perception of diversity across the limitless dimensions of diversity that exist in any team (Oosterhof, van der Vegt, van de Vliert, Sanders & Kiers, 2009). An example use of this type can be found in a paper by Jehn and Bezrukova (2010) who asked participants to rate the degree to which their team was split into subgroups, broke into alliances, and divided into subsets of individuals. The third type, *perceptions of group heterogeneity*, denotes the degree to which members construe their team to be composed of individuals who are different from each other on a certain attribute. In this type of measures, researchers employ fixed sets of categories for eliciting measures of perceived differences. For example, Cunningham, Choi and Sagas (2008) inquired about perceived

diversity in terms of race and Williams, Parker, and Turner (2007) as well as Ries et al. (2010) measured perceived age diversity.

By and large, perceived diversity reflects the psychological evaluation and cognitive construal of actual diversity (Harrison et al., 2002). However, *subgroup splits* and *team heterogeneity* represent different aspects of this evaluation. Whereas subgroup splits perceptions imply construing group members in terms of “us-them”, group heterogeneity perceptions entail individuation of group members, a process that has the potential to reduce biases and conflicts and to spur collaboration among team members. This distinction is critical because, whereas the former perceptions are more likely to be associated with negative effects, team heterogeneity perceptions are more likely to be related to positive effects, in particular in the case of educational diversity (Joshi & Roh, 2009; Kearney & Gebert, 2009).

Self-categorization theory specifies the conditions under which different definition of self are likely to become salient and details the consequences of those different definitions for social perception and behavior (Elmors et al., 2004). In particular, self-categorization theory stipulates that no one level of categorization is inherently more real than another, and hence both types of perceived diversity are appropriate reflection of the team’s objective diversity. In other words, members of an educational diverse team may construe differences within their team, either as educational subgroup split or as educational team heterogeneity, depending on the comparative context they choose to focus on. As mentioned above, collective team identification reflects the extent to which members ascribe team defining characteristics to the self and take the collective’s interests and values to heart (Lin et al., 2016), and thus determines the readiness and will of members to define themselves primarily as members of the team over competing social categories. Thus, when members identify strongly with the team, they will be more likely to

construe differences as educational team heterogeneity rather than educational subgroup split. In summary, we propose that collective team identification has opposing effect on educational *subgroup splits* and *educational team heterogeneity* perceptions, such that under high levels of collective team identification, members perceive themselves to be sharing a common in-group identity, the salience of subgroups categories decreases, and associated biases are minimized (Gaertner, Dovidio, Anastasio, Bachman & Rust, 1993; Gaertner & Dovidio, 2000).

However, while the team as a whole is less likely to be evaluated as split into subgroups due to the shared superordinate identity, differences relevant to the team task may become more apparent. Specifically, members in teams with high collective team identification are motivated to actively search for resources relevant to the team's task, strive to reach agreements on contentious matters, coordinate their behaviors, develop common mental models, and exchange information (Hogg & Terry, 2000; van Knippenberg & van Schie, 2000). Therefore, the degree to which team members identify with the team, strive to reach the team's goals, and are committed to its purposes may influence the psychological importance attributed by team members to information, perspectives and ideas different than their own that may be relevant to the task and serve the team's goals. Specifically, due to the focus on shared goals and tasks that high collective team identification induces, team members are likely to construe task-relevant differences as an asset to the team. In other words, given high team identification, members are likely to be motivated to detect and recognize resources that can contribute to achieving team goals, including objective demographical and informational differences. Such a situation, in which team members both strive to recognize differences relevant to the task and evaluate others to be equal partners for cooperation, is theoretically ideal for facilitating information elaboration in teams. Therefore, we propose:

Hypothesis 2: Perceived educational subgroup splits mediate the moderating effect of collective team identification on the relationship of objective educational diversity with task-relevant information elaboration (negative path).

Hypothesis 3: Perceived educational team heterogeneity mediates the moderating effect of collective team identification on the relationship between objective educational diversity and task-relevant information elaboration (positive path).

Methods

Sample

The sample consisted of 326 individuals working in 61 teams in four different German organizations drawn from the high-tech industry (29 teams) and the health services field (32 teams). The main function of these teams was consulting (in-house or external), assisting clients with optimization of business processes, customization of products and services, market research, and the development of business strategy. In all teams, members had to interact and collaborate closely to meet team objectives. The average response rate was 87.7%, and we gathered data from at least 64% of all team members. Team size ranged from 3 to 15 members with an average team size of 6.03 members (standard deviation [SD] = 2.88) and a mean age of 38.08 years (SD = 8.31). Of the team members, 48.4% were male and 51.6% were female.

Importantly, we collected data using multiple sources. Specifically, objective educational team diversity was measured based on data provided by the HR department of organizations. Collective team identification, perceived educational subgroup splits and perceived educational

team heterogeneity were measured using self-ratings by team members, and elaboration of task-relevant information was rated by the team leaders. Moreover, we measured the central constructs of our model over two points in time to reduce measurement artifacts. Specifically, objective team diversity, both diversity perceptions, and collective team identification were measured at Time 1. Two weeks later, at Time 2, we measured the dependent variable elaboration of task-relevant information.

