Cognitive Diversity and Innovative Work Behavior: The Mediating Roles of Task Reflexivity and Relationship Conflict and the Moderating Role of Perceived Support

ABSTRACT

Previous research has merely explored the positive relationship between cognitive diversity and creativity, but the potential negative side of cognitive diversity might also prevail and should be examined together with its positive side. To address this gap, our study, drawing on the categorization-elaboration model framework, explored both the positive and negative effects of cognitive diversity on creativity/innovation in a single model. Using data collected from 101 teams (including both team leaders and team members) in 10 Chinese manufacturing companies, we identified a dual pathway—namely, task reflexivity (i.e., positive pathway) and relationship conflict (i.e., negative pathway) —in the linkage of cognitive diversity and innovative work behavior (i.e., IWB). Cognitive diversity encouraged IWB via the task reflexivity pathway, but impeded IWB via the relationship conflict pathway. We further demonstrated that perceived support for innovation moderated the relationships between cognitive diversity and task reflexivity/relationship conflict, with cognitive diversity more related to task reflexivity and less related to relationship conflict when perceived support for innovation was high. Moderated mediation effects also indicated that the positive indirect effect of cognitive diversity on IWB through task reflexivity existed only when support for innovation was high, and that the negative indirect effect of cognitive diversity on IWB through relationship conflict occurred only when support for innovation was low.

Keywords: cognitive diversity; task reflexivity; relationship conflict; innovative work behavior; perceived support for innovation

Practitioner Points:

This study informs team managers about the double-edged-sword effect of cognitive diversity on innovative work behavior and calls for future research on how to manage diverse teams composed of individuals with different cognitions.

Cognitive diversity was found to influence innovative work behavior positively via task reflexivity and negatively via relationship conflict. Therefore, team managers should encourage their employees to rethink and reevaluate task-related issues but not translate this into emotional exclusion.

Perceived support for innovation strengthened the positive effect of cognitive diversity and weakened its negative influence. Therefore, team managers should build up such an environment by showing support and encouragement of innovation in teams of employees with different cognitions.

INTRODUCTION

Accelerating business change and fierce competition have prompted organizations and teams to pursue creativity and innovation to survive and succeed (Shin, Kim, Lee, & Bian, 2012; Wang, Kim, & Lee, 2016). Hence, diverse teams with different knowledge backgrounds and varied information sources are increasingly needed to establish (Guillaume, Dawson, Woods, Sacramento, & West, 2013), which makes it considerably significant to study the relations between team diversity and creativity/innovation. Cognitive diversity, referring to "an accurate reflection of how much the team shares a common set of attitudes, values and norms" (Kilduff, Angelman, & Mehra, 2000, p. 6), can bring about diversified perspectives and cognitive resources, which are vital for knowledge-based and creative tasks (Martins, Schilpzand, Kirkman, Ivabaj, & Ivana, 2013). Though previous research indicated that team diversity may contribute to heterogeneity in the human resource pool (e.g., knowledge, information, expertise), and also inevitably lead to significant difficulties in communication and coordination (Horwitz & Horwitz, 2007; Jehn, Northcraft, & Neale, 1999), little work has been done to test the double-edged sword of cognitive diversity. The potential positive and negative effects elicited by cognitive diversity might prevail and even be counteracted, and which of these effects dominates is unclear. Such evidence signals the need to further explore how and when cognitive diversity would exert influences on team creativity/innovation.

Several studies have proposed and tested whether cognitive diversity affects creativity or innovation. The literature argued that exposure to diverse perspectives would promote the

generation of novel ideas (Hoever, van Knippenberg, Van Ginkel, & Barkema, 2012) by enhancing team learning (Van der Vegt & Bunderson, 2005) or stimulating intrinsic motivation to engage in the task (Wang et al., 2016). The key argument of these studies centered on the task-related processes and proposed that different cognitions would motivate team members to gather a wide range of information, knowledge, and ideas to better complete their tasks (Wang et al., 2016). In addition, Shin et al. (2012) proposed that the positive relationship between cognitive diversity and individual creativity would exist only when transformational leadership and creative self-efficacy were high. However, most studies have only centered on task-relevant actions as mediators to identify positive association between cognitive diversity and creativity, and examined few contextual factors (Shin et al., 2012; Wang et al., 2016). Those insufficient investigations leave doubts about whether distinct differences in cognitions can cause difficulty in building cooperative and trustful relationships and further impede innovation, and about which environment supports for the positive role of cognitive diversity.

Grounded in the categorization-elaboration model (CEM) framework (van Knippenberg et al., 2004), this research aims to dig into the complex effects of cognitive diversity on innovative work behavior by exploring both the task-related and relationship-related processes (van Knippenberg et al., 2004). Specifically, cognitive diversity can stimulate team members to discuss and rethink existing task-related problems rather than adhere to routine patterns (i.e., task reflexivity), which is conducive to innovative behavior (i.e., elaboration process; for a review, see Williams & O'Reilly, 1998). Cognitive diversity can also elicit intergroup bias, with team

members treating individuals with different cognitions as out-group members and expressing interpersonal exclusion or aggression towards out-group members (i.e., relationship conflict). This can undermine employees' willingness to innovate (i.e., categorization process; Simons, Pelled, & Smith, 1999). Furthermore, the perceptions of external approval and support for employees' innovative activities have contextual influences on the effects of cognitive diversity (Somech & Drach-Zahavy, 2013). In creative circumstances, different perspectives are more likely to be regarded as useful information inputs and taken seriously than to elicit instinctive exclusions (Anderson & West, 1998; Leung, Huang, Su, & Lu, 2011), thereby enhancing task reflexivity and buffering relationship conflict.

Our research contributes to the existing research in several ways. First, previous studies provided evidence for the positive association between cognitive diversity and creativity but ignored the destructive effects of divergent perspectives on team coordination and interpersonal trust (van Knippenberg, Dawson, West, & Homan, 2011). This study responds to the call of van Knippenberg et al. (2004) for more analysis of the complex or possibly inconsistent effects that diversity (e.g., cognitive diversity) has on creativity/innovation. Second, our research explored the dual mechanisms through which cognitive diversity is transmitted to team innovative behavior from both task (i.e., task reflexivity) and relational perspectives (i.e., relationship conflict). Third, the existing research has not examined whether a climate of innovation would enhance or mitigate the effects of cognitive diversity on innovation. The exploration of this key

climate factor could offer a contingent perspective for understanding the different processes and a vital approach to managing cognitive diversity. Figure 1 depicts our conceptual framework.

Insert Figure 1 about here

THEORY AND HYPOTHESES

Mechanisms Linking Cognitive Diversity to Innovative Work Behavior

The categorization-elaboration model (CEM) framework was proposed by van Knippenberg et al. (2004) and integrates the elaboration process and categorization process to analyze the effects of diversity from an integrative perspective. The elaboration process asserts that diversity improves team performance because heterogeneous teams have diverse information, skills, and perspectives, encouraging team members to think about task progress (Bantel & Jackson, 1989; Ellis, Mai, & Christian, 2013). In contrast, the categorization process, with significantly different assumptions, suggests that highly diverse teams can lead to subgroups based on perceived differences in certain attributes (e.g., age, gender, cognition), which can block effective exchanges and communications between members and consequently impede team operation (Jehn, Northcraft, & Neale, 1999; van Knippenberg & Schippers, 2007). Also, van Knippenberg et al. (2004) highlighted that each type of diversity would have double-sided effects (i.e., both positive and negative effects) on innovation through both the elaboration and categorization processes.

Drawing on the CEM framework, we explore whether team members' differences in cognitions elicit complex reactions (i.e., positive or negative) and influence team creativity or

innovation. Rather than use creativity as a focal outcome by centering on the generation of ideas only, this study focuses on innovative work behavior (IWB) which consists of three different behavioral tasks—idea generation, idea promotion, and idea realization (Janssen, 2000; Somech & Drach-Zahavy, 2013)—to capture broad creative activities and processes. Idea generation may be likely to relate positively to different cognitions, but the promotion and implementation of the novel ideas call for building a combination of supporters surrounding the idea through some social activities (Janssen, 2000). The potential interpersonal disharmony triggered by distinct cognitions may be unbeneficial for the processes of implementing the ideas. Therefore, the potential negative effects of cognitive diversity on team innovative behavior should be examined together with its positive ones.

In our research context, according to the elaboration process, team members with diverse cognitions might hold a more extensive range of task-relevant information/knowledge and put forward various opinions towards task-relevant issues. These comprehensive information and opinions can stimulate team members to think of new ideas by avoiding reaching an easy consensus and arousing more divergent thinking, thus benefiting creative performance (Ellis, Mai, & Christian, 2013; Yang & Konrad, 2011). However, according to the categorization process, individuals will exclude others with different cognitions, such as those with distinct interpretations of tasks, splitting the group into subgroups. People who are excluded have difficulty gaining access to useful information, which can harm trust between team members and lead to relational conflict, which consequently impedes innovation (Jehn et al., 1999; van

Knippenberg, & Schippers, 2007). Therefore, our model regards task reflexivity (the elaboration of task-relevant information) and relationship conflict (categorizing the self and others into different groups) as parallel pathways through which cognitive diversity affects team innovative work behavior.

