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ORIGINAL PAPER

When and How Does Team Task Conflict Spark Team Innovation? A Contingency Perspective

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Abstract

Whether team task conflict is beneficial or harmful to team innovation has long been controversial, and empirical studies on the team task conflict–team innovation relationship were inconsistent. Drawing on the contingency model of team innovation, the current study examined how team task conflict interacts with two types of team supportive climates, namely team support for innovation (TSFI) and team psychological safety (TPS), in predicting team innovation via team information elaboration. We tested our hypotheses using multi-source and lagged data collected from 361 employees working in 98 research and development teams. As expected, team information elaboration mediated the interaction effects between team task conflict and team supportive climates on team innovation. In particular, team task conflict had a positive indirect effect on team innovation via team information elaboration when TSFI or TPS was high. However, such indirect effect was negative when TSFI was low and was not significant when TPS was low. Residualized relative weight analysis comparing the moderation effects further suggests that TFSI and TPS are equally important team climates in activating the beneficial effect of team task conflict. Theoretical and practical implications are discussed.

Keywords Task conflict · Support for innovation · Psychological safety · Information elaboration · Team innovation

Given that organizations fight for innovation through the pervasive use of teams with the increasingly diverse workforce (Van Knippenberg, 2017), conflict becomes an inevitable issue in teamwork (e.g., Jehn & Bendersky, 2003). De Clercq et al. (2009) argued that conflict can be a force for innovation in teamwork, especially when it is not personal but about the task at hand (see also Yong et al., 2014), which is termed team task conflict (Jehn, 1995). Team task conflict refers to disagreements among team members "about the content of the tasks being performed, including differences in viewpoints, ideas, and opinions" (Jehn, 1995, p. 258). By offering dissenting ideas and viewpoints for team members to look at and deal with task-related issues from different perspectives, team task conflict has the potential to spark team innovation (Bai et al., 2016; De Clercq et al., 2009; Park et al., 2020).

Despite seeming conceptually reasonable, previous empirical findings regarding the relationship between team task conflict and team innovation were mixed. Specifically, on the one hand, some scholars found that team task conflict was positively linked to team innovative performance (e.g., Amason, 1996; Bai et al., 2016; De Clercq et al., 2009; Jehn, 1995; Lee et al., 2019; Matsuo, 2006; Yong et al., 2014). On the other hand, other research suggested that team task conflict may not necessarily enhance (e.g., Fairchild & Hunter, 2014) or may even harm (e.g., Santos et al., 2015) team innovation. In addition, meta-analyses showed that the relationship between team task conflict and team innovation was not significant (Hülsheger et al., 2009; O'Neill et al., 2013). Such mixed findings suggest that team task conflict might not trigger team innovation consistently and directly.

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A possible reason for the mixed findings is that previous studies usually assumed team task conflict as a proxy for team information elaboration and argued for its beneficial effects (e.g., Bai et al., 2016; De Clercq et al., 2009; Matsuo, 2006; Van Knippenberg, 2017; Van Knippenberg et al., 2004), which is a major limitation because team task conflict and team information elaboration are conceptually and empirically distinct from each other (Hoever et al., 2012; Van Knippenberg et al., 2004). Specifically, team task conflict reflects team members' dissenting and diverse opinions, ideas, and viewpoints, representing "[informational] resources relevant to the team task" (Xie et al., 2014, p. 241). In contrast, team information elaboration reflects the crucial team process of team members' constructively exchanging and integrating those informational resources (Hoever et al., 2012; Leroy et al., 2021), which is assumed to be a more proximal and powerful predictor of team innovation than team task conflict (Van Knippenberg, 2017; Van Knippenberg et al., 2004). As noted by Van Knippenberg (2017, p. 223), instead of focusing on the direct effect of team task conflict on team innovation, it is more critical to "emphasize the process it is often erroneously presumed to stimulate", namely team information elaboration. That is, team information elaboration (i.e., the team process of exchanging, discussing, and integrating different task-relevant information; Van Knippenberg et al., 2004) is highlighted as the most critical mediating mechanism through which team task conflict affect team innovation. However, little empirical attention has been paid to explore whether and when team task conflict would enhance team innovation via activating team information elaboration.

As an effort to address this limitation in the literature, we draw on the contingency model of team innovation (Van Knippenberg, 2017) to examine whether and when team task conflict would enhance team innovation via team information elaboration. This model posits that team information elaboration is a key mechanism through which informational resource may improve team innovation. This is because information elaboration entails constructive exchange, discussion, and integration of different opinions, viewpoints, and knowledge, which could enhance team innovation (Hoever et al., 2012). Moreover, this contingency model also highlights that whether team informational resources could activate team information elaboration and eventually enhance team innovation is contingent on team climates. That is, supportive team climates are crucial in deciding whether team informational resources can be elaborated and transformed into team innovation (Van Knippenberg, 2017). Given that team task conflict represents the extent to which team members possess different task-relevant opinions and ideas (Jehn, 1995; Park et al., 2020; Yong et al., 2014), scholars have considered it as a type of informational resources (e.g., Bradley et al., 2012; Chen, 2006; Fairchild & Hunter, 2014; Xie et al., 2014). As such, based on the contingency model, team task conflict can spark team innovation via team information elaboration when team climates are supportive because, in such conducive work environments, team members' diverse ideas and perspectives emerging in the task conflict process can be exchanged and integrated, activating team information elaboration, which in turn enables team innovation.

According to Van Knippenberg's (2017) contingency model, team support for innovation and team psychological safety are two critical indicators of supportive team climates that can leverage the beneficial effects of informational resources on information elaboration and innovation. Team support for innovation (TSFI) refers to team members' collective perceptions that their innovative and change-oriented activities are valued, encouraged, and supported (rather than being devalued, discouraged, and rejected) within team (King et al., 1991; Scott & Bruce, 1994; West, 1990), while team psychological safety (TPS) refers to the shared belief among team members that interpersonal risk-taking in the team is safe (Edmondson, 1999). Since the contingency model suggests that TSFI and TPS could help activate the exchange and integration of different ideas, opinions, and perspectives derived from task conflict, transforming such informational resources into the team innovative process, we posit that the effects of team task conflict on the team innovative process are contingent on TSFI and TPS.

In sum, we draw on the contingency model of team innovation to develop a mediated moderation model examining whether team task conflict that occurs in supportive (e.g., innovation supporting or psychologically safe) team climates could activate team information elaboration, which in turn improves team innovation (Fig. 1 shows our research model).