Measures

Objective educational diversity We focused on educational diversity as an indicator of informational diversity, calculating this type of diversity based on data retrieved from company files concerning the academic field in which participants obtained their highest degree. Based on this information, we created six different categories for this sample (e.g., engineering, programming, medicine, nursing, finance). The average number of educational backgrounds per team was 2.5. According to Harrison and Klein (2007), educational diversity broadens the range of relevant knowledge, distinctive information, and unique experience among unit members and thus constitute diversity in the form of variety. Hence, in line with Harrison and Klein's guidelines for aligning conceptualization with operationalization, we measured these variables

via Blau's (1977) index of heterogeneity, $1 - \sum p_i^2$. In the formula, p is the proportion of team members in a particular category and i is the number of categories represented in the team. The diversity index varies from 0 (perfectly homogenous team) to a maximum of 1 (perfectly heterogeneous team).

Collective team identification Members' identification with their team was assessed on a five-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) developed by Mael and Ashforth (1992). We adapted the scale to the workplace by replacing the word “school” with “team” and used five of the six items. Sample items include, “*I am very interested in what others think about our team*”, and, “*This team’s successes are my successes*”. The scale had an internal consistency of .87.

Perceived educational subgroup split We used two items to assess the extent to which team members evaluated the team as split into subgroups (following measures by Jehn & Bezrukova, 2010 and Zanutto, Bezrukova & Jehn, 2011): “*My team splits into subgroups based on different educational background*” and “*My team is divided into smaller cliques based on different educational background*”. We used a 5-point Likert scale ranging from 1 (don’t agree at all) to 5 (agree very much), such that higher scores represented greater perceived diversity. The scale had an internal consistency of .80.

Perceived educational team heterogeneity To assess the extent to which education differences were perceived by team members, we used three items adapted from a scale by Campion, Medsker, and Higgs (1993): “*Most of my teammates have a different educational background*”, “*The members of my team vary widely in their educational background*” and “*I am very aware of the educational differences among my colleagues*”. The response scale ranged from 1 (strongly disagree) to 5 (strongly agree) such that higher scores represented greater diversity. Perceived educational team heterogeneity had a Chronbach’s alpha of .84.

Elaboration of task-relevant information This variable refers to the degree to which information is shared, processed, and integrated in group interaction (van Knippenberg, et al., 2004). Team leaders were requested to respond to five items adapted from Homan et al. (2008). Example items include “*The members of this team complement each other by openly sharing their knowledge*”, “*The members of this team contribute a lot of information when working together on a task*”, “*The members of this team contribute unique information when working together on a task*” and “*As a team, members try to use all available information*” The scale had an internal consistency of .86.

Control variables We controlled for team size and team tenure, two variables that previous studies have reported to be associated with the measures examined in this study. Team size has been found to impact the relationship between diversity and team processes and outcomes (Carral, Forrester, Dawson & West, 2001), as well as team performance and health (Wegge et al., 2008). We measured team size as the number of team members, excluding the team leader. We operationalized team tenure as the time that a team has existed in terms of the average number of years that participants have spent as members of a particular team. In addition, we controlled for two diversity dimensions that have been the primary focus of the diversity literature (Guillaume et al., 2017; van Knippenberg & Schippers, 2007), namely age diversity, which we have operationalized using within-group standard deviation, and gender diversity, which we calculated with the Blau’s (1977) index.

Data aggregation

Because the variables tested in our model are conceptualized as “shared unit properties”, our hypotheses require analyzing the data at the group level. We therefore calculated mean $\bar{r}_{wg(j)}$

values (James, Demaree & Wolf, 1984), which indicate the degree of agreement among members within teams, as well as two versions of the intraclass correlation coefficient to assess the ratio of between-group to total variance (ICC1) and the reliability of average group perceptions (ICC2). The mean $r_{wg(i)}$ for all teams was higher than .70 for all relevant scales. ICC(1) values for perceived educational team heterogeneity, perceived educational subgroup split, and collective team identification were .43, .23, and .48 respectively. ICC(2) values for these constructs were .69, .60, and .72 respectively. These results justify aggregating individual responses to the team level of analysis.

Results

Table 1 presents the means, standard deviations, and correlations among the study variables. In line with previous research, both perceived educational team heterogeneity and perceived educational subgroup splits appear to be rather independent from the objective presence of educational diversity (e.g., Harrison et al., 2002; Homan et al., 2010; Jehn & Bezrukova, 2010; van Dick, van Knippenberg, Haegele, Guillaume & Brodbeck, 2008). As mentioned earlier, past research has provided evidence that objective differences in teams are not always linked with the differences that individuals perceive (Shemla et al., 2016). This may be even enhanced in the case of educational diversity, a type of difference that is not readily visible. Moreover, whereas objective educational diversity was not significantly correlated with the elaboration of task-relevant information, both perceived educational subgroup split and perceived educational team heterogeneity were significantly associated with our dependent variable in the expected (opposite) direction.