Task Reflexivity

Team reflexivity refers to "the extent to which group members overtly reflect upon, and communicate about the group's objectives, strategies (e.g., decision making) and process (e.g., communication), and adapt them to current or anticipated circumstances" (West, Garrod, & Carletta, 1997, p. 296; see also Schippers, West, & Dawson, 2015). Team reflexivity is commonly regarded as a team process captured by a sequence of activities that involve solving work-related issues by questioning whether present ways of working are obsolete (i.e., reflection), planning detailed ways to adapt to the current surroundings (i.e., planning), and taking actions to achieve the new expectations of the team objectives (i.e., action) (for a review, see Widmer, Schippers, & West, 2009). Reflection is viewed as core to the reflexivity process (for a review, see Konradt, Otte, Schippers, & Steenfatt, 2016; Schippers, Den Hartog, & Koopman, 2007) and can be judged by the quality and quantity of information sought and evaluated; such a process might be of particular importance in diverse teams with different information sources and different views (Otte, Konradt, Garbers, & Schippers, 2017). It is important to note that reflexivity and reflection have often been mixed up and used interchangeably in previous studies (Otte et al., 2017). This paper centers on reflexivity, which

not only includes looking back on experiences and methods (i.e., reflection), but also attaches the importance of making appropriate plans and putting into practice. In addition, task reflexivity, specifically thinking about and discussing work processes and task progress, help team members avoid habitual routines and rigid mindsets (Moreland & McMinn, 2010; Schippers, Den Hartog, Koopman, & Wienk, 2003). Accordingly, we include task reflexivity, which is helpful when integrating diversified information (i.e., elaboration process), as a process variable that explains how diverse cognitions may induce creative behaviors.

Consistent with arguments by Schippers et al. (2003), team members with different cognitions have abundant information/knowledge of and perspectives on how to accomplish a task. This leads team members to develop their cognitive thinking on task objectives and strategies, and stimulates them to discuss alternative approaches (Schippers, Edmondson, & West, 2018; for a review, see Williams & O'Reilly, 1998). Especially when circumstances are novel, more distinct cognitions are needed to foster divergent thinking and open-minded discussions in the search for adaptive and effective solutions (for a review, see Widmer et al., 2009).

Reflexive teams benefit from distinct cognitions; they encourage each member to attach importance to their own viewpoint and promote proactive thinking instead of settling for habitual thoughts and routine behaviors (Schippers, Homan, & Knippenberg, 2013; Urbach, Fay, & Goral, 2010). This is necessary for generating novel ideas. Also, the literature on minority dissent (De Dreu, Nijstad, Baas, & Bechtoldt, 2008; Farh, Lee, & Farh, 2010) has asserted that task

divergences can push team members to reexamine each other's views and their effectiveness, which in turn benefits creative thinking. In addition, by reflecting on working processes, team members have more opportunities to exchange ideas, create a deep and shared understanding about different perspectives, and ultimately select the most promising plans, thus facilitating team innovative behavior (Schippers et al., 2015; Schippers, West, & Edmondson, 2018). Taken together, we propose that task reflexivity is the key mechanism by which cognitive diversity is positively associated with IWB.

Hypothesis 1: Task reflexivity mediates the positive relationship between cognitive diversity and innovative work behavior, such that cognitive diversity is positively and indirectly related to innovative work behavior through task reflexivity.

Relationship Conflict

Relationship conflict entails disagreements between team members about interpersonal issues including values and preferences (Jehn & Bendersky, 2003). The literature has introduced team conflict as a key mechanism explaining workplace diversity's effects on team outcomes (e.g., Jehn et al., 1999; Pelled, Eisenhardt, & Xin, 1999). Relationship conflict is commonly used to explain how surface-level diversity (e.g., age diversity, gender diversity, functional diversity) influences task performance (Pelled et al., 1999; Shin et al., 2012). This study explores the role of relationship conflict in mediating the linkage between cognitive diversity and innovative behavior. We propose that the contradictory views resulting from cognitive diversity can cause

employees to engage in irrational tit-for-tat responses (categorization process), thus impeding the development of creative activities.

Harrison and Klein (2007) summarized the literature on workplace diversity and argued that deep-level differences may induce negative emotional reactions, including conflict. Consistent with these arguments, Tepper, Moss and Duffy (2011) found that dissimilar employees tend to hold onto their own views and invalidate those of their counterparts, thus provoking disagreements between the opposing parties. As a form of deep-level diversity, cognitive diversity reflects differences in terms of thinking, values, preferences, and knowledge structure between team members. These differences give rise to a stronger "us versus them" mentality toward out-group members who hold opposing views, which may lead to interpersonal exclusion and relationship conflict (Olson et al., 2007). Moreover, different perspectives on interpersonal interactions can be interpreted as doubt or even negativity from others, which can decrease psychological safety and boost self-suspicion (Yang & Mossholder, 2004). To maintain a balanced state of mind, individuals may fight against the different perspectives arising from cognitive diversity instead of analyzing the different viewpoints rationally, leading to relationship conflict (Martins et al., 2013).

The negative emotions and reduced self-identity elicited by interpersonal conflicts are the main barriers to team effectiveness (De Dreu & Van Vianen, 2001). For example, a meta-analysis conducted by De Dreu and Weingart (2003) revealed strongly negative associations between relationship conflict, team performance, and satisfaction. Conflicts resulting from interpersonal

issues can be interpreted as a threat to one's ego and cause anxiety, which is clearly detrimental to employees' morale and willingness to engage in work (De Dreu & van Knippenberg, 2005). In addition, when employees experience interpersonal conflicts at work, they may spend more time and energy dealing with disagreements rather than focusing on task-related issues, limiting their information processing ability (De Dreu & Weingart, 2003; Knight, Patterson, & Dawson, 2017). Lower morale and a reduced ability are obstacles to work, especially to non-routine work that requires more creative thinking and action. Summarizing these arguments, we propose that cognitive diversity can impede IWB by eliciting relationship conflict.

Hypothesis 2: Relationship conflict mediates the negative relationship between cognitive diversity and innovative work behavior, such that cognitive diversity is negatively and indirectly related to innovative work behavior through relationship conflict.

The Moderating Role of Perceived Support for Innovation

Studies have determined that the diversity process is heavily influenced by team climate (Joshi & Roh, 2009). For innovation activities, a climate where individuals perceive support for innovation plays a vital role. According to West (1990, p. 338), support for innovation refers to "the expectation, approval and practical support of attempts to introduce new and improved ways of doing things in the work environment". Adopting this definition, our research mainly focuses on the perceived support for innovation from all team members, including the team leader. An innovative climate might impel team members with diverse backgrounds to be open to different perspectives, encouraging creative or critical thinking rather than triggering unreasonable

confrontations (Somech & Drach-Zahavy, 2013). Moreover, support for innovation may prompt team members to be more aware of the common goal (i.e., to be innovative as a team), which should heighten employees' sense of outcome interdependence (Schippers et al., 2003) and reduce the possibility of emotional conflicts. Accordingly, we argue that perceived support for innovation may moderate the linkage of cognitive diversity with task reflexivity and relationship conflict.

Individuals' perceptions of an innovative climate may strengthen the relationship between cognitive diversity and task reflexivity. Perceived support for innovation not only encourages team members with distinct cognitions to put forward new ideas, but also creates a team climate that is open to opposing ideas (Somech & Drach-Zahavy, 2013). When team members feel welcome and valued in raising more disagreements over task issues, they are more likely to provide constructive feedback to their peers on plans and discuss the suitability of these plans in new environments, rather than just give an easy resolution (Walumbwa & Schaubroeck, 2009). Moreover, a highly supportive atmosphere makes team members feel safe and stimulates the sharing of knowledge and information, which is essential for developing divergent thinking modes (Clegg, Unsworth, Epitropaki, & Parker, 2002). These arguments support the notion that diverse cognitions have an enhanced effect on task reflexivity where there is a perception of support for innovation.

We also suggest that in a climate that supports innovation, the positive effects of cognitive diversity on relationship conflict may be attenuated. Cognitive diversity undermines an

individual's willingness to understand others and lowers the quality of interpersonal exchanges, resulting in relationship conflict. However, when employees strongly perceive support and respect from their colleagues, they are more willing to trust and communicate with each other (Schippers et al., 2015) and to try to understand each other rather than to repel disparate individuals (Herman, Dasborough, & Ashkanasy, 2008). These actions improve the quality of working relationships between team members. Thus, the negative emotional reactions caused by cognitive diversity are buffered when strong support for innovative activities is perceived. Hence, we offer the following hypotheses.

Hypothesis 3a: Perceived support for innovation will moderate the relationship between cognitive diversity and task reflexivity, such that the positive relationship will be stronger when a team has a higher level of perceived support for innovation.

Hypothesis 3b: Perceived support for innovation will moderate the relationship between cognitive diversity and relationship conflict, such that the positive relationship will be weaker when a team has a higher level of perceived support for innovation.