Our study makes the following contributions to the literature. First, by exploring the interaction effects of team task conflict and supportive team climates, we provide more nuanced understandings of *when* task conflict might spark or hurt team information elaboration and team innovation. In so doing, we not only identify boundary conditions of the utility of task conflict in the team context by highlighting the importance of team climates, but also offer a potential explanation reconciling the previous inconsistent findings regarding the effects of team task conflict. Second, while numerous studies have focused on the team task conflict–team innovation relationship (e.g., Chen, 2006; De Clercq et al., 2009; Fairchild & Hunter, 2014; Matsuo, 2006; Yong et al., 2014), little research examined its mediating mechanism in a team context (for an exception in a dyadic context, see Chua & Jin, 2020). By investigating the mediating role of team information elaboration through which team task conflict and supportive team climates interactively impact team innovation, we offer some of the first insights into *how* task conflict can spark or hurt team innovation under certain

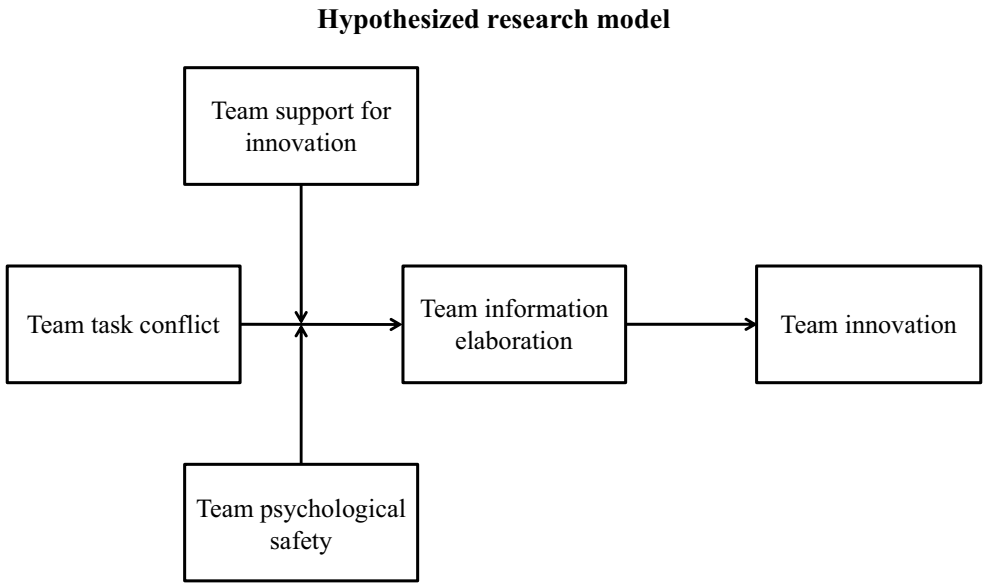

Fig. 1 Hypothesized research model

circumstances, offering a knowledge integration lens in understanding the implications of team task conflict. Third, by testing the mediated moderation model linking team task conflict and team innovation, we offer empirical evidence to support Van Knippenberg's (2017) contingency model of team innovation.

Literature Review and Hypothesis Development

The Contingency Model of Team Innovation

The contingency model of team innovation (Van Knippenberg, 2017) posits that team innovation is an information integration process. Teams become more innovative when team members are more able to engage in information elaboration, namely exchanging, discussing, and integrating insights, ideas, and knowledge related to team tasks. For that to occur, informational resources and supportive team climates are two fundamental factors conducive to the information integration process of team innovation.

According to the contingency model (Van Knippenberg, 2017), informational resources reflect team factors providing teams with diverse opinions, ideas, and perspectives, which offer a resource pool that the team can draw on and form the basis for team information integration. Supportive team climates (such as TSFI and TPS) reflect team factors that stimulate the use of those informational resources, which determine whether team members are motivated and able to take good advantage of their informational resources (e.g., diverse opinions, ideas, and perspectives) to carry out the information elaboration process successfully. As such, informational resources and supportive team climates interactively influence team information elaboration, which in turn facilitates team innovation.

Drawing on the team innovation contingency model, we argue that team task conflict, as a typical type of informational resources (e.g., Bradley et al., 2012; Chen, 2006; De Wit et al., 2012; Fairchild & Hunter, 2014; Xie et al., 2014), would promote team elaboration when team climates are supportive (e.g., innovation supporting or psychologically safe). Given that team information elaboration is the core driver of team innovation, we propose a mediated moderation model in which team information elaboration mediates the interaction effects of team task conflict and supportive team climates (i.e., TSFI and TPS) on team innovative performance. In the following, we elaborate on the hypotheses of our research model.

The Interaction Between Team Task Conflict and Team Support for Innovation (TSFI)

Being a key indicator of supportive team climates, TSFI reflects the anticipation, recognition, and support of team members' efforts to bring creative and improved approaches of doing things within teams (Scott & Bruce, 1994; West, 1990). In an innovation-supportive climate, team members would believe that expressing and discussing dissenting views freely and openly is legitimate and supported (Scott & Bruce, 1994; Somech & Drach-Zahavy, 2013). As such, different ideas, viewpoints, and suggestions that emerge in the task conflict process would be received in a more respectful and professional way by

team members in such a team climate (Isaksen & Lauer, 2002; Tu et al., 2019). Thus, when engaging in task conflict, team members in such a climate are willing to listen to each other and thoroughly consider the divergent opinions and viewpoints generated by others. This process could trigger greater knowledge exchange and integration, thereby promoting team information elaboration.

Moreover, while task conflict occurs in teams with high support for innovation, team members would have shared belief that their innovation-related and change-oriented activities are expected and valued by their teams (e.g., King et al., 1991; Tu et al., 2019; West, 2002). As such, they would be encouraged and motivated to seek and integrate diverse opinions, viewpoints, and perspectives that come up in team task conflict so as to develop innovative ideas, processes, or solutions and meet their teams' expectations of achieving innovation (Charbonnier-Voirin et al., 2010; Montani & Odoardi, 2015; Scott & Bruce, 1994). In such a team climate, team members are more apt to leverage task conflict and more willing to consider each other's opinions and evaluate alternative ideas comprehensively, thereby activating the beneficial effect of team task conflict on team information elaboration.

By contrast, in teams with low levels of support for innovation, team members are more inclined to maintain the status quo because innovative endeavors are not valued or expected in such teams (Scott & Bruce, 1994). In such a climate, expressing and discussing conflicting opinions may be viewed as questioning the status quo, fault-finding, or obstacle-raising (Isaksen & Lauer, 2002; Valls et al., 2016). In this case, even when team members disagree with others' opinions and perspectives, they are less likely to communicate their dissenting ideas (Bain et al., 2001). If team members decide to avoid rather than confront the conflict of task-related opinions, a team may suffer from a stagnation of learning and thinking, which hinders the team process of information elaboration (Samba et al., 2017). In a word, given that team members are less motivated to listen to and consider others' various ideas and perspectives in teams with low levels of support for innovation, team task conflict may not benefit (or may even hurt) team information elaboration. Thus, we propose:

Hypothesis 1 Team task conflict interacts with TSFI in predicting team information elaboration. Specifically, team task conflict has a positive relationship with team information elaboration when TSFI is high; however, such relationship becomes weaker in magnitude or even negative when TSFI is low.

The Interaction Between Team Task Conflict and Team Psychological Safety (TPS)

Psychological safety is another key supportive team climate that could alter the way how task conflict is dealt with in a team (Bradley et al., 2012; De Dreu, 2008; De Dreu & Weingart, 2003; Edmondson & Lei, 2014; Hülsheger et al., 2009; Van Ginkel & Van Knippenberg, 2008). One potential downside of task conflict is that disagreement in opinions may be viewed as personally threatening and even hostile, which could make it difficult for team members to exchange or consider different perspectives thoroughly and thus hinders information integration (e.g., Carnevale & Probst, 1998; Lovelace et al., 2001; Park et al., 2020). However, TPS is essentially about removing such interpersonal concerns (Edmondson & Lei, 2014). Since psychological safety creates a team climate in which no one would be embarrassed, rejected, or punished by the team for speaking up (Edmondson, 1999; Lin et al., 2020; Men et al., 2020), it provides a platform for constructive expression of different or even conflicting viewpoints in teamwork. Thus, when task conflict occurs and team members have ideas and opinions that are different from others' in a psychologically safe environment, they are able to fully express such dissenting ideas and opinions (Bradley et al., 2012; Edmondson, 2003; Fairchild & Hunter, 2014; Kahn, 1990; Men et al., 2020; Peng et al., 2019). Such adequate expression of different viewpoints could help team members better understand the essential roots of task disagreement, better consider each other's conflicting perspectives, and better evaluate the pros and cons of team members' differential ideas, which facilitates the process of utilizing task conflict to activate team information elaboration (Bradley et al., 2012; Kessel et al., 2012).