Insert Table 1 about here

To test Hypothesis 1, which posits a moderating effect of collective team identification on the relationship of objective educational diversity with the elaboration of task-relevant information, we conducted a hierarchical regression analysis with mean-centered predictor variables. We entered the control variables (team size, team tenure, age and gender diversity) in the first stage, objective education diversity and collective team identification in the second step, and the interaction of collective team identification with education diversity in the third step. Table 2 (Model 1) summarizes the results, which lend support to Hypothesis 1. In particular, we found a significant change in the multiple squared correlation coefficient after adding the interaction term ($\Delta R^2 = .15, p < .01$; see Step 3 of Model 1). The regression coefficient for the interaction of collective team identification with education diversity was significant ($\beta = .31, p < .01$) and simple slope analyses revealed that when collective team identification was high, objective education diversity was significantly positively related to elaboration of task-relevant information ($b = .36, t = 3.28, p < .001$). By contrast, when collective team identification was low, objective educational diversity was negatively related to elaboration of task-relevant information ($b = -.27, t = 2.13, p < .05$). Figure 2 illustrates these relationships.

Insert Table 2 and Figure 2 about here

Hypotheses 2 and 3 both posit a mediated moderation effect, which occurs when the interaction between two variables affects a mediator, which in turn is associated with a dependent variable. To test for mediated moderation, we followed the procedures outlined by

Morgen-Lopez and Mackinnon (2006). Specifically, we first regressed the mediator on the control, independent, and moderator variables, as well as the interaction between objective education diversity and collective team identification. Next, we regressed the dependent variable on the control, mediator, independent, and moderator variables, as well as the on the interaction effect. According to Morgen-Lopez and Mackinnon (2006), the estimate of the mediated moderation effect is the product of the path from the interaction term to the mediator and the path from the mediator to the dependent variable.

Hypothesis 2 states that perceived educational subgroup split mediates the moderating effect of collective team identification on the relationship between objective education diversity and elaboration of task-relevant information. With respect to the first step of the mediated moderation effect, results confirmed the posited moderating effect of collective team identification on the relationship of education diversity with perceived educational subgroup split (see Table 2, Step 3 of Model 2). Adding the interaction of collective team identification with educational diversity yielded a significant change in the amount of variance explained ($\Delta R^2 = .11$, $p < .05$). Simple slope analyses showed that when collective team identification was high, objective educational diversity was related significantly and negatively with perceived educational subgroup split ($b = -.29$, $t = 3.05$, $p < .01$). In contrast, when collective team identification was low, objective education diversity was associated significantly and positively with perceived educational subgroup split ($b = .27$, $t = 2.39$, $p < .05$). Figure 3 illustrates these relationships.

Insert Figure 3 about here

The indirect effect of the interaction of objective educational diversity with collective team identification via perceived educational subgroup split was also significant ($\beta = -.29, p < .05$). Results indicated that, in support of Hypothesis 2, this interactive effect was mediated by perceived educational subgroup split. The formerly direct effects of this interaction was no longer significant after controlling for the mediators (see Table 2, Step 4 of Model 1).

Hypothesis 3 states that perceived educational team heterogeneity mediates the moderating effect of collective team identification on the relationship of objective education diversity with elaboration of task-relevant information. Results confirmed the posited moderating effect of collective team identification on the relationship of education diversity with perceived educational team heterogeneity (see Table 2, Step 3 of Model 3). Adding the interaction of collective team identification with education diversity yielded a significant change in the amount of variance explained ($\Delta R^2 = .09, p < .05$). Simple slope analyses showed that when collective team identification was high, objective education diversity was related significantly and positively with perceived educational team heterogeneity ($b = .26, t = 1.98, p < .05$). When collective team identification was low, objective education diversity was significantly and negatively related with perceived educational team heterogeneity ($b = -.29, t = 2.03, p < .05$). Figure 4 illustrates these relationships.

Insert Figure 4 about here

Further, in support of Hypothesis 3, the indirect effect of the interaction of objective education diversity with collective team identification via perceived educational team heterogeneity was significant ($\beta = .21, p < .05$). Results indicated that the interactive effect of

objective educational diversity with collective team identification on elaboration of task-relevant information was mediated by perceived educational team heterogeneity. The formerly direct effect of this interaction was no longer significant after controlling for the mediators (see Table 2, Step 4 of Model 1).

Discussion

Integrating theory and research on objective and perceived team diversity, we hypothesized that collective team identification moderates the relationship between objective educational team diversity and task-relevant information elaboration. We further hypothesized that the moderating impact of collective team identification is mediated through two distinct types of perceived diversity. Our findings support these hypotheses. In particular, we found that under high levels of collective team identification objective educational diversity was positively associated with the elaboration of task-relevant information, and that under low levels of collective team identification this relationship was negative. Importantly, two mediated moderation effects help explain these findings. Specifically, collective team identification moderated the relationship of objective educational diversity with perceived educational subgroup splits, which in turn was associated negatively with the elaboration of task-relevant information. At the same time, collective team identification moderated the relationship of objective educational diversity with perceived educational heterogeneity, which in turn was positively related to the elaboration of task-relevant information.