Differences in cognitions not only stimulate team members to integrate well-rounded information/knowledge and ruminate over task-related issues to reach better solutions (Schippers et al., 2003), but also cause disharmonious interpersonal relations and the exclusion of those with opposing perspectives (Martins et al., 2013). Therefore, we posit that task reflexivity (positive pathway) and relationship conflict (negative pathway) are the mechanisms through which cognitive diversity impacts team IWB. As explained earlier, a higher perception of support for

innovation is proposed to form an inclusive and supportive environment in which team members think differently and strive towards a common goal (Somech & Drach-Zahavy, 2013). In such a climate, team members with different cognitions tend to concentrate more on task execution rather than fall into social disharmony, thereby motivating team members to innovate. In contrast, when there is little support for innovation, team members are more likely to reject differing opinions and stick to fixed patterns of thinking, which becomes a barrier to translating cognitive diversity into creative outcomes.

Taken together, we propose that the perceived support for innovation conditionally influences the strength of the indirect effects of cognitive diversity on innovative behaviors channeled through task reflexivity and relationship conflict, thus reflecting a pattern of moderated mediation between the variables. Because cognitive diversity is expected to have a strong relationship with task reflexivity and a weak association with relationship conflict when perceived support for innovation is high, we further present the following hypotheses.

Hypothesis 4a: Perceived support for innovation will moderate the positive indirect effect of cognitive diversity on innovative work behavior through task reflexivity, such that the indirect effect will be stronger when perceived support for innovation is high.

Hypothesis 4b: Perceived support for innovation will moderate the negative indirect effect of cognitive diversity on innovative work behavior through relationship conflict, such that the indirect effect will be weaker when perceived support for innovation is high.

METHOD

Sample and Procedure

Data were collected from team leaders and members from 10 manufacturing enterprises in mainland China at two different times. In the first wave of the survey, all participants independently reported their demographic information (i.e., age, gender) and their perceptions of team cognitive diversity, reflexivity, conflict, and support for innovation according to their daily experience at work. Three months later, the second wave of the survey asked the corresponding leaders to report their perceptions of their teams' innovative work behavior, their teams' demographic characteristics (i.e., team longevity, task type), and their own demographic information (i.e., age, gender).

The human resource departments in the sample companies helped us identify 150 teams. Five hundred questionnaires were delivered to team members and 447 were returned for an effective rate of 89.4%. For each team, 3–9 team members were given the questionnaires and approximately 70% of the teams provided complete responses (1–2 members in the remaining teams gave no response or invalid responses). In the second-wave survey, we received 132 leaders' responses, with a response rate of 88.0%.

Following the advice of Barrick, Bradley, Kristof-Brown and Colbert (2007), the responses of a team with at least three members (excluding team leaders) should be retained. After matching team members' and leaders' questionnaires, we selected teams with three or more members (excluding the team leader) for our final sample. There were 101 teams in our final

sample, comprising 420 team members (i.e., subordinates) and 101 team leaders. Of the 101 teams, the average team size was 4.20 members (excluding the team leader; SD=1.43, range 3–7), and the mean team longevity was 2.14 years (SD=0.09, range=0.08–5). Of the 101 team leaders, the average age was 38.77 (SD=6.53, range=26–55) and 59.4% were male. Of the 420 team members, the average age was 28.1 (SD=7.59, range=20–53) and 44.05% were male.

Measures

All of our measurements were originally published in English. Following the back-translation procedure (Brislin, 1980), a Chinese student who specialized in English translated the measurements into Chinese, and then two additional Chinese students who specialized in English independently translated the Chinese version back into English. By comparing and discussing the two English versions with the translators, we finalized the back-translated version at a high level of agreement.

Cognitive diversity. Cognitive diversity was measured in the first wave of the survey using a four-item scale adapted from Van der Vegt and Janssen (2003). Team members were asked to report their agreement with four statements regarding team members' differences in cognitions. A sample item is "To what extent do team members differ in their way of thinking?" (1 = "to a very small extent" to 5 = "to a very large extent"). Cronbach's alpha for this scale was 0.82.

Task reflexivity. We adopted an eight-item scale from Carter and West (1998) to assess task reflexivity in the first-wave survey. Team members were asked to indicate the level of task reflexivity. A sample item is "The methods used by the team to complete the job are often

discussed" (1 = "strongly disagree" to 5 = "strongly agree"). Cronbach's alpha for this scale was 0.87.

Relationship conflict. We assessed relationship conflict in the first wave using the measures developed by Jehn (1997). Team members were asked to assess the extent to which relationship conflict was "frequent." A sample item is "How much friction is there among members in your work unit?" (1 = "not at all" to 5 = "very much"). Cronbach's alpha for this scale was 0.93.

Support for innovation. We used an eight-item scale derived from the Team Climate Inventory (TCI) Scale (Anderson & West, 1998) in the first wave to measure the extent to which team members supported innovation. Team members were asked to assess the extent to which they agreed with each statement about the perceived level of support for innovation. A sample item is "People in the team cooperate to help develop and apply new ideas" (1 = "strongly disagree" to 5 = "strongly agree"). Cronbach's alpha for this scale was 0.95.

Innovative work behavior. We used a nine-item scale following Janssen (2000) to measure IWB in the second wave of the survey. Team leaders were instructed to evaluate the IWB of their whole teams. A sample item is "This team can transform innovative ideas into useful applications" (1 = "strongly disagree" to 5 = "strongly agree"). Cronbach's alpha for this scale was 0.85.

Control variables. Team size was controlled in this study because larger teams are more likely to have conflicts that affect team processes and effectiveness (Curral, Forrester, Dawson, & West, 2001; Farh et al., 2010; Ogungbamila, Ogungbamila, & Adetula, 2010). We also controlled

for team longevity because teams with greater longevity can develop a shared understanding of tasks, thus giving rise to less conflict and reflexivity (Pelled et al., 1999; Schippers et al., 2013). Moreover, whether a team task is innovative may be an intervening variable; for example, innovative tasks are standard for research and development (R&D) teams, while routine tasks are necessary for service and administration teams. Thus, task type was added as a control variable, with tasks divided into innovative tasks (i.e., R&D teams, design teams, consulting teams) and non-innovative tasks (i.e., administration teams, service teams).

As bio-demographic diversity may have significant effects on team processes and outcomes (Horwitz & Horwitz, 2007; Schippers et al., 2003), we controlled for age diversity and gender diversity in our model. To calculate age diversity, we used the coefficient of variation (i.e., standard deviation divided by the mean) as proposed by Allison (1978). For gender diversity, we adopted the index $H=-\sum_{i=1}^{n} Pi \ (\ln Pi)$ as suggested by Teachman (1980), where Pi represents the proportion of members in a particular category. For instance, if the team is composed of five males and three females, the gender diversity of this team is $-\left(\frac{5}{8} \ln\frac{5}{8} + \frac{3}{8} \ln\frac{3}{8}\right) = 0.6616.$

We also controlled for task conflict and social reflexivity because they were more likely to correlate with our focal variables (i.e., task reflexivity, relationship conflict) and then influence individuals' creative outcomes. We used Jehn's (1997) scale to assess task conflict and Carter and West's (1998) scale to measure social reflexivity. Team members were asked to indicate the level of task conflict and social reflexivity in the first wave. A sample item for task conflict is "How often do people in your work unit disagree about the work being done?" (1 = "not at all" to

5 = “very often”). A sample item for social reflexivity is “Team members provide each other with support during difficult times” (1 = “strongly disagree” to 5 = “strongly agree”). Cronbach’s alpha for task conflict was 0.88 and that for social reflexivity was 0.80.

RESULTS

Confirmatory Factor Analysis

Confirmatory factor analysis was conducted to determine the discriminant and convergent validity of the focal variables reported by team members: cognitive diversity, task reflexivity, social reflexivity, task conflict, relationship conflict, and support for innovation. Following Mathieu and Farr’s (1991) suggestion, we created item parcels because our sample size was not large enough to measure individual items. The two items with the highest and lowest factor loadings were aggregated into one score. The two items with the second-highest and second-lowest factor loadings were then combined, and so forth. Using this method, we ultimately stipulated 21 items in a six-factor loading (4 raw items for cognitive diversity, 3 parcel items for task reflexivity, 3 parcel items for social reflexivity, 4 raw items for task conflict, 4 raw items for relationship conflict, and 3 parcel items for support for innovation).

The model yielded a good fit, $\chi^2(174) = 349.20$, $p < 0.01$, TLI = 0.90, CFI = 0.91, RMSEA = 0.09. Compared with the six-factor model, all of the five-factor models in which any two of the six factors were combined provided worse fits to the data ($95.90 < \Delta\chi^2[\Delta df = 5] < 1521.23$, $p < 0.01$). Each item loaded significantly on its corresponding factor, and the smallest factor loading was 0.60. For adequate validity analysis, we also calculated the average variance extracted and

the composite reliability of each construct as recommended by Fornell and Larcker (1981). The average variance extracted values were 0.66, 0.68, 0.51, 0.67, 0.82, and 0.71 (all exceeded the cut-off of 0.50), and the composite reliability values were 0.88, 0.94, 0.89, 0.89, 0.95, and 0.95 (all exceeded the cut-off of 0.70) for cognitive diversity, task reflexivity, social reflexivity, task conflict, relationship conflict, and support for innovation, respectively. The average variance extracted was greater than the squared correlations between constructs (Fornell & Larcker, 1981). These results demonstrate discriminant and convergent validity and show that all of our proposed constructs could be used to test our hypotheses.