Moreover, because TPS reflects an interpersonal climate of mutual trust, support, and respect, employees work in a psychologically safe environment would interpret disagreement and divergence of task-related opinions and ideas in a more constructive way (Bradley et al., 2012; Fairchild & Hunter, 2014; Kahn, 1990; Men et al., 2020). When teams engage in task conflict, team members in a psychologically safe climate are more likely to view task disagreements or divergent opinions as other team members' providing complementary information, rather than personal offense or antagonism (Edmondson, 1999; Kessel et al., 2012). Under such an environment, team members are more open and receptive to various opinions and perspectives engendered from task conflict, and thus are more willing to extensively consider and adopt other's different or even conflicting ideas and information (Edmondson, 1999; Kostopoulos & Bozionelos, 2011; Peng et al., 2019), making it possible to transform team task conflict into team information elaboration.

In contrast, when task conflict occurs in teams of low psychological safety, team members are more concerned

about negative interpersonal consequences (Bradley et al., 2012; Edmondson, 1999; Lovelace et al., 2001; Men et al., 2020). They would feel less confident in expressing dissent task opinions because they have fear of being embarrassed, rejected, or even punished (Edmondson, 1999, 2003; Fairchild & Hunter, 2014; Yagil & Luria, 2010). As such, when teams engage in task conflict in that some team members disagree with others' opinions regarding team tasks, diverse ideas and perspectives cannot be expressed and discussed openly and fully in an environment that is psychologically unsafe, which makes it difficult to transform team task conflict into team information elaboration (Kark & Carmeli, 2009; Kessel et al., 2012). Moreover, team members may take task disagreements personally when team environment is not safe. Thus, they are less willing to consider and adopt others' divergent perspectives and insights arising in task conflict, which would hamper the process of turning task conflict into team information elaboration (Samba et al., 2017). In short, given that members in psychologically unsafe teams are less able to take advantage of the divergent perspectives and insights that emerge in team task conflict, team task conflict may not be able to activate (or may even hinder) team information elaboration when TPS is low. Accordingly, we propose:

Hypothesis 2 Team task conflict interacts with TPS in predicting team information elaboration. Specifically, team task conflict has a positive relationship with team information elaboration when TPS is high; however, such relationship becomes weaker in magnitude or even negative when TPS is low.

Relative Importance of TSFI and TPS

Although both TSFI and TPS are team supportive climates that are expected to moderate the relationship between team task conflict and team information elaboration, the magnitudes of their moderating effects may be different because TSFI represents task-related rewards and incentives that enable the transformation of team task conflict into team information elaboration, while TPS reflects the extent to which there are relationship-based barriers that would inhibit the utilization of team task conflict to activate team information elaboration. Given the lack of theories in predicting the magnitudes of their moderating effects, we opt to examine the relative importance of these moderating effects as a research question.

Research question: Which types of team supportive climates (i.e., TSFI vs. TPS) would contribute more to the prediction of the relationship between team task conflict and team information elaboration?

The Mediating Role of Team Information Elaboration

Team information elaboration entails team members' exchanging and discussing each other's perspectives, and integrating dissenting viewpoints and various informational resources (Van Knippenberg et al., 2004), which is necessary for the generation of new ideas and solutions in a team (Harvey, 2015; Hoever et al., 2012; Van Ginkel & Van Knippenberg, 2008). To be specific, team information elaboration requires team members to exchange and discuss viewpoints and knowledge relevant to team tasks within teams, which offers mutual learning opportunities for team members, promoting more creative responses to team tasks (Kearney et al., 2009; Kessel et al., 2012). Moreover, information elaboration requires team members to integrate the unique information from each other, which makes them more able to make judgments and decisions that are both novel and valid to solve their team tasks (Harvey, 2015; Van Ginkel & Van Knippenberg, 2008). In brief, when the level of team information elaboration is high, team members exchange different ideas about the team tasks more frequently, consider and discuss the dissenting task-related information more thoroughly, and integrate diverse ideas more systematically and appropriately (Xie et al., 2014), which altogether contributes to team innovation. Supporting our arguments, empirical studies have revealed that information elaboration was positively linked to team innovation (e.g., Hoever et al., 2012; Homan et al., 2007; Van Knippenberg et al., 2004).

Combining these theoretical arguments and arguments for Hypothesis 1, we expect an indirect effect of the interaction term between team task conflict and TSFI on team innovation via team information elaboration. When TSFI is high, team members are encouraged and motivated to exchange, discuss, and integrate various opinions, viewpoints, and perspectives that arise in task conflict, which activates team information elaboration and thus prompts team innovation. Similarly, combining the theoretical arguments for the information elaboration–team innovation relationship, and arguments for Hypothesis 2, we also expect an indirect effect of the interaction term between team task conflict and TPS on team innovation via team information elaboration. When TPS is high, team members have the courage to exchange and discuss their different perspectives and opinions regarding team tasks provided by task conflict, and are willing to consider and adopt each other's ideas, which facilitates team information elaboration and thus promotes team innovation. Therefore, we propose the following mediated moderation hypotheses:

Hypothesis 3 Team information elaboration mediates the interaction effect of team task conflict and TSFI on team innovation.

Hypothesis 4 Team information elaboration mediates the interaction effect of team task conflict and TPS on team innovation.

Methods

Participants and Procedure

Since our study focuses on team innovation, research and development (R&D) teams offer ideal contexts to understand team innovation phenomenon and test our hypotheses. We thus recruited participants from R&D teams in a large information technology (IT) firm in China. We chose to conduct this study in China because innovation is highly emphasized in China, and many Chinese enterprises have identified innovation as the most critical developmental strategy (Li et al., 2021; Qian et al., 2012). Regarding the R&D teams in our sample, they were stable teams (rather than project teams) where team members remains reasonably stable over a considerable period of time. These teams were responsible for developing and/or improving a wide range of IT products, including desktop software, mobile applications, and web applications. Each R&D team consists of a number of team member employees and a team leader. Note that a team member was affiliated with only one team.

According to Podsakoff et al., (2003, 2012), multi-source data and lagged design could alleviate common method bias. Thus, we collected team task conflict, TSFI, TPS, team information elaboration, and team innovation data from two different sources (i.e., team members and team leaders) at three different time points. In the first survey (Time 1), team members rated the levels of team task conflict, TSFI, and TPS. In the second survey (Time 2), approximately 1 month after the first survey, team members rated the levels of team information elaboration. In the third survey (Time 3), about 1 month after the second survey, each team leader offered ratings of their own team's innovative performance. Each questionnaire was given a unique identification code. With such identifiers, we were able to match team members' two waves of responses with their corresponding team leaders' ratings of team innovation, while response confidentiality can still be ensured.