Within the context of team diversity research, our study is noteworthy in several respects. First, our findings add support to the contingency approach in the diversity literature (van Knippenberg et al., 2004; Wegge, 2003) by illustrating that the relationship between educational

team diversity and team outcomes depends on contextual conditions. In particular, our results provide support to the notion that the presence of a broader range of perspectives and knowledge does not guarantee its utilization, and suggest that the motivational force captured by collective team identification can play a role in ensuring that team members would elaborate on task-related information. On the basis of our findings, we argue that a shared, superordinate identity among team members plays a role in helping to tap the benefits of team diversity. From a practical standpoint, this offers exciting possibilities for leaders of diverse teams, since they are often in a position that allows them to influence and shape team identity. For instance, Kearney and colleagues (2009) found that transformational leadership in diverse teams is positively related to team collective identification. Indeed, as Reicher and colleagues have argued, leaders can assume the role of *identity entrepreneurs* who craft a shared sense of ‘we’ and ‘us’ (Reicher, Haslam & Hopkins, 2005; Reicher & Hopkins, 2001). Such leaders who actively engage in identity entrepreneurship, define the boundaries of the group and shape the meaning of being a group member (Reicher et al., 2005). Leaders’ crafting of shared identity has direct implications, not only to their own standing within the team, but also to team members’ motivation and engagement (Steffens, Haslam, Kerschreiter, Schuh & van Dick, 2014).

Thus, a direct practical implication of our study is that leaders of educationally diverse teams should focus on interventions that enhance team identity. We know from prior research that there are various strategies that can help achieving this goal, including using small teams, narrating stories about the team’s common history, developing an understanding of the norms and ideas that define the group, being explicit about who falls inside and outside ingroup boundaries, and expressing and spreading positive emotions in groups (Wegge, Schuh & van Dick, 2012). Thus, linking our findings about the imperative role of team identity with those

drawn from the research on identity entrepreneurship highlights the central role that team leaders may play in unlocking the promise of diverse teams. However, the notion that leaders may be especially important in shaping team identity also suggests that the ability of some diverse teams to realize their potential could be tempered because of the individuals who lead them. Although leaders are theoretically equipped with the potential of forming a collective group identity, not all leaders are equally able to do so. For example, this potential hinges to some extent on leaders' group prototypicality and performance (Steffens, Haslam, Kessler & Ryan, 2013). While previous research has explored the positive role of team leaders in unlocking the potential of diverse teams (Guillaume et al., 2017), it has yet to examine the inhibiting role that leaders may play in this context.

Second, our findings demonstrate that team composition can be construed not only along the continuum of homogenous-diverse, but that members also distinguish between different types of diversity in teams. Distinguishing between different types of diversity perceptions helps clarifying the relationship between perceived diversity and team functioning. Specifically, we found that the two types of perceived diversity are associated with the elaboration of task-relevant information in *opposing* relationships. Whereas perceived educational subgroup splits are negatively associated with the elaboration of task-relevant information, there is a positive relationship between the latter and perceived educational heterogeneity in teams. Thus, while our results provide support to the assertion that perceived differences are related to team functioning, they also illustrate that the nature of this relationship depends on how perceived diversity is conceptualized (Shemla et al., 2016). This finding calls attention to the key advantage of using perceived over objective diversity when studying differences in teams, namely that the former

provides a more nuanced and idiosyncratic information that is relevant to a specific group at a certain time.

Nevertheless, it is plausible that the relationship of perceived diversity with team outcomes may turn out to be more complex given the influence of two important factors. The first factor concerns the type and breadth of perceived diversity dimensions. For example, Shemla et al (2016) posited that diversity perceptions include three interacting dimensions: focal point of reference (i.e., self-to-team dissimilarity, perceived subgroup splits, and perceived team heterogeneity), similarity/difference (i.e., whether individuals construe diversity in terms of degree of similarity or degree of differences), and measurement specificity (i.e., specific type of diversity or overall diversity without referring to any specific attributes). The effects of perceived subgroup split and perceived heterogeneity may vary depending on how they interact with the other two dimensions of perceived diversity. For instance, team members might perceive their team to be diverse in terms of education but at the same time perceive the team to be homogenous overall. Thus, while in this study we focus on a specific type of diversity, examining the effects of specific and overall perceived diversity at the same time could yield less straightforward reactions. Second, the negative effects of perceived subgroup splits may be attenuated in the case that this type of perceived social categorization is not equated with intergroup bias. Perceived social categorization in the form of perceived subgroup splits merely refers to the perceptual grouping of people and it need not be necessarily related to the negative effects resulting from unfavorable perceptions of, and attitudes and behavior toward outgroup members (Mayo et al., 2016). This distinction is important, because the potential negative effects of perceived subgroup splits are linked to intergroup bias and not to social categorization per se. Intergroup biases are caused by threats to the value or the distinctiveness of the group (van

Knippenberg et al., 2004), and in the absence of such threats, diversity may result in positive group outcomes (van Knippenberg & Haslam, 2003). Thus, to the extent that team members regard all perceived subgroups to be of equal status and prestige, it might be that perceived subgroup distinction may not be related to negative results.