Data Aggregation

The individual-level variables were assessed by more than one source and needed to be aggregated to the team level. In doing so, three statistics were used to examine construct validity issues for team-level composition variables: ICC1, ICC2 and R_{wg} (James, Demaree, & Wolf, 1984). ICC1 and ICC2 (intraclass correlation coefficients) were computed to justify whether team membership accounted for members' rating. Based on James (1982), data aggregation is appropriate if the ICC1 is higher than 0.05 and the ICC2 is higher than 0.50. The R_{wg} score was used to examine the agreement between team members about the same change. A R_{wg} score above 0.70 indicates a proper data combination (James, Joyce, & Slocum, 1988).

At the individual level, team members were asked to rate their perception of their team's cognitive diversity, task/social reflexivity, task/relationship conflict, and support for innovation, which were aggregated to the team level for further analysis. To examine the suitability of the

aggregation, ICC1, ICC2, and R_{wg} were calculated. The results show that for cognitive diversity, task reflexivity, social reflexivity, task conflict, relationship conflict, and support for innovation, the ICC1, ICC2 and mean R_{wg} values were 0.11–0.34, 0.58–0.79, and 0.79–0.95, respectively, which exceeded the conventional cut-offs of 0.05, 0.50 and 0.70. Thus, the scores evaluated by the team members were averaged to obtain the team-level scores. We present the means, standard deviations and correlations between all variables in Table 1.

Insert Table 1 about here

Hypotheses Testing

We predicted that task reflexivity (*Hypothesis 1*) and relationship conflict (*Hypothesis 2*) would mediate the relationship between cognitive diversity and innovative work behavior. To initially test the direct effects between our measurement variables, we conducted *hierarchical regression analysis*. The results in Table 2 demonstrate that, after controlling for team size, task type, team longevity, age diversity, and gender diversity, cognitive diversity was positively related to task reflexivity (B = 0.32, *SE* = 0.06, $p < 0.01$, *Model 2*) and relationship conflict (B = 0.30, *SE* = 0.12, $p < 0.05$, *Model 6*). As expected, task reflexivity had a positive effect on IWB (B = 0.47, *SE* = 0.17, $p < 0.01$, *Model 13*), and relationship conflict was negatively associated with IWB (B = -0.32, *SE* = 0.09, $p < 0.01$, *Model 13*) after controlling all relevant variables.

To further test cognitive diversity's indirect effects on IWB through task reflexivity and relationship conflict, we used the bootstrapping method (Edwards & Lambert, 2007; Preacher & Hayes, 2008). We added the controlled variables of team size, task type, team longevity, age

diversity, and gender diversity as covariates. Task reflexivity, relationship conflict, and two seemingly correlated variables (task conflict and social reflexivity) were included as mediators. The results indicate that the indirect effect between cognitive diversity and IWB through task reflexivity (cognitive diversity→task reflexivity→IWB) was significant (indirect effect = 0.13, 95% CI = [0.04, 0.26]). Also, cognitive diversity's indirect effect on IWB via relationship conflict (cognitive diversity→relationship conflict→IWB) was supported (indirect effect = -0.12, 95% CI = [-0.29, -0.03]). These results are consistent with our predictions (*Hypothesis 1 and Hypothesis 2*).

Insert Tables 2 and 3 about here

Hypotheses 3a and *3b* predicted that perceived support for innovation would enhance the cognitive diversity–task reflexivity relationship but reduce the cognitive diversity–relationship conflict association. Table 2 demonstrates that the cognitive diversity–perceived support for innovation interaction term was positively related to task reflexivity (B = 0.12, *SE* = 0.03, $p < 0.01$, *Model 4*), and negatively associated with relationship conflict (B = -0.22, *SE* = 0.06, $p < 0.01$, *Model 8*), thereby supporting *Hypotheses 3a* and *3b*. Then we followed the procedure proposed by Aiken and West (1991) to plot this interaction effect at varying levels of perceived support for innovation. Specifically, high perceived support for innovation was defined as 1 standard deviation above the mean, and low perceived support for innovation as 1 standard deviation below the mean. As expected, team members' high perception of support for innovation strengthened the positive relationship between cognitive diversity and task reflexivity (see Figure

2) and weakened the positive relationship between cognitive diversity and relationship conflict (see Figure 3). This evidence further supports *Hypotheses 3a* and *3b*.

Insert Figures 2 and 3 about here

Hypothesis 4 proposed that the indirect effects would be moderated by perceived support for innovation. The bootstrapping results for this conditional indirect effect (Edwards & Lambert, 2007; Preacher & Hayes, 2008) are shown in Table 4. For the cognitive diversity→task reflexivity→ IWB linkage, the indirect effect was nonsignificant when perceived support for innovation was low (indirect effect = 0.03, 95% CI = [-0.09, 0.26]), but positive and significant when perceived support for innovation was medium (indirect effect = 0.11, 95% CI = [0.03, 0.24]) or high (indirect effect = 0.18, 95% CI = [0.04, 0.38]), suggesting that the positive indirect effect of cognitive diversity on IWB through task reflexivity varied at different levels of perceived support for innovation (supporting *Hypothesis 4a*). Correspondingly, for the cognitive diversity→relationship conflict→IWB linkage, the indirect effect was negative and significant when perceived support for innovation was low (indirect effect = -0.21, 95% CI = [-0.51, -0.03]) or medium (indirect effect = -0.14, 95% CI = [-0.32, -0.03]), but not significant when perceived support for innovation was high (indirect effect = -0.08, 95% CI = [-0.27, 0.01]), providing evidence for *Hypothesis 4b*.

Insert Table 4 about here

Supplementary Analyses

Researchers have argued over the positive and negative effects of workplace diversity on work outcomes (Horwitz & Horwitz, 2007; van Knippenberg et al., 2004). Our results show that cognitive diversity had no significant effect on IWB (B = 0.06, *SE* = 0.10, $p > 0.05$, *Model 10*), which may be explained by the beneficial effects (elicited by task reflexivity) canceling out the adverse effects (elicited by relationship conflict). Whether the beneficial effects of cognitive diversity exceed the adverse ones and ultimately benefit for the team would depend on contextual factors. This suggests that more research about contingency variables when analyzing the effects of workplace diversity is needed (Guillaume, Dawson, Otaye-Ebede, Woods, & West, 2017; Joshi & Roh, 2009; van Knippenberg et al., 2004). Accordingly, we conducted an additional analysis to test whether employees' perception of a climate supportive for innovation would directly influence the effects of cognitive diversity on IWB.

Our results show that the interaction between cognitive diversity and perceived support for innovation had positive effects on IWB (B = 0.21, *SE* = 0.05, $p < 0.01$, *Model 11*) after controlling for relevant variables. Furthermore, we plotted the relationship between cognitive diversity and IWB at high and low levels of perceived support for innovation (see Figure 4). When employees experienced high support for innovation, the relationship between cognitive diversity and IWB was positive. Yet, when employees perceived low support for innovation, this relationship became negative. These results suggest that whether employees with diverse cognitions express and discuss their creative ideas was determined by their perception of others'

support. Diverse teams can greatly benefit from an environment supporting creativity that effectively stimulates creative opinions, approaches, and achievements. But unfavorable climates together with divergent cognitions would be a devil and push teams into tremendous difficulty as they struggle with unacceptable levels of dissents.

Insert Figure 4 about here

DISCUSSION

Adopting an integrated perspective (i.e., the CEM framework), our study explores the mechanisms and circumstances under which cognitive diversity influences IWB. Using multi-source data from both team leaders and members, our results indicate the double-sided effects of cognitive diversity on IWB through dual mechanisms. On the one hand, cognitive diversity could stimulate the integration of task-related information and knowledge, which was conducive to raising task reflexivity and strengthening IWB (*Hypothesis 1*). On the other hand, differences in cognitions could lead to emotional exclusion of out-group members, causing relationship conflict and hampering IWB (*Hypothesis 2*). The current study also demonstrated the moderating effects of perceived support for innovation; the relationship between cognitive diversity and task reflexivity was stronger while the association between cognitive diversity and relationship conflict was weaker when team members perceived higher support for innovation from other team members (*Hypothesis 3*). Furthermore, as expected, the indirect effect of cognitive diversity on IWB through task reflexivity and relationship conflict varied with the level of perceived support for innovation (*Hypothesis 4*). This might have been due to the positive interactions and

social exchanges emerging from team members who perceived high support for innovation, which led them to concentrate on task processes and ignore disharmony in interpersonal interactions.