We invited all members of R&D teams ($N=412$) to take part in our survey. The human resources personnel of the company assisted us in sending the survey invitation, emphasizing voluntary participation and response confidentiality of the study. Surveys were then distributed to those 412 team member employees working in 101 R&D teams and the corresponding 101 team leaders. Among them, 361 employees working in 98 teams returned complete surveys (87.6% response rate), whereas all team leaders returned complete ratings on team innovation (100% response rate). Thus, our final sample includes 361 team members and 98 team leaders from 98 teams. We were capable of attaining such high response rates due to strong support from top management, allowing employees to complete surveys during work hours, and offering material incentive. Specifically, each participant who completed the survey was offered a gift (e.g., an exquisite USB flash drive) valued about 100 RMB (about $14 USD) for their participation. Among team members, 31.6% were female; they were 28.0 (SD 3.7) years old on average; and most of them (81.2%) had a Bachelor's degree or above.

Measures

Most of the measures we used were originally written in English. To use those measures in Chinese, we followed the commonly used back-translation procedure (Brislin, 1980) to ensure the accuracy of translating the English-based measures into Chinese. Specifically, two translators fluent in both English and Chinese translated the English items into Chinese. Another two translators fluent in both languages translated the Chinese items back into English. The four translators then discussed and resolved discrepancies between the two English versions. Unless otherwise indicated, participants were asked to rate the level of agreement with each item on a seven-point Likert scale (scoring from 1 = "*strongly disagree*" to 7 = "*strongly agree*").

Team Task Conflict

We used the four-item scale developed by Jehn (1995) to measure team task conflict at Time 1. A sample item was "How often do people in your team disagree about opinions regarding the work being done?" Team members were asked to rate on a five-point scale (scoring from 1 = "*none*" to 5 = "*a lot*"). The Cronbach's alpha for team task conflict was 0.97 at the team level (and was 0.94 at the individual level). Since the current study focuses on team-level phenomenon, individual team members' responses within each team were aggregated to form team-level variables. We calculated within-group agreement (r_{wg}; James et al., 1984) and intraclass correlations (ICC[1] and ICC[2]; Bliese, 2000) to test the justifications for aggregation. Results found that the mean r_{wg} was 0.82 (median = 0.95), ICC(1) was 0.19, and ICC(2) was 0.52, justifying the aggregation.

Team Support for Innovation (TSFI)

At Time 1, we measured TSFI using items adapted from Scott and Bruce's (1994) Support for Innovation Scale. Six items with the highest factor loadings were selected. In our pilot study using a sample of 137 participants, the correlation between the six-item abbreviated version and the 16-item full version of support for innovation was 0.81,

suggesting that the six-item scale was a reasonable substitute for the full version. Those items were: "The main function of members in this work team is to follow orders which come down through channel" (reversed coded), "Around this work team, a person can get in a lot of trouble by being different" (reversed coded), "A person can't do things that are too different around this work team without provoking anger" (reversed coded), "The best way to get along in this work team is to think the way the rest of the group does" (reversed coded), "People around this work team are expected to deal with problems in the same way" (reversed coded), and "This work team seems to be more concerned with the status quo than with change" (reversed coded). The Cronbach's alpha for TSFI was 0.92 at the team level (and was 0.87 at the individual level). The mean r_{wg} was 0.71 (median = 0.84), ICC(1) was 0.22, and ICC(2) was 0.57, supporting team-level aggregation.

Team Psychological Safety (TPS)

We used the seven-item scale developed by Edmondson (1999) to measure TPS at Time 1. A sample item was: "Members of this team are able to bring up problems and tough issues." The Cronbach's alpha for TPS was 0.88 at the team level (and was 0.80 at the individual level). The mean r_{wg} was 0.71 (median = 0.86), ICC(1) was 0.24, and ICC(2) was 0.60, supporting the aggregation.

Team Information Elaboration

At Time 2, we used the four-item scale developed by Kearney et al (2009) to measure team information elaboration. A sample item was "The members of this team carefully consider all perspectives in an effort to generate optimal solutions". The Cronbach's alpha for team information elaboration was 0.95 at the team level (and was 0.91 at the individual level). The mean r_{wg} was 0.76 (median = 0.95), ICC(1) was 0.26, and ICC(2) was 0.62, justifying the aggregation.

Team Innovation

At Time 3, team innovation was rated by team leaders using De Dreu's (2002) four-item scale. A sample item was "Team members often produce new services, methods, or procedures." The Cronbach's alpha for team innovation at the team level was 0.95.

Control Variables

As a robustness check, we controlled for the effects of numerous covariates (i.e., team size, team tenure, team gender/education/tenure diversity, leader-member exchange, transactive memory systems, team task conflict asymmetry, and team relationship conflict) on team information elaboration and team innovation. Specifically, since previous studies suggest that team size and team tenure could be linked to team innovation (Hülsheger et al., 2009; Kessel et al., 2012), we controlled for these variables in hypotheses testing. At Time 1, we measured team sized by asking each team leader to report the number of team members in their teams. We also collected team members' self-reports of their length of time working within their teams at Time 1, and calculated the mean score for each team as a measure of team tenure. Since literature on team innovation suggests that team diversity might impact team innovation process (Jungmann et al., 2020; Kearney et al., 2009; Van Knippenberg, 2017), we controlled for gender diversity, education diversity, and team tenure diversity to rule out the potential confounding effects of team diversity. Specifically, we used Blau's index to measure gender diversity and education diversity (Blau, 1977), and used standard deviation among team members' team tenure to represent team tenure diversity (Harrison & Klein, 2007).

We further controlled for leader-member exchange (LMX) since previous studies suggest that quality of LMX could affect team innovation (Cheng & Li, 2012; Zhao, 2015). Each team members rated his/her LMX at Time 1 with a seven-item scale from Lin et al. (2018), which is a validated Chinese-version scale of Graen and Uhl-Bien's (1995) LMX-7 scale. A sample item was "I would characterize my working relationship with my supervisor as extremely effective." The Cronbach's alpha for LMX was 0.80 at the team level (and was 0.77 at the individual level). The mean r_{wg} was 0.86 (median = 0.94), ICC(1) was 0.10, and ICC(2) was 0.29. We also controlled for team transactive memory systems (TMS) because prior research suggests that it could affect team process and team innovation (Ren & Argote, 2011). Team members rated TMS at Time 1 using the 15-item scale from Lewis (2003). A sample item was "Each team member has specialized knowledge of some aspect of our task." The Cronbach's alpha for TMS was 0.96 at the team level (and was 0.93 at the individual level). The mean r_{wg} was 0.91 (median = 0.96), ICC(1) was 0.34, and ICC(2) was 0.66.

Previous research also showed that team task conflict asymmetry could be related to team innovation process, we assessed team task conflict asymmetry as the standard deviation among team members' ratings of task conflict and controlled its confounding effects (Jehn et al., 2010). In addition, we controlled for relationship conflict to rule out its confounding effects. Team members rated relationship conflict at Time 1 using Jehn's (1995) four-item scale. A sample item was "How much emotional conflict is there among members in your team?" A five-point scale (1 = "*none*" to 5 = "*a lot*") was used. The Cronbach's alpha

for team relationship conflict was 0.93 at the team level (and was 0.87 at the individual level). The mean r_{wg} was 0.89 (median = 0.93), ICC(1) was 0.26, and ICC(2) was 0.63.

Our hypothesis tests showed the same pattern of results regardless of whether we included these control variables. As such, we report the results without control variables for brevity. Results including all control variables are available in the Supplementary Material for interested readers. We also included information of descriptive statistics and correlations for all control variables in Table 1.

Results

Means, standard deviations, and zero-order correlations among all study variables are presented in Table 1. Because our research model focuses on the team-level effects of task conflict, the following analyses were conducted at the team level. All analyses were conducted with Mplus 8.4 (Muthén & Muthén, 2017).