Limitations and future research

We acknowledge several limitations of this study. First, we recognize that our choice to focus on elaboration of task-relevant information instead of a more tangible team outcome as the dependent variable may be seen as a disadvantage. Particularly, future research needs to examine whether the moderating role of collective team identification and the mediating role of perceived diversity lead not only to increased elaboration of task-relevant information, but also to higher team performance and increased innovation. Nevertheless, focusing on information elaboration enables us to examine the impact of these processes on specific behaviors that previous research has identified to be a central prerequisite for a wide range of positive team outcomes, including performance and innovation (Kearney & Gebert, 2009; van Knippenberg et al., 2004). Further, our focus on information elaboration serves our goal to examine more directly a core issue in diversity research, namely the question of what conditions and processes may facilitate the utilization of the broader range of information and perspectives present in educationally diverse teams.

Another limitation of our study is capturing a static and unidirectional depiction of what is possibly a dynamic process. Admittedly, it may be that our depiction of collective team identification as a moderating factor that precedes diversity perception tells only one side of the story. Instead, it is also possible that information elaboration feeds and shapes the extent to

which members identify with their teams. For instance, it may be, as Postmes and his colleagues previously suggested (Postmes, Haslam & Swaab, 2005), that team members may develop a common identity on the basis of actions on behalf of the team, such as the act of sharing, exchanging and integrating information with other team members. At the same time, it may also be that team members' diversity perceptions can influence the level of collective team identification. For example, to the extent that differences are seen as normative and warranted by the team (e.g., if members believe that differences are beneficial for their collaboration; Rink & Ellemers, 2007), differences may also be a source of a common identity. We thus believe, that our understanding of how to manage diverse teams can be significantly strengthened if future research considered the possibility of more dynamic and cyclical relationships among diversity, identity, and team outcomes.

Another limitation of our study is that we could not assess the specific nature and complexity of team tasks. Even though all teams participating in our study were working on similar tasks, it can be argued that the potential benefits of objective educational diversity on information elaboration are more pronounced if team tasks are complex and that the benefits of sharing knowledge in teams are also stronger in more complex tasks (Mesmer-Magnus & DeChruch, 2009; Wegge et al., 2008). Hence, future studies should assess also task complexity as another, important potential moderator variable in analyzing potential benefits of objective and subjective educational diversity in teams.

Finally, we focused on a single dimension of objective differences, namely educational diversity. Further research is needed to ascertain the generalizability of our findings to other diversity attributes. It might indeed be that given the notion that demographical differences are less likely than informational differences to constitute potential for enhanced performance

(Horwitz & Horwitz, 2007), our findings do not extend to demographical team diversity. However, this limitation underscores a fundamental problem in studying objective diversity, namely that there is a great deal of arbitrariness in selecting the diversity attributes that might be most relevant to the specific sample examined. In addition to diversity type, another potential hurdle for the generalizability of our findings concerns studying perceptions of more than one dimension of diversity. In our study, we measured perceived diversity by asking participants to evaluate the extent to which team members are different and the extent to which the team splits into subgroups specifically with regard to educational background. Such a measure might be less suitable when studying combination of multiple diversity attributes that cannot be explicitly identified. However, as Mayo, van Knippenberg, Guillen, and Firfiray (2016) recently showed, this methodological issue can be overcome by measuring categorization salience without assessing or priming the salience of each categorization separately. Specifically, Mayo and her colleagues have demonstrated that such a measure can also distinguish between positive responses and intergroup-biased responses to salient diversity categories. Thus, employing such a measure may not only assist determining the extent to which certain attributes are relevant for a specific team, but may also provide a more accurate assessment of whether perceived social categorization is related to intergroup bias and whether or not the negative effects of perceived subgroup splits may be attenuated.

Conclusion

The extant literature on diversity in teams suggests that educational differences among team members hold much promise. However, a reliable assessment of the benefits as well as the limitations of team diversity requires knowledge of the conditions under which and the processes through which such differences are more or less positively associated with team functioning. With the present study, we hope to have shed some light on the conditions under which educational team diversity can help to unlock the full potential of organizational teams. Our results show that high collective team identification and the link between objective and perceived diversity are key to tapping the benefits inherent in diverse teams. Importantly, we identified perceived team heterogeneity and perceived subgroup split as two separate paths through which team identification is linked to elaboration of task-relevant information in diverse teams. We hope that these findings stimulate further research on exploring the role of perceptions in determining the effects of team diversity.