Theoretical Implications

Our research makes several theoretical contributions. First, our research provides empirical evidence linking cognitive diversity to team innovative behavior, in contrast with the limited existing research that has focused on how cognitive diversity stimulates creativity as measured by the generation of creative ideas (Shin et al., 2012; Wang et al., 2016). Furthermore, this study extends previous studies regarding diversity by adopting the CEM framework. Few studies have explored the dual-mechanism process in an integrated model, so the question of whether and how cognitive diversity benefits team innovation remains unclear (Phillips & Loyd, 2006; Swider et al., 2015). Our study addresses this issue by identifying task reflexivity (elaboration process) and relationship conflict (categorization process) as two key mediators that translate cognitive diversity into IWB. To the best of our knowledge, this empirical study is the first to propose and test both elaboration and categorization processes as two parallel mechanisms, and to examine the ambiguous effects of cognitive diversity on IWB.

Second, previous research has mainly explored the mediating role of task-related activities on the positive connection between cognitive diversity and team innovation (Wang et al., 2016). This study further proposes and tests whether cognitive diversity would cause interpersonal exclusion by focusing on interpersonal activities. The results showed that cognitive diversity can

enhance IWB through task reflexivity and hamper IWB through relationship conflict and that the effects of the positive and negative pathways can cancel out, causing the cognitive diversity-IWB linkage to appear insignificant. Mannix and Neale (2005) argued that diversity may provoke more beneficial thinking on task-related aspects and stimulate more negative emotions on relational aspects. Though it is a well-argued standpoint, less empirical work has been conducted on this proposition. Responding to the calls for new research using this integrative perspective (van Knippenberg et al., 2004), this study takes a holistic view to analyze the effects of diversity from both the task and relational perspectives.

Third, one of main findings of this study is that perceived support for innovation serve as a key contextual factor for both the direct and indirect effects of cognitive diversity on IWB. Specifically, we found that the direct effects of cognitive diversity and IWB were positive only when team members perceived high support for innovative activities from their peers. Also, the positive indirect effect of cognitive diversity on IWB (via task reflexivity) was strengthened in this case, while the negative indirect effect of cognitive diversity on IWB (through relationship conflict) was weakened at higher levels of perceived support for innovation. One possible explanation for this finding is that in climates that do not support innovation, team members may exclude those with the distinct cognitions rather than treat them as beneficial resources in reevaluating the task at hand. Further to Siegel and Kaemmerer's (1978) position that one's perception of the climate is the crucial factor influencing his or her subsequent attitudes and behaviors, our findings show that perceived support for innovation plays a critical role in

interpreting the meaning of cognitive diversity. Our contingent perspective could also provide a contextual understanding of how the double-edged sword of cognitive diversity can be managed to magnify the positive effect and reduce the negative effect.

Managerial Implications

To reap the benefits of cognitive diversity, our proposed dual-pathway model suggests that task reflexivity positively mediates the relationship between cognitive diversity and IWB and should be reinforced, while relationship conflict plays a negative role and should be minimized. The current study provides guidance for using cognitive diversity in organizations. First, team leaders should pay attention to team members' reflections on task-relevant issues and encourage individuals to rethink and reevaluate task plans by providing both emotional and material rewards which can promote creative outcomes.

To eliminate the negative effect of cognitive diversity on IWB, organizations and human resource managers should develop a monitoring system to control relationship conflict. Following Herzberg's motivation theory (Herzberg, Mausner, & Snyderman, 1959), relationships should be regarded as a hygiene factor; a good exchange relationship does not necessarily lead to high innovation, but a poor exchange relationship strongly hinders innovation. Hence, a human resource policy with a penalty for interpersonal conflict could help avoid the negative consequences of relationship conflict.

As demonstrated by our results, perceived support for innovation offers a possible way to strengthen the positive effect of cognitive diversity and weaken its negative influence. Building

an environment that supports and encourages innovation requires efforts not only from top managerial teams to develop motivational systems, such as appealing promotion systems and reward systems for innovative performance, but also from team leaders to provide assistance and emotional support.

Limitations and Future Research Directions

Despite the contributions of this study, it also has some limitations. The first limitation is related to the data collection. Although we collected data from multiple sources which helped to alleviate common method variance bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), the data are cross-sectional in nature, which could only provide evidence for the correlational relationship between our focal variables but not the causality. Future research should use a longitudinal design or field experiments to examine the causal effects of cognitive diversity on IWB. Moreover, the time interval for collecting data from team members and their corresponding leaders was three months, which might introduce the possibility that other factors may interfere with the outcome variables (i.e., IWB) and weaken the credibility of our results. For example, the development and improvement in team members' creative abilities may cause team leaders to highly evaluate the degree of innovation. Considering that teams need time to develop innovative ideas, future research should require pre- and post-measures of innovative activities from the same participants to capture the dynamic development of novel ideas elicited by cognitive diversity, reflexivity, and conflict. In addition, our findings may be subject to "social desirability response bias" because the team leader is also a member of the team and might evaluate his or

her own team's innovation more highly. Thus, objective innovation data should be used to examine the established relationship in future research.

Another limitation is that our research focuses on exploring the effects of cognitive diversity on overall IWB rather than on the distinct processes in different stages of innovation. As proposed by Farh et al. (2010), moderate levels of task conflict are more likely to translate into creativity in earlier project stages than in later stages because of the different focal concerns in different stages. Exposure to different perspectives stimulates the generation of novel ideas and helps to determine an optimal plan in early stages, whereas plans cannot be easily changed by different perspectives when teams are close to deadlines in later stages. Although we control for team longevity, which can represent stages of development, differential processes in early or later project phases are absent in our research; this should be paid more attention in future research.

Finally, the present study tested only the moderating effect of team climate (i.e., perceived support for innovation). Other potential contingent factors, such as task-related characteristics (e.g., task/goal/reward interdependence) (Saavedra, Earley, & Van Dyne, 1993) and interpersonal interactions (e.g., leader–member or member–member exchanges) (Nishii & Mayer, 2009), which may influence individuals' willingness to understand others' viewpoints and stimulate different responses to cognitive diversity, should be examined in future research. By examining other contextual factors that might influence the effects of cognitive diversity on IWB, future studies can further draw a relatively more complete picture of how cognitive diversity influences team innovative behavior.

CONCLUSION

This study provides insight into issues surrounding when and how cognitive diversity facilitates IWB. It identifies two pathways between cognitive diversity and IWB: task reflexivity and relationship conflict. The dual-pathway model not only offers an explanation for the inconsistent results about the effects of cognitive diversity on IWB in the literature, but also provides an integrative perspective to further understand the role of reflexivity and conflict in the relationship between cognitive diversity and IWB. Furthermore, a key boundary condition—perceived support for innovation—is identified as influencing cognitive diversity's indirect effect on IWB through task reflexivity and relationship conflict mechanisms. These findings have theoretical importance and practical implications.

References

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.

Allison, P. D. Measures of inequality. (1978). *American Sociological Review, 43(6)*: 865-880. DOI: 10.2307/2094626

Anderson, N. R., & West, M. A. (1998). Measuring climate for work group innovation: Development and validation of the team climate inventory. *Journal of Organizational Behavior, 19(3)*: 235-258. DOI: 10.1002/(SICI)1099-1379(199805)19:3%3C235::AID-JOB837%3E3.0.CO;2-C

Barrick, M. R., Bradley, B. H., Kristof-Brown, A. L., & Colbert, A. E. (2007). The moderating role of top management team interdependence: Implications for real teams and working groups. *Academy of Management Journal, 50(3)*: 544-557. DOI: 10.5465/AMJ.2007.25525781

Brislin, R. W. (1980). Translation and content analysis of oral and written material. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (pp. 389-444). Boston, MA: Allyn & Bacon.

Carter, S. M., & West, M. A. (1998). Reflexivity, effectiveness, and mental health in BBC-TV production teams. *Small Group Research, 29(5)*: 583-601. DOI: 10.1177/1046496498295003

Clegg, C., Unsworth, K., Epitropaki, O., & Parker, G. (2002). Implicating trust in the innovation process. *Journal of Occupational and Organizational Psychology, 75(4)*: 409-422. DOI: *10.1348/096317902321119574*

Curral, L. A., Forrester, R. H., Dawson, J. F., & West, M. A. (2001). It's what you do and the way that you do it: Team task, team size, and innovation-related group processes. *European Journal of Work and Organizational Psychology, 10(2)*: 187-204. DOI: 10.1080/13594320143000627

De Dreu, C. K. W., & van Knippenberg, D. (2005). The possessive self as a barrier to conflict resolution: Effects of mere ownership, process accountability, and self-concept clarity on competitive cognitions and behavior. *Journal of Personality and Social Psychology, 89(3)*: 345-357. DOI: 10.1037/0022-3514.89.3.345

De Dreu, C. K. W. (2006). When too little or too much hurts: Evidence for a curvilinear relationship between task conflict and innovation in teams. *Journal of Management, 32(1)*: 83-107. DOI: 10.1177/0149206305277795

De Dreu, C. K. W., Nijstad, B. A., Baas, M., & Bechtoldt, M. N. (2008). The creating force of minority dissent: A motivated information processing perspective. *Social Influence, 3(4)*: 267-285. DOI: 10.1080/15534510802341157