The Measurement Model

We first examined the convergent and divergent validity of our measures. Specifically, a series of confirmatory factor analyses (CFA) and model comparisons were conducted. CFA analyses found that the five-factor (i.e., team task conflict, TSFI, TPS, team information elaboration, and team innovation) measurement model fit the data well: $\chi^2(df = 265) = 413.44$, $p < 0.01$, RMSEA = 0.08, CFI = 0.93, TLI = 0.92, SRMR = 0.06. All factor loadings for items were significant ($ps < 0.01$). Results of model comparisons further demonstrated that the hypothesized five-factor measurement model had a significant better fit to the data ($\Delta\chi^2$ [$\Delta df = 4$] ranged from 413.44 to 837.20, $ps < 0.01$) than any of the 10 alternative four-factor models (i.e., combining any two of the five factors). Such findings provided evidence of construct distinctiveness.

The Interaction Between Team Task Conflict and TSFI

To test the interaction effects between team task conflict and TSFI (Hypotheses 1 and 3), we estimated a mediated moderation model (Model 1) wherein we regressed both team information elaboration and team innovation on team task conflict, TSFI, and the interaction term of team task conflict and TSFI. The effect of team information elaboration on team innovation was also estimated. We centered team task conflict and TSFI around their grand means before calculating the interaction term to reduce multi-collinearity concerns (Aiken & West, 1991). All exogenous variables in this model were grand-mean centered to facilitate interpretations. Table 2 presents the results for Model 1. This model explained 16.4% of the variance in team information elaboration, and 14.1% of the variance in team innovation. Beyond other predictors, the interaction term additionally explained 13.1% and 0.8% of the variances in team information elaboration and team innovation, respectively.

As shown in Table 2, although neither team task conflict nor TSFI was significantly linked to team information elaboration, the interaction term of team task conflict and TSFI was positively related to team information elaboration ($\gamma = 0.29$, $p < 0.01$). Figure 2 depicts this interaction effect. Simple slope analyses further indicated that the relationship between team task conflict and team information elaboration was significantly positive at the high level (+1 *SD*) of TSFI ($\gamma = 0.26$, $p = 0.03$), not significant at the average level of TSFI ($\gamma = -0.07$, $p = 0.58$), and significantly negative at the low level (−1 *SD*) of TSFI ($\gamma = -0.39$, $p = 0.02$). Next, we used Johnson-Neyman (J-N) technique (Preacher et al., 2006) to identify the specific intervals of moderator values in which the task conflict–team information elaboration relation would be significantly different from zero. Results showed that the effect of team task conflict on team information elaboration was significant and positive when TSFI (grand-mean centered) was higher than 1.04, and this effect was significant and negative when TSFI (grand-mean centered) was lower than −0.76. Thus, task conflict was positively related to team information elaboration at higher levels of TSFI, but negatively related to team information elaboration at lower levels of TSFI. Thus, Hypothesis 1 was supported.

Moreover, team information elaboration was positively related to team innovation ($\gamma = 0.30$, $p < 0.01$). To test Hypothesis 3 (the mediated moderation hypothesis), we used bootstrap estimates to test the significance of the mediated moderation effect. With 20,000 bootstrapping samples (for an applied example, see Lin et al., 2021), the indirect effect of the interaction term between team task conflict and TSFI via information elaboration on team innovation was 0.09, and the 95% confidence interval (CI) excluded zero (95% CI [0.03, 0.16]). In particular, as shown in Table 3, the conditional indirect effect of team task conflict on team innovation via team information elaboration was significantly positive when TSFI was high, but was significantly negative when TSFI was low. Therefore, in support of Hypothesis 3, information elaboration mediated the interaction effect of team task conflict and TSFI on team innovation.

The Interaction Between Team Task Conflict and TPS

To test the moderation effect of TPS (Hypotheses 2 and 4), we estimated another mediated moderation model (Model 2) wherein we regressed both team information elaboration and team innovation on team task conflict, TPS, and the interaction term between team task conflict and TPS. Team

Table 1 Descriptive statistics, reliabilities, and intercorrelations among study variables

Variable		Mean	Within-team SD	Between-team SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Team size	5.65	–	1.18	–												
2	Team tenure (in months)	15.07	–	8.30	−0.06	–											
3	Gender diversity	0.21	–	0.22	0.14	−0.04	–										
4	Education diversity	0.43	–	0.17	0.18	−0.20*	0.11	–									
5	Team tenure diversity	9.93	–	7.02	0.04	0.72**	−.01	0.01	–								
6	Leader-member exchange	5.18	0.91	0.54	−0.21*	0.07	−0.09	−0.13	0.07	–	0.04		−0.09	−0.06	0.06	0.13*	0.01
7	Transactive memory systems	4.31	1.10	0.82	−0.14	0.02	−0.09	−0.17	0.15	0.10	–		0.00	0.01	0.14**	0.14**	0.12*
8	Team task conflict asymmetry	1.20	–	0.96	0.03	−0.05	−0.17	−0.06	−0.04	−0.25*	0.10	–					
9	Team relationship conflict	2.50	1.15	0.85	0.13	0.00	0.02	0.06	0.13	−0.18	−0.03	0.12	–	0.25**	−0.03	−0.03	−0.08
10	Team task conflict	3.22	1.69	1.17	−0.01	0.18	−0.05	−0.06	0.09	0.02	0.05	−0.14	0.37**	–	0.06	−0.06	0.04
11	Team support for innovation	4.06	1.69	1.10	−0.21*	0.03	−0.01	−0.15	−0.10	0.11	0.26**	0.03	−0.13	0.23*	–	0.21**	0.15**
12	Team psychological safety	4.23	1.58	0.94	−0.17	0.17	0.01	0.08	0.15	0.30**	0.19	−0.26**	−0.06	0.04	0.27**	–	0.18**
13	Team information elaboration	4.80	1.29	1.38	−0.11	0.14	0.02	−0.09	0.13	−0.04	0.22*	−0.13	−0.01	0.10	0.17	0.25*	–
14	Team innovation	5.40	–	1.44	−0.16	0.14	0.04	−0.08	0.09	0.06	0.25*	−0.02	−0.10	0.08	0.16	0.26**	0.35**

Team-level correlations ($N = 98$) are below the diagonal; individual-level correlations ($N = 361$) are above the diagonal

*$p < 0.05$

**$p < 0.01$ (two-tailed). The data of team size (i.e., mean = 5.65, SD 1.18) was obtained from team leaders through self-reporting, which was the actual size of the team, reflecting the number of team members truly exist in reality. On the other hand, our final sample consisted of 361 team members and 98 team leaders from 98 teams (with an average of 4.68 members in each team), which reflects the numbers of participants in the current study

Table 2 Unstandardized path coefficients

	Model 1				Model 2				Model 3			
	Team information elaboration		Team innovation		Team information elaboration		Team innovation		Team information elaboration		Team innovation	
	γ	SE	γ	SE	γ	SE	γ	SE	γ	SE	γ	SE
Constant	4.71**	0.13	3.92**	0.52	4.78**	0.13	4.21**	0.52	4.73**	0.12	4.24**	0.53
Team task conflict (TTC)	−0.07	0.12	−0.00	0.12	−0.01	0.11	−0.00	0.12	−0.09	0.12	−0.02	0.12
Team support for innovation (TSFI)	0.04	0.13	0.10	0.13					0.01	0.12	0.06	0.13
Team psychological safety (TPS)					0.09	0.15	0.17	0.16	0.06	0.15	0.15	0.16
TTC*TSFI	0.29**	0.08	0.08	0.09					0.19*	0.08	0.01	0.09
TTC*TPS					0.31**	0.08	0.16	0.09	0.22*	0.09	0.15	0.10
Team information elaboration			0.30**	0.11			0.25*	0.11			0.24*	0.11
R^2	0.16**		0.14**		0.18**		0.18**		0.23**		0.18**	

$N = 98$ teams. Unstandardized coefficients are presented. Standard errors are reported in parentheses.