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Table 1. Means, standard deviations, and correlations

Variable	M	SD	1	2	3	4	5	6	7	8
1. Objective educational diversity	.38	.22	-							
2. Collective team identification	3.88	.29	.01	-						
3. Perceived sub-group split	3.14	.65	-.03	-.35**	-					
4. Perceived team heterogeneity	3.20	.68	.03	.17	-.23	-				
5. Information elaboration	3.54	.61	.14	.11	-.40**	.39**	-			
6. Team size	6.03	2.88	.08	-.05	.09	.04	.19	-		
7. Team tenure	5.20	3.46	.07	.12	-.13	.19	.14	.07	-	
8. Age diversity	8.52	3.85	-.08	-.07	-.16	-.04	.10	.08	-.34**	-
9. Gender diversity	.27	.21	-.11	-.19	-.11	-.10	-.23	-.13	-.20	.22

Notes: M = mean; SD = standard deviation. N= 61 teams; * $p < .05$; ** $p < .01$.

Table 2. Results of regression analyses

Variable	Model 1: Elaboration of task-relevant information				Model 2: Perceived sub-group split			Model 3: Perceived team heterogeneity		
	Step 1	Step 2	Step 3	Step 4	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Step 1: Control										
Team size	.09	.09	.13	.12	.05	.03	-.0	.01	.02	.06
Team tenure	.09	.08	.00	-.02	-.15	-.13	-.05	.13	.12	.05
Gender diversity	-.11	-.12	-.14	-.16*	-.06	-.11	-.09	-.04	-.03	-.04
Age diversity	.11	.12	.09	.05	-.15	-.14	-.12	.02	.02	.00
Step 2: Main effects										
Educational diversity (ED)		.08	.05	.05		-.03	-.00		.01	-.02
Collective identification (ID)		.05	.10	.02		-.24**	-.28**		.10	.14
Step 3: Interaction effect										
ED × ID			.31**	.18			-.28**			.28*
Step 4: Mediators										
Perceived sub-group split				-.29*						
Perceived team heterogeneity				.21*						
R^2	.12	.14	.29	.41	.08	.21	.33	.04	.06	.16
ΔR^2		.02	.15**	.12*		.13*	.11*		.02	.09*

Notes: $N= 61$ teams; Standardized regression coefficients are reported. * $p < .05$; ** $p < .01$.

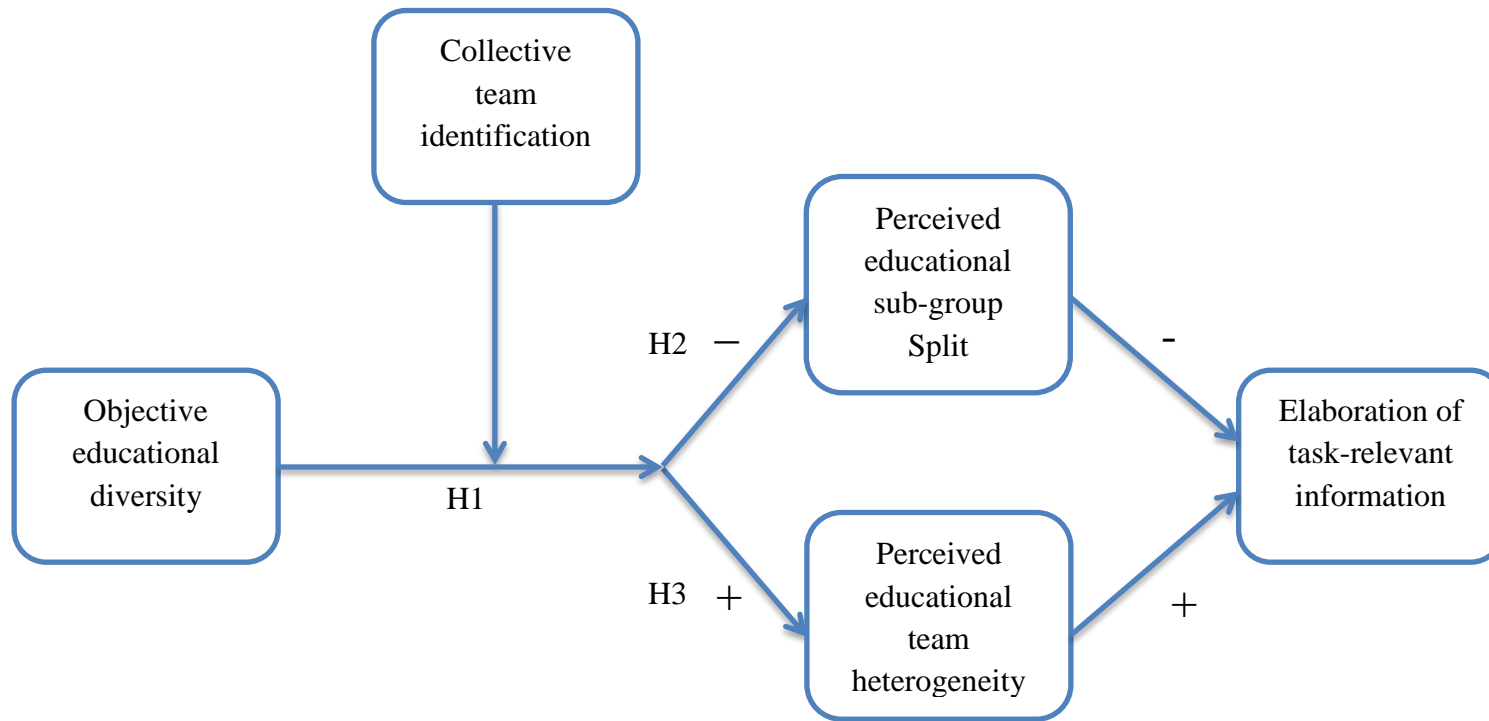


Figure 1. Illustrative summary of the study hypotheses.