De Dreu, C. K. W., & Van Vianen, A. E. M. (2001). Managing relationship conflict and the effectiveness of organizational teams. *Journal of Organizational behavior, 22(3)*: 309-328. DOI: 10.1002/job.71

De Dreu, C. K. W., & Weingart, L. R. (2003). Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *Journal of Applied Psychology, 88(4)*: 741-749. DOI: 10.1037/0021-9010.88.4.741

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: a general analytical framework using moderated path analysis. *Psychological Methods, 12(1)*: 1-22. DOI: 10.1037/1082-989X.12.1.1

Ellis, A. P. J., Mai, K. M., & Christian, J. S. (2013). Examining the asymmetrical effects of goal faultlines in groups: A categorization-elaboration approach. *Journal of Applied Psychology, 98(6)*: 948-961. DOI: 10.1037/a0033725

Farh, J. L., Lee, C., & Farh, C. I. C. (2010). Task conflict and team creativity: A question of how much and when. *Journal of Applied Psychology, 95(6)*: 1173-1180. DOI: 10.1037/a0020015

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research, 18(3):* 382-388. DOI: 10.2307/3150980

Guillaume, Y. R. F., Dawson, J. F., Otaye-Ebede, L., Woods, S. A, & West, M. A. (2017). Harnessing demographic differences in organizations: What moderates the effects of workplace diversity? *Journal of Organizational Behavior, 38(2)*: 276-303. DOI: 10.1002/job.2040

Guillaume, Y. R. F., Dawson, J. F., Woods, S. A., Sacramento, C. A., & West, M. A. (2013). Getting diversity at work to work: What we know and what we still don't know. *Journal of Occupational and Organizational Psychology, 86(2)*: 123-141. DOI: 10.1111/joop.12009

Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review, 32(4)*: 1199-1228. DOI: 10.5465/AMR.2007.26586096

Herman, H. M., Dasborough, M. T., & Ashkanasy, N. M. (2008). A multi-level analysis of team climate and interpersonal exchange relationships at work. *The Leadership Quarterly, 19(2)*: 195-211. DOI: 10.1016/j.leaqua.2008.01.005

Herzberg, F., Mausner, B., & Snyderman, B. B. (1959). *The motivation to work* (2nd ed.). New York: John Wiley & Sons.

Hoever, I. J., van Knippenberg, D., Van Ginkel, W. P., & Barkema, H. G. 2012. Fostering team creativity: perspective taking as key to unlocking diversity's potential. *Journal of Applied Psychology, 97(5)*: 982-996. DOI: 10.1037/a0029159

Horwitz, S. K., & Horwitz, I. B. (2007). The effects of team diversity on team outcomes: A meta-analytic review of team demography. *Journal of Management, 33(6)*: 987-1015. DOI: 10.1177/0149206307308587

James, L. R. (1982). Aggregation bias in estimates of perceptual agreement. *Journal of Applied Psychology, 67(2)*: 219-229. DOI: 10.1037/0021-9010.67.2.219

James, L. R., Demaree, R. G., & Wolf, G. (1984). Estimating within-group interrater reliability with and without response bias. *Journal of Applied Psychology, 69(1)*: 85-98. DOI: 10.1037/0021-9010.69.1.85

James, L. R., Joyce, W. F., & Slocum, J. W. (1988). Comment: Organizations do not cognize. *Academy of Management Review, 13(1)*: 129-132. DOI: 10.2307/258360

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative work behaviour. *Journal of Occupational and Organizational Psychology, 73(3)*: 287-302. DOI: 10.1348/096317900167038

Jehn, K. A. (1997). A qualitative analysis of conflict types and dimensions in organizational groups. *Administrative Science Quarterly, 42(3)*: 530-557. DOI: 10.2307/2393737

Jehn, K. A., Northcraft, G. B., & Neale, M. A. (1999). Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Administrative Science Quarterly, 44(4)*: 741-763. DOI: 10.2307/2667054

Jehn, K. A., & Bendersky, C. (2003). Intragroup conflict in organizations: A contingency perspective on the conflict-outcome relationship. *Research in Organizational Behavior, 25*: 187-242. DOI: 10.1016/S0191-3085(03)25005-X

Joshi, A., & Roh, H. (2009). The role of context in work team diversity research: A meta-analytic review. *Academy of Management Journal, 52(3)*: 599-627. DOI: 10.5465/AMJ.2009.41331491

Kilduff, M., Angelman, R., & Mehra, A. (2000). Top management diversity and firm performance: Examining the role of cognitions. *Organization Science, 11(1)*: 21-34. DOI: 10.1287/orsc.11.1.21.12569

Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior, 38(6)*: 792-812. DOI: 10.1002/job.2167

Konradt, U., Otte, K. P., Schippers, M. C., & Steenfatt, C. (2016). Reflexivity in teams: A review and new perspectives. *The Journal of Psychology, 150(2)*: 153-174. DOI: 10.1080/00223980.2015.1050977

Leung, K., Huang, K. L., Su, C. H., & Lu, L. (2011). Curvilinear relationships between role stress and innovative performance: Moderating effects of perceived support for innovation. *Journal of Occupational and Organizational Psychology, 84(4)*: 741-758. DOI: 10.1348/096317910X520421

Mannix, E., Neale, M. A. 2005. What differences make a difference? The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest, 6(2)*: 31-55. DOI: 10.1111/j.1529-1006.2005.00022.x

Martins, L. L., Schilpzand, M. C., Kirkman, B. L., Ivabaj, S., & Ivanaj, V. (2013). A contingency view of the effects of cognitive diversity on team performance: The moderating roles of team psychological safety and relationship conflict. *Small Group Research, 44(2)*: 96-126. DOI: 10.1177/1046496412466921

Mathieu, J. E., & Farr, J. L. (1991). Further evidence for the discriminant validity of measures of organizational commitment, job involvement, and job satisfaction. *Journal of Applied Psychology, 76*: 127-133. DOI: 10.1037/0021-9010.76.1.127

Metcalfe, J., & Mischel, W. (1999). A hot/cool-system analysis of delay of gratification: dynamics of willpower. *Psychological review, 106(1)*: 3-19. DOI: 10.1037/0033-295X.106.1.3

Moreland, R. L., & McMinn, J. G. (2010). Group reflexivity and performance. In S. R. Thye & E. J. Lawler (Eds.), Advances in Group Processes (Vol. 27, pp. 63-95). Bingley, UK: Emerald Group Publishing Limited.

Ogungbamila, B., Ogungbamila, A, & Adetula, G. A. (2010). Effects of team size and work team perception on workplace commitment: Evidence from 23 production teams. *Small Group Research, 41(6)*: 725-745. DOI: 10.1177/1046496410376306

Olson, B. J., Parayitam, S., & Bao, Y. (2007). Strategic decision making: The effects of cognitive diversity, conflict, and trust on decision outcomes. *Journal of Management, 33(2)*: 196-222. DOI: 10.1177/0149206306298657

Otte, K. P., Konradt, U., Garbers, Y., & Schippers, M. C. (2017). Development and validation of the REMINT: A reflection measure for individuals and teams. *European Journal of Work and Organizational Psychology*, 26(2): 299-313. DOI: 10.1080/1359432X.2016.1261826

Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly, 44(1)*: 1-28. DOI: 10.2307/2667029

Phillips, K. W., & Loyd, D. L. (2006). When surface and deep-level diversity collide: The effects on dissenting group members. *Organizational Behavior and Human Decision Processes, 99(2)*: 143-160. DOI: 10.1016/j.obhdp.2005.12.001

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88(5)*: 879-903. DOI: 10.1037/0021-9010.88.5.879

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40(3)*: 879-891. DOI: 10.3758/BRM.40.3.879

Saavedra, R., Earley, P. C., & Van Dyne, L. (1993). Complex interdependence in task-performing groups. *Journal of Applied Psychology, 78(1)*: 61-72. DOI: 10.1037/0021-9010.78.1.61

Schippers, M. C., Den Hartog, D. N., Koopman, P. L., & Wienk, J. A. (2003). Diversity and team outcomes: The moderating effects of outcome interdependence and group longevity and the mediating effect of reflexivity. *Journal of Organizational Behavior, 24(6)*: 779-802. DOI: 10.1037/0033-295X.106.1.3

Schippers, M. C., Den Hartog, D. N., & Koopman, P. L. (2007). Reflexivity in teams: A measure and correlates. *Applied Psychology: An International Review, 56(2)*: 189-211. DOI: 10.1111/j.1464-0597.2006.00250.x

Schippers, M. C., Edmondson, A. C., & West, M. A. (2018). Team reflexivity. In J. M. Levine & L. Argote (Eds.), Handbook of Group and Organizational Learning Oxford University Press.