*$p < 0.05$

**$p < 0.01$ (two-tailed)

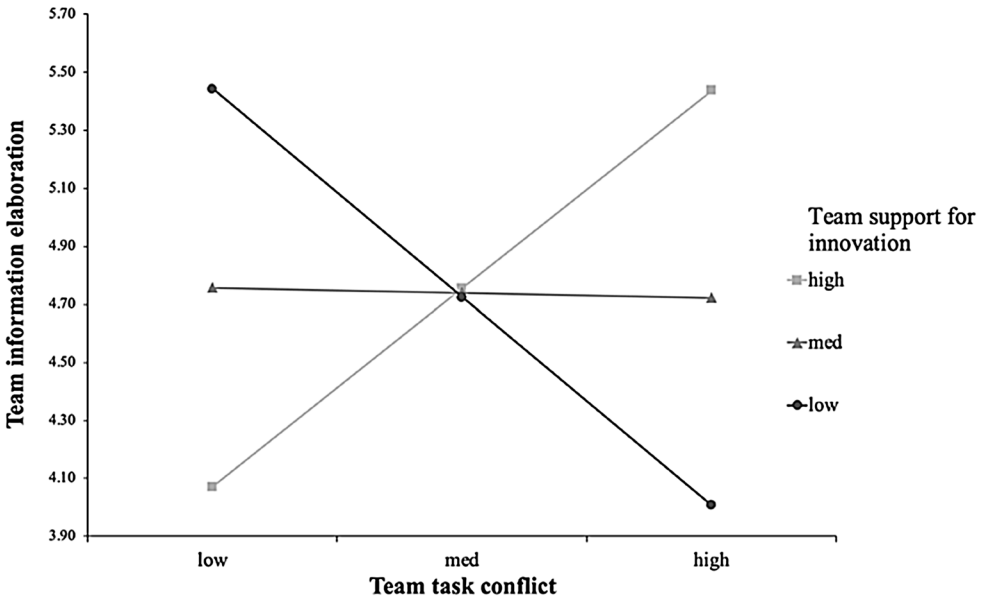

Fig. 2 Interaction effect between team task conflict and team support for innovation on team information elaboration

Table 3 Conditional indirect effects of team task conflict on team innovation via team information elaboration

	Team innovation	
	Estimate	95% confidence interval
Team support for innovation		
High	0.08*	[0.01, 0.18]
Low	−0.12*	[−0.27, −0.02]
Team psychological safety		
High	0.07*	[0.01, 0.16]
Low	−0.08	[−0.20, 0.00]

*Significant estimate since the 95% confidence interval did not include zero

innovation was regressed on information elaboration. Note that we grand-mean centered team task conflict and TPS before computing the interaction term. This model explained 18.1% and 18.1% of the variances in team information elaboration and team innovation, respectively. The interaction term accounted for additional 17.4% and 2.4% of the variances in team information elaboration and team innovation, respectively.

As shown in Model 2 in Table 2, although neither team task conflict nor TPS was significantly related to team information elaboration, the interaction term between team task conflict and TPS was positively related to team information elaboration ($\gamma = 0.31$, $p < 0.01$). Figure 3 depicts

this interaction effect. Simple slope analyses demonstrated that the effect of team task conflict on team information elaboration was significantly positive at the high level (+1 *SD*) of TPS ($\gamma = 0.28$, $p = 0.02$), but not significant for teams at the average level ($\gamma = -0.01$, $p = 0.91$) or the low level (−1 *SD*) of TPS ($\gamma = -0.30$, $p = 0.05$). Using J-N technique (Preacher et al., 2006), the results showed that the relationship between task conflict and team information elaboration was significant and positive when TPS (grand-mean centered) was higher than 0.78, and this relationship was significant and negative when TPS (grand-mean centered) was lower than − 0.97. Thus, task conflict was positively related to team information elaboration at higher levels of TPS, but negatively related to team information elaboration at lower levels of TPS, supporting Hypothesis 2.

Results also demonstrated that information elaboration was positively related to team innovation ($\gamma = 0.25$, $p = 0.02$). Similarly, we used bootstrap estimates to test Hypothesis 4 (the mediated moderation hypothesis). With 20,000 bootstrapping samples, the indirect effect of the interaction term between team task conflict and TPS via team information elaboration on team innovation was 0.08, and the 95% CI did not contain zero (95% CI [0.01, 0.16]). Specifically, as shown in Table 3, the conditional indirect effect of team task conflict on team innovation via team information elaboration was significantly positive when TPS was high, but was not significant when TPS was low. Therefore, supporting Hypothesis 3, information elaboration mediated the interaction effect between team task conflict and TPS on team innovation.

Comparing the Moderation Effects of TSFI and TPS

In order to demonstrate the relative contribution of the moderation effects of TSFI and TPS, we further conducted relative weight analysis. Specifically, we estimated a mediated moderation model (Model 3) wherein both team information elaboration and team innovation were regressed on team task conflict, TSFI, TPS, the interaction term of team task conflict and TSFI, and the interaction term of team task conflict and TPS. Team innovation was also regressed on team information elaboration. Table 2 presents the results for Model 3.

We then tested the relative importance of the moderation effects of TSFI and TPS. According to LeBreton et al. (2013), traditional approaches of relative importance analysis (e.g., traditional relative weight analysis or dominance analysis) are inappropriate to test the relative contribution of interaction effects because traditional approaches presuppose that there is no inherent ordering of the predictors and thus no one predictor takes precedence over the other (Budescu, 1993; Johnson, 2000; LeBreton et al., 2013). However, this premise is not true when testing for a higher-order effect (e.g., the effect of an interaction term between X and Z, namely XZ) because this higher-order effect is only valid when it predicts the criterion above and beyond the effects of its lower-order variables (e.g., the effects of X and Z). In other words, since higher-order terms (e.g., interaction terms) are "confounded, messy, and tainted variables" (LeBreton et al., 2013, p. 467), it is necessary to remove their appropriate lower-order effects before calculating their relative contributions (LeBreton et al., 2013). As such, using traditional approaches of relative importance analysis to estimate the relative contribution of interaction effects