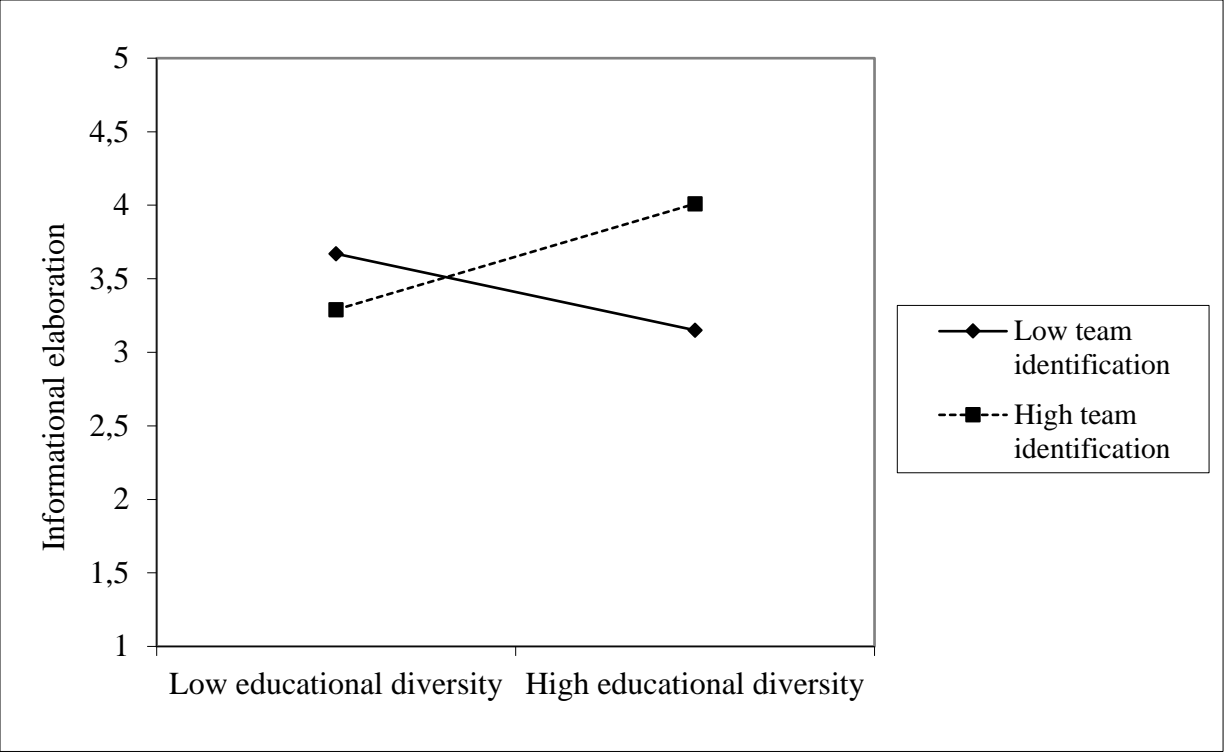


Figure 2. Collective team identification as a moderator of the relationship between objective educational diversity and the elaboration of task-relevant information.