Schippers, M. C., Homan, A. C., & Knippenberg, D. (2013). To reflect or not to reflect: Prior team performance as a boundary condition of the effects of reflexivity on learning and final team performance. *Journal of Organizational Behavior, 34(1)*: 6-23. DOI: 10.1002/job.1784

Schippers, M. C., West, M. A., & Dawson, J. F. (2015). Team reflexivity and innovation: The moderating role of team context. *Journal of Management, 41(3)*: 769-788. DOI: 10.1177/0149206312441210

Schippers, M. C., West, M. A., & Edmondson, A. C. (2018). Team reflexivity and innovation. In R. Rico, N. M. Ashkanasy & O. B. Salas (Eds.), Handbook of the Psychology of Teamwork and Collaborative Processes: Wiley-Blackwell.

Shin, S. J., Kim, T. Y., Lee, J. Y., & Bian, L. (2012). Cognitive team diversity and individual team member creativity: A cross-level interaction. *Academy of Management Journal, 55(1)*: 197-212. DOI: 10.5465/amj.2010.0270

Siegel, S. M., & Kaemmerer, W. F. (1978). Measuring the perceived support for innovation in organizations. *Journal of Applied Psychology, 63(5)*: 553-562. DOI: 10.1037/0021-9010.63.5.553

Simons, T., Pelled, L. H., & Smith, K. A. (1999). Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal, 42(6)*: 662-673. DOI: 10.2307/256987

Somech, A., & Drach-Zahavy, A. (2013). Translating team creativity to innovation implementation: The role of team composition and climate for innovation. *Journal of Management, 39(3)*: 684-708. DOI: 10.1177/0149206310394187

Teachman, J. D. (1980). Analysis of population diversity: Measures of qualitative variation. *Sociological Methods and Research, 8(3)*: 341-362. DOI: 10.1177/004912418000800305

Tepper, B. J., Moss, S. E., & Duffy, M. K. (2011). Predictors of abusive supervision: Supervisor perceptions of deep-level dissimilarity, relationship conflict, and subordinate performance. *Academy of Management Journal, 54(2)*: 279-294. DOI: 10.5465/AMJ.2011.60263085

Urbach, T., Fay, D., & Goral, A. (2010). Extending the job design perspective on individual innovation: Exploring the effect of group reflexivity. *Journal of Occupational and Organizational Psychology, 83(4)*: 1053-1064. DOI: 10.1348/096317909X479394

Van der Vegt, G. S., & Bunderson, J. S. (2005). Learning and performance in multidisciplinary teams: The importance of collective team identification. *Academy of management Journal, 48(3)*: 532-547. DOI: 10.5465/amj.2005.17407918

Van der Vegt, G. S., & Janssen, O. (2003). Joint impact of interdependence and group diversity on innovation. *Journal of Management, 29(5)*: 729-751. DOI: 10.1016/S0149-2063_03_00033-3

van Knippenberg, D., Dawson, J. F., West, M. A., & Homan, A. C. (2011). Diversity faultlines, shared objectives, and top management team performance. *Human Relations, 64(3)*: 307-336. DOI: 10.1177/0018726710378384

van Knippenberg, D., De Dreu, C. K. W., & Homan, A. C. (2004). Work group diversity and group performance: An integrative model and research agenda. *Journal of Applied Psychology, 89(6)*: 1008-1022. DOI: 10.1037/0021-9010.89.6.1008

van Knippenberg, D., & Schippers, M. C. (2007). Work group diversity. *Annual Review Psychology, 58*: 515-541. DOI: 10.1146/annurev.psych.58.110405.085546

Walumbwa, F. O., & Schaubroeck, J. (2009). Leader personality traits and employee voice behavior: Mediating roles of ethical leadership and work group psychological safety. *Journal of Applied Psychology, 94(5)*: 1275-1286. DOI: 10.1037/a0015848

Wang, X. H. F., Kim, T. Y., & Lee, D. R. (2016). Cognitive diversity and team creativity: Effects of team intrinsic motivation and transformational leadership. *Journal of Business Research, 69(9)*: 3231-3239. DOI: 10.1016/j.jbusres.2016.02.026

West, M. A. (1990). The social psychology of innovation in groups. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work: Psychological and organizational strategies* (pp. 309-333). Chichester, UK: Wiley.

West, M. A., Garrod, S., & Carletta, J. (1997). Group decision-making and effectiveness: Unexplored boundaries. In C. L. Copper & S. E. Jackson (Eds.), *Creating tomorrow's organizations: A handbook for future research in organizational behavior* (pp. 292-312). Chichester: Wiley.

Widmer, P. S., Schippers, M. C., & West, M. A. (2009). Recent developments in reflexivity research: A review. *Psychology of Everyday Activity, 2(2)*: 2-11.

Williams, K. Y., & O'Reilly, C. A. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior, 20*: 77-140.

Yang, Y., & Konrad, A. M. (2011). Diversity and organizational innovation: The role of employee involvement. *Journal of Organizational Behavior, 32(8)*: 1062-1083. DOI: 10.1002/job.724

Yang, J., & Mossholder, K. W. (2004). Decoupling task and relationship conflict: The role of intragroup emotional processing. *Journal of Organizational Behavior, 25(5)*: 589-605. DOI: 10.1002/job.258

TABLE 1 Means, Standard Deviation, Correlations, and Reliabilities

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Team size	-											
2. Task type (innovative task)	0.03	-										
3. Team longevity	-0.08	-0.10	-									
4. Age diversity	0.11	-0.18	0.12	-								
5. Gender diversity	0.19	0.13	0.00	0.08	-							
6. Cognitive diversity	0.02	-0.01	0.07	-0.10	0.09	(0.82)						
7. Task reflexivity	-0.04	0.01	0.09	0.05	0.13	0.31**	(0.87)					
8. Social reflexivity	-0.05	0.05	0.07	0.20*	0.14	0.08	0.54**	(0.80)				
9. Task conflict	0.05	-0.07	0.14	-0.03	-0.05	0.14	0.06	-0.09	(0.88)			
10. Relationship conflict	-0.01	-0.04	0.06	-0.18	-0.15	0.30**	-0.37**	-0.57**	0.19	(0.93)		
11. Support for innovation	0.04	-0.02	0.21*	-0.06	0.18	0.12	0.50**	0.54**	0.04	-0.31**	(0.95)	
12. Innovative work behavior	-0.02	0.20*	0.13	0.09	0.18	0.09	0.47**	0.45**	-0.03	-0.49**	0.20*	(0.85)
Mean	4.20	0.46	2.14	0.13	0.51	2.96	3.65	3.76	3.03	2.43	4.01	3.73
SD	1.43	0.50	0.09	0.09	0.25	0.48	0.32	0.43	0.74	0.63	0.38	0.44

Note. n=101 teams. For task type, innovative task (i.e., R&D teams, design teams, consulting teams) was recoded "1" and non-innovative task (i.e., administrative teams, service teams) was recoded "0". Values in the brackets are Cronbach's alpha coefficients.
* $p < 0.05$, ** $p < 0.01$; two-tailed.

TABLE 2 Hierarchical Regression with Dependent Variables Task Reflexivity and Relationship Conflict

	Task reflexivity				Relationship conflict			
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant	3.56 (0.14)	2.66 (0.22)	2.50 (0.25)	2.37 (0.23)	2.60 (0.25)	1.76 (0.42)	2.21 (0.47)	2.42 (0.45)
Control variable								
Team size	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	0.02 (0.04)	0.02 (0.04)	0.02 (0.04)	-0.00 (0.04)
Task type (innovative task)	0.00 (0.07)	0.02 (0.06)	0.02 (0.06)	-0.02 (0.06)	-0.06 (0.12)	-0.05 (0.12)	-0.06 (0.12)	0.01 (0.11)
Team longevity	0.03 (0.03)	0.02 (0.03)	0.01 (0.03)	0.02 (0.03)	0.05 (0.06)	0.04 (0.06)	0.06 (0.06)	0.04 (0.05)
Age diversity	0.12 (0.40)	0.34 (0.36)	0.39 (0.36)	0.13 (0.34)	-1.30 (0.71)	-1.10 (0.70)	-1.23 (0.69)	-0.77 (0.66)
Gender diversity	0.19 (0.14)	0.13 (0.12)	0.10 (0.12)	0.07 (0.12)	-0.31 (0.24)	-0.37 (0.24)	-0.30 (0.24)	-0.25 (0.23)
Independent variable								
Cognitive diversity		0.32** (0.06)	0.30** (0.06)	0.26** (0.06)		0.30* (0.12)	0.33** (0.12)	0.41** (0.12)
Moderator								
Support for innovation			0.06 (0.04)	0.12** (0.04)			-0.16 (0.09)	-0.26** (0.09)
Interaction								
Cognitive diversity* Support for innovation				0.12** (0.03)				-0.22** (0.06)
R^2	0.03	0.24	0.26	0.36	0.06	0.12	0.15	0.25
ΔR^2	0.03	0.21	0.02	0.10	0.06	0.06	0.03	0.10
F	0.61	5.08**	4.66**	6.54**	1.20	2.01*	2.36*	3.81**

Note. n=101 teams. * $p < 0.05$, ** $p < 0.01$; two-tailed. Estimates are unstandardized regression coefficients. Values in the brackets are standard errors (SEs).