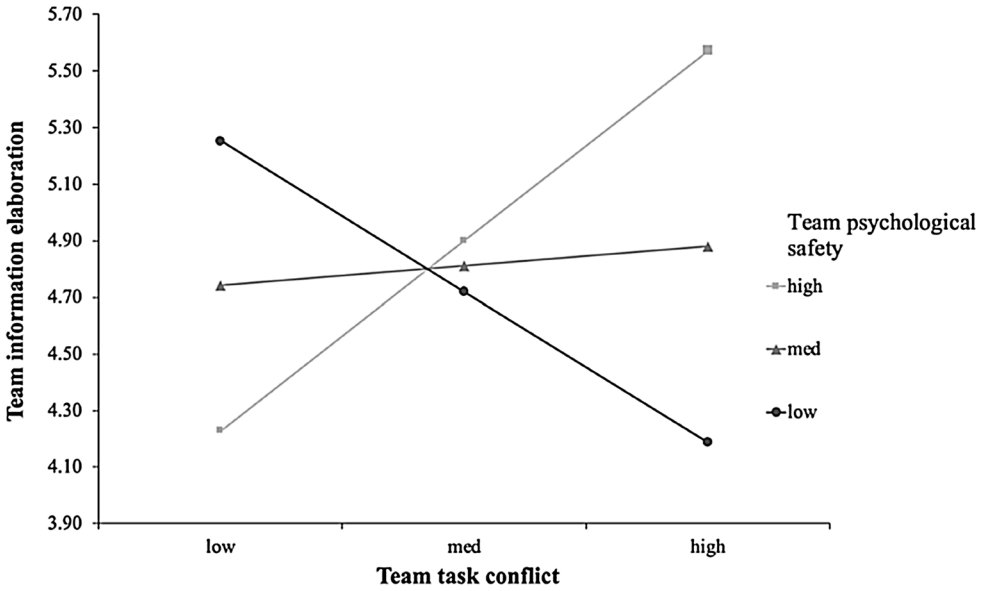

Fig. 3 Interaction effect between team task conflict and team psychological safety on team information elaboration

without cleansing of their relevant lower-order effects could be misleading.

Therefore, following LeBreton et al.'s (2013) recommendation, we used residualized relative weight analysis to demonstrate the relative importance of the moderation effects of TSFI and TPS. Specifically, we regressed each interaction term (i.e., the interaction term of team task conflict and TSFI/the interaction term of team task conflict and TPS) on its relevant lower-order terms (i.e., team task conflict and TSFI/team task conflict and TPS), respectively, and then saved the residuals of those two regressions as two new variables (i.e., two residual terms). These newly created residual terms represent correct interaction terms because they were cleansed appropriately (i.e., adjusted only by their corresponding lower-order effects), and equal to the higher-order interaction effects. We then performed traditional relative weight analyses using all lower-order variables and the two newly created residual terms to examine relative importance of the moderation effects of TSFI and TPS.

Results are presented in Table 4, where we offered two types of coefficients: raw relative weight and rescaled relative weight. To be specific, raw relative weight represents the proportion of variance explained in a criterion that is accounted for by each predictor, while the rescaled relative weight is calculated by dividing the raw relative weights by the model R^2 and multiplying by 100, reflecting the percentage of predicted variance for each predictor (LeBreton et al., 2007). As shown in Table 4, all predictors explained 22.8% of the variances in team information elaboration in total. The moderation effects of TSFI (raw relative weight = 0.09, 95% CI [0.01, 0.22]) and TPS (raw relative weight = 0.08, 95% CI [0.01, 0.22]) accounted for 37.2% and 34.1% of this explained variance, respectively. We also compared the relative weights of two interaction terms. Results demonstrated that the relative weights of two interaction terms were not significantly different (difference = 0.01, 95% CI [− 0.14, 0.12]), suggesting that the moderation effects of TSFI and TPS were equally important in predicting team information elaboration.

Supplementary Analysis

Since one may be curious about whether team task conflict, TSFI, and TPS may interact jointly in predicting outcomes, we further examined the three-way interaction effects between team task conflict, TSFI, and TPS on team information elaboration and team innovation. Results showed that none of the three-way interaction effects on team information elaboration ($\gamma = -0.01$, $p = 0.90$) and team innovation ($\gamma = -0.12$, $p = 0.09$) were statistically significant.

In addition, since the team-level Cronbach's alphas for team task conflict, TSFI, team information elaboration, and team innovation were quite high (> 0.90), there might be a potential issue of item redundancy (Boyle, 1991). Therefore, following Ng et al. (2010), we created shortened versions of the four scales (i.e., team task conflict, TSFI, team information elaboration, and team innovation) by removing redundant items, and reran hypotheses tests using those shortened scales. Consistent with Ng et al. (2010), we removed one item from each scale; that is, the one with the highest correlations to the rest of items in its original scale was removed. Analyses showed that the result pattern remained the same and our hypotheses were again supported, suggesting that item redundancy may not be a severe issue in affecting our findings.

Discussion

Previous research has come to mixed conclusions about the team task conflict–team innovation relationship. Following the contingency model of team innovation, we used

Table 4 Results of residualized relative weight analysis of model 3

	Team information elaboration		Team innovation	
	Raw relative weight [95% CI]	Rescaled relative weight	Raw relative weight [95% CI]	Rescaled relative weight
Team task conflict (TTC)	0.01 [0.00, 0.04]	3.28	0.00 [0.00, 0.02]	1.93
Team support for innovation (TSFI)	0.02 [0.00, 0.08]	7.00	0.01 [0.00, 0.08]	6.44
Team psychological safety (TPS)	0.04 [0.00, 0.15]	18.35	0.05 [0.00, 0.15]	24.79
TTC × TSFI	0.09 [0.01, 0.22]	37.22	0.01 [0.00, 0.08]	7.43
TTC × TPS	0.08 [0.01, 0.22]	34.14	0.04 [0.00, 0.16]	19.70
Team information elaboration			0.07 [0.01, 0.22]	39.69
Total	0.23	100	0.18	100

95% confidence intervals for raw relative weights based on 10,000 bootstrapped samples are reported in the brackets

CI confidence intervals

two typical types of supportive team climate (i.e., TSFI and TPS) as moderators, and team information elaboration as a mediator to explain when and how team task conflict is linked to team innovative performance. Our findings suggest that for teams with high levels of support for innovation or psychological safety, team task conflict is beneficial for team information elaboration, which, as a result, enhances team innovative performance. Thus, this study highlights the importance of considering team task conflict and supportive team climate simultaneously in promoting team information elaboration and team innovation.

Theoretical Implications

Scholars have called for empirical research examining the boundary conditions of the effectiveness of task conflict and the underlying mechanisms because previous findings were mixed (e.g., De Dreu, 2008; De Dreu & Weingart, 2003; Hülsheger et al., 2009). Despite the diverse informational resources activated by team task conflict are essential for team innovation, there is no guarantee that team task conflict would necessarily promote team innovation. The current study highlights the boundary conditions that enable a team to transform task conflict into innovation process. Specifically, task conflict occurring in teams with high levels of support for innovation or psychological safety can benefit team information elaboration, which in turn results in increased team innovation. However, team task conflict could hurt team information elaboration and team innovation when a team does not support for innovation or is not psychologically safe. By clarifying the contingencies of the effects of team task conflict, we answer previous research calls (e.g., De Dreu, 2008; De Wit et al., 2012; Hülsheger et al., 2009) and offer some possible explanations reconciling previously mixed findings.

Moreover, according to the results of relative weight analysis, we did not find any significant difference in the moderating effects between TSFI and TPS, suggesting that the task-related moderating factor (e.g., innovation-supportive climate) is as important as the interpersonally related moderating factor (e.g., psychological safety climate) while considering the effects of team task conflict. Such finding is important because, although previous research have highlighted the important roles of interpersonally related climates in leveraging the beneficial effects of task conflict (e.g., Bradley et al., 2012; Fairchild & Hunter, 2014), little is known about the moderating roles of task-related climates in the effects of task conflict. Of note, since our study was conducted in China, it is important to consider the Chinese context when discussing our findings. The Chinese culture is highly collectivistic (Hofstede, 2001) and strongly emphasizes on interpersonal harmony and conflict avoidance (Friedman et al., 2006). In such a highly relationship-oriented culture, a task-related climate (i.e., TSFI) can still be as important as a relationship-related climate (i.e., TPS), highlighting the critical role of TSFI in utilizing the favorable effects of task conflict.