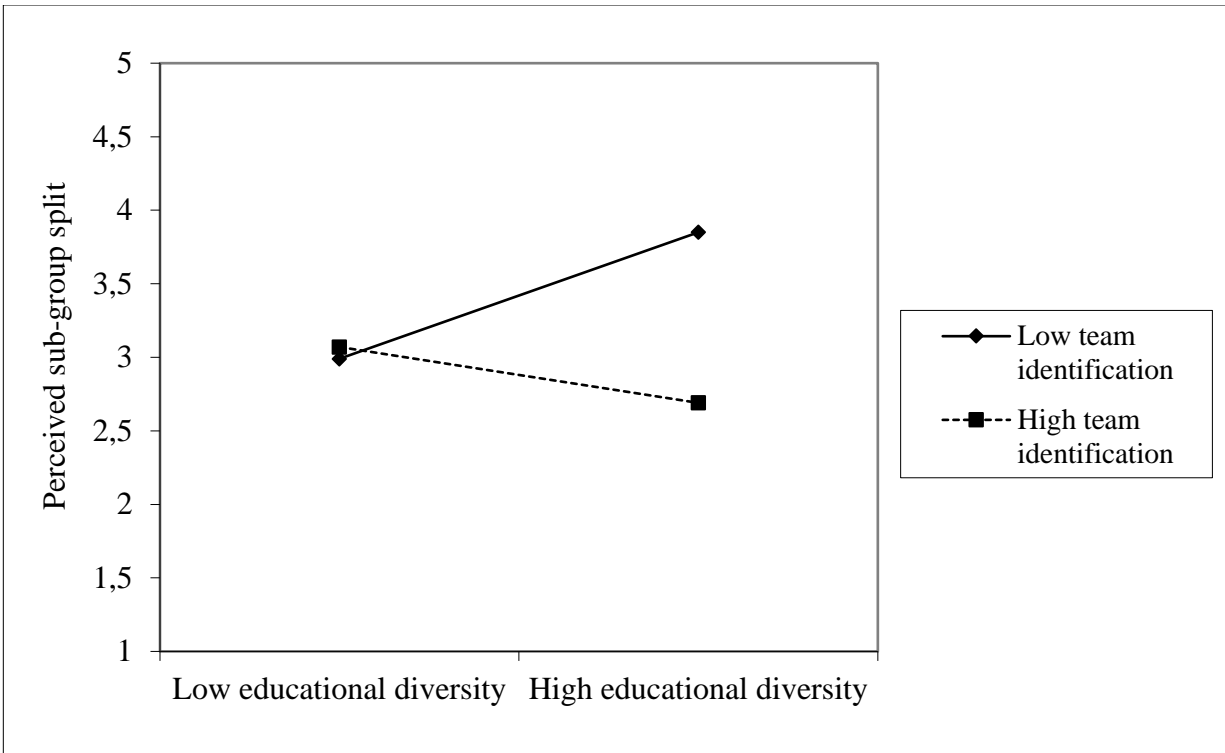


Figure 3. Collective team identification as a moderator of the relationship between objective educational diversity and perceived educational sub-group split.

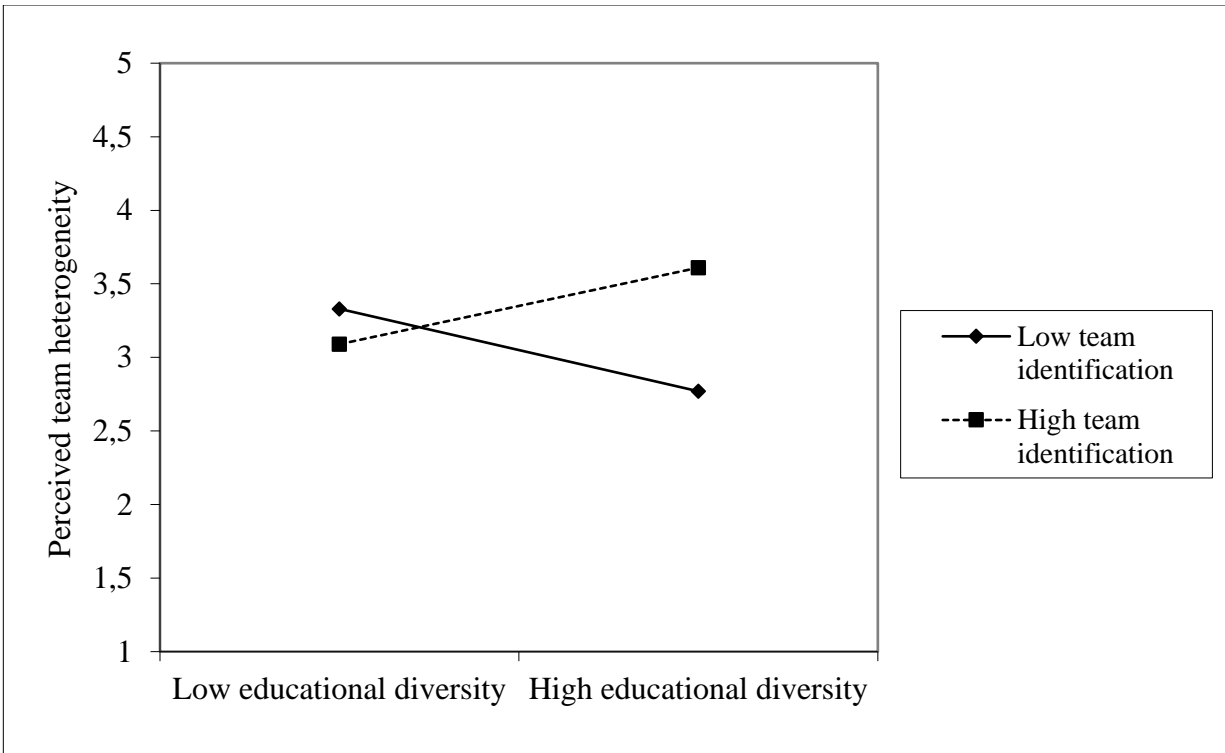


Figure 4. Collective team identification as a moderator of the relationship between objective educational diversity and perceived educational team heterogeneity.

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