TABLE 3 Hierarchical Regression with Dependent Variable Innovative Work Behavior

Variable	Model 9	Model 10	Model 11	Model 12	Model 13
Constant	3.31 (0.20)	2.76 (0.39)	2.56 (0.37)	1.41 (0.52)	2.26 (0.67)
Control variable					
Team size	-0.02 (0.03)	-0.02 (0.03)	0.00 (0.03)	-0.01 (0.03)	-0.01 (0.03)
Task type (innovative task)	0.21* (0.10)	0.22* (0.10)	0.16 (0.09)	0.19* (0.09)	0.19* (0.08)
Team longevity	0.06 (0.05)	0.04 (0.05)	0.06 (0.04)	0.04 (0.04)	0.06 (0.04)
Age diversity	0.58 (0.57)	0.73 (0.57)	0.29 (0.54)	0.22 (0.54)	0.15 (0.49)
Gender diversity	0.30 (0.20)	0.23 (0.20)	0.19 (0.18)	0.16 (0.19)	0.09 (0.17)
Independent variable					
Cognitive diversity		0.06 (0.10)	-0.02 (0.09)	0.01 (0.10)	0.02 (0.10)
Moderator					
Support for innovation		0.11 (0.07)	0.21** (0.07)	0.08 (0.07)	0.03 (0.06)
Interaction					
Cognitive Diversity * Support for Innovation			0.21** (0.05)		
Control variable for mediator					
Task conflict				0.01 (0.06)	0.00 (0.06)
Social reflexivity				0.44** (0.11)	0.01 (0.13)
Mediator					
Task reflexivity					0.47** (0.17)
Relationship conflict					-0.32** (0.09)
R^2	0.05	0.07	0.21	0.20	0.35
ΔR^2	0.05	0.02	0.14	0.13	0.15
F	2.10	2.00	4.25**	3.72**	5.87**

Note. n=101 teams. * $p < 0.05$, ** $p < 0.01$; two-tailed. Estimates are unstandardized regression coefficients. Values in the brackets are standard errors (SEs). ΔR^2 of Model 12 was compared with that of Model 10.

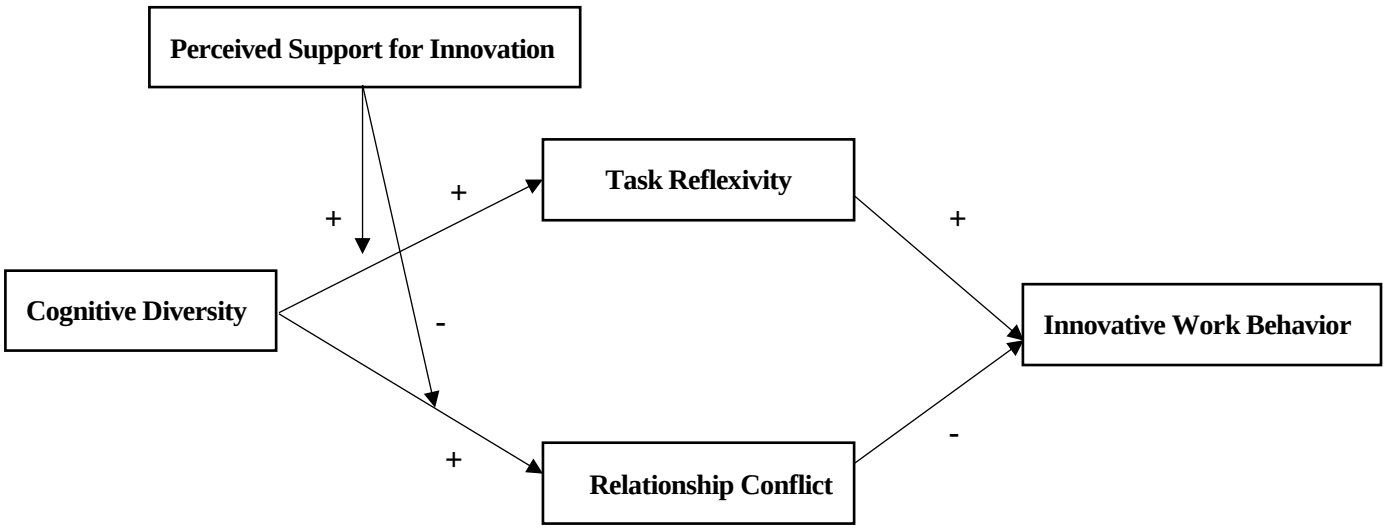
TABLE 4 Bootstrapping Results for Moderated Mediation Effect

	Indirect effect	Boot SE	Boot LLCI	Boot ULCI
Cognitive diversity→Task reflexivity→Innovative Work Behavior linkage				
Low support for innovation (-1SD)	0.03	0.09	-0.09	0.26
Mean support for innovation (0)	0.11	0.05	0.03	0.24
High support for innovation (+1SD)	0.18	0.09	0.04	0.38
Cognitive diversity→Relationship conflict→Innovative Work Behavior linkage				
Low support for innovation (-1SD)	-0.21	0.13	-0.51	-0.03
Mean support for innovation (0)	-0.14	0.07	-0.32	-0.03
High support for innovation (+1SD)	-0.08	0.06	-0.27	0.01

Note. n=101 teams. Bootstrap sample size is 5,000. Estimates are unstandardized regression coefficients; We controlled for team size, task type, team longevity, age diversity, gender diversity, task conflict, social reflexivity in the equations. 95% confidence intervals are reported in the table.

FIGURE 1

Hypothesized Model



Note. + donates a positive relationship and – donates a negative relationship

FIGURE 2

Interaction of cognitive diversity and support for innovation on task reflexivity

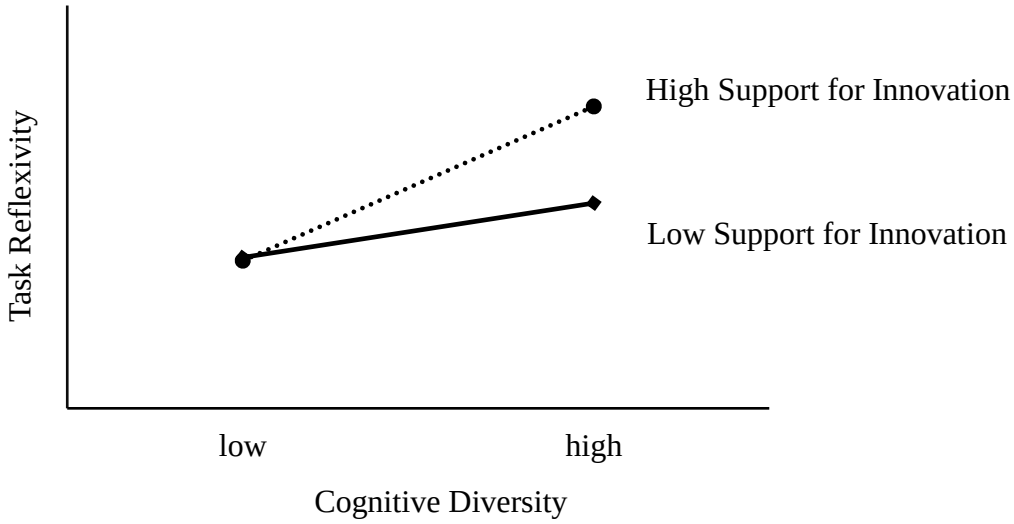


FIGURE 3

Interaction of cognitive diversity and support for innovation on relationship conflict

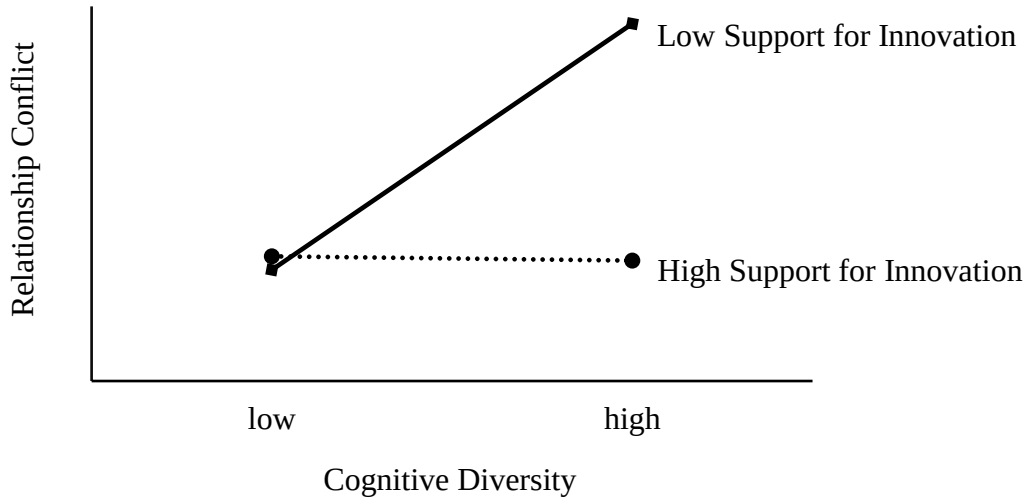


FIGURE 4

Interaction of cognitive diversity and support for innovation on innovative work behavior