This study also offers some of the first insights into the mediating role of team information elaboration in the interactive effects of task conflict and team supportive climates on team innovation. This is important because previous research has largely assumed task conflict as a proxy for team information elaboration (Van Knippenberg, 2017), while our study suggests that task conflict is conceptually and empirically differentiated from team information elaboration. Consistent with the team innovation contingency model, we offer empirical evidence to show that team information elaboration could be a more proximal antecedent of team innovation, and serve as a theoretical mechanism linking the interactions between information resources and supportive team climates to team innovation.

Finally, the present study also contributes to the contingency model of team innovation. The contingency model integrated the knowledge integration perspective and team climate perspective to emphasize the need to consider two critical elements of team innovation: informational resources that are conducive to team innovation, and team supportive climates that promote the use of those resources, with information elaboration being the core mechanism of their interaction effects on team innovation (Van Knippenberg, 2017). Given that task conflict captures team member's diverse opinions and knowledge and provides teams with a pool of informational resources (Xie et al., 2014), it is ideal to apply the contingency model in examining the effects of team task conflict. However, the contingency model has not been tested in the research context of task conflict, limiting our understanding of its validity. The current study offers a systematic test of and adds the empirical evidence to the team innovation contingency model.

Practical Implications

Our study offers several practical implications for management. First, given that task conflict is inevitable in work contexts, and is inherently neutral as it potentially has both good and bad effects (e.g., Jehn & Bendersky, 2003), managers should take a more rational and balanced (rather than one-sided) view of task conflict and deal with it in a proper way. Our findings suggest that task conflict could be constructive to team innovation by facilitating teams' knowledge exchange and integration when team climate is supportive of innovation or psychologically safe. In order to take advantage of the beneficial effects of task conflict, organization managers are encouraged to develop supportive team climates. For instance, team leaders could set up formal practices and procedures to reward and motivate team members'

exchange and integration of various ideas and perspectives. They may also need to supply adequate resources and assistance to support team members' innovative activities.

Moreover, managers should not underestimate the potential interpersonal risks of task conflict, and should endeavor to develop a psychologically safe climate to deal with such concern. For instance, team leaders could design targeted training programs that help team members to interact and coordinate with each other in a mutually respectful and supportive manner, and handle dissenting and different ideas and perspectives in a constructive way. Managers should also learn to value employees who engage in speaking up and challenging the status quo by expressing and discussing dissenting views.

Second, our results suggest that information elaboration is a core driver of innovation in the team context, which emphasizes the crucial role of team members' information exchange and integration in facilitating team innovation. Thus, organization managers could raise team members' awareness of the importance of information exchange and integration. Moreover, managers could design training programs to help team members understand and reflect on the divergent viewpoints and perspectives within team effectively. In addition, managers are also recommended to create conditions that encourage team members to exchange and integrate diverse knowledge and information. For example, given that previous research suggests that shared task representation and collective leadership are facilitators of team information elaboration (Resick et al., 2014; Van Ginkel & Van Knippenberg, 2008), managers could foster a shared task-understanding among team members and empower them so as to prompt information exchange and integration. Of note, since our study collected data exclusively from an IT company in the Chinese context, whether our findings can generalize to other contexts requires further validation. Thus, we suggest that the current findings should be applied with some caution, especially in cultural contexts that are different from China.

Limitations and Future Research

There are some limitations need to be noted. First, although we collected data using multi-source and lagged design to alleviate concerns of common method bias (Podsakoff et al., 2003, 2012), and interaction effects (i.e., the focal hypothesized effects of the current study) are unlikely to be produced by common method variance (Lai et al., 2013; Lin et al. 2013; Siemsen et al., 2010), the data were cross-sectional in nature, which prevents us from making causal inference. In particular, while we controlled for a wide range of covariates (e.g., team diversity, team relationship conflict, TMS, and LMX) to rule out their potential confounding effects and offer more rigorous tests of our hypotheses, endogeneity bias might still affect our analyses (Antonakis et al., 2014). For instance, leader affect may also be a critical variable that could confound our research findings because prior research (Martinko et al., 2018) showed that it could predict a number of important organizational outcomes beyond traditional leadership constructs (e.g., transformational leadership, LMX) that are important predictors of follower creativity and innovation (e.g., Lee et al., 2019; Lin et al., 2018). As such, future research could further explore whether leader affect and other potential confounding variables might affect our findings. We also encourage future studies to adopt longitudinal or experimental designs to better examine the causal relationships between our focal variables.

Second, although there are no theoretical foundations for us to develop an a priori hypothesis of the three-way interaction involving team task conflict, TSFI, and TPS, we conducted post hoc analyses to examine such three-way interaction effects. Our supplementary analyses showed that none of the three-way interaction effects on team information elaboration and team innovation were statistically significant. One possible reason of the non-significant results could be due to the insufficient sample size ($N < 100$). We call for future research to develop more sophisticated theories regarding the three-way interaction effects involving team informational resources and different types of team supportive climates, and test them with larger-scale sample.

Third, although we theoretically and empirically identified TSFI and TPS as important moderators of the effects of team task conflict, other boundary conditions need to be further explored. It is promising to investigate other potential moderators beyond supportive team climates, such as organizational cultures, leader's characteristics or behaviors, and composition of team members' personality or ability. For example, as suggested by Van Knippenberg (2017), team members' creativity (i.e., ability to be creative) may be an important factor beyond the team innovation contingency model that could moderate the effect of informational resources on information elaboration. Future research could test this proposition in the research context of task conflict and further extend the contingency model.

Fourth, collecting data from homogeneous R&D teams at one company in China allows controlling for the potentially confounding impacts of team type and organizational-level factors (Li et al., 2018). However, the homogeneous sample might limit the generalizability of our research findings. For instance, interpersonal harmony was strongly emphasized in the Chinese context (Deng & Yao, 2020; Hofstede, 2001; Lin et al., 2020). Thus, the detrimental effects of task conflict on information elaboration and innovative outcomes may be particularly salient when a team supportive climate is absent. Different from the Chinese context, employees in western contexts may be more independently oriented and are encouraged to express dissent ideas and opinions (Deng

& Yao, 2020; Deng et al., 2021). In such a context, task conflict may not necessarily harm information elaboration and innovation even in the absence of a team supportive climate. Future research needs to collect more heterogeneous samples in different occupational, national, or cultural settings to further test the generalizability of our findings.

Conclusion

Drawing on the contingency model of team innovation, we offer some insights to answer the question of when and how team task conflict can spark team innovation. As an attempt to reconcile previous contradictory findings regarding the impacts of team task conflict on team innovation, our study suggests that under high levels of TSFI or TPS, team task conflict could enhance team innovation via promoting team information elaboration. The findings advance our understandings of the team task conflict–team innovation relationship and offer managerial implications for organizational managers who seek to promote their teams' innovative performance.

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Author Contributions YD: conceptualization; methodology; writing—original draft preparation; writing—review and editing; supervision. WL: corresponding author; conceptualization; methodology; formal analysis and investigation; writing—original draft preparation; writing—review and editing; funding acquisition; resources; supervision. GL: conceptualization; writing—review and editing; resources.

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Declarations

Conflict of interest The authors have no conflicts of interest to declare that are relevant to the content of this article.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of American Psychological Association (APA).

Informed Consent Informed consent was obtained from all individual participants included in the study.

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