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How and when team regulatory focus influences team innovation and member creativity

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How and when team regulatory focus influences team innovation and member creativity

Abstract

Purpose: This study aims at testing how team regulatory focus may relate to individual creativity and team innovation and addressing the fit/misfit issue of team regulatory focus and team bureaucracy.

Design/Methodology/Approach: We collected data from 377 members and their leaders within 56 R&D teams in two Taiwan companies.

Findings: A team promotion focus was positively related, whereas a team prevention focus was negatively related, to both team innovation and member creativity through team perspective taking and employee information elaboration, respectively. Furthermore, team bureaucracy played a moderating role that suppressed the indirect relationship between team regulatory focus and creativity.

Important values: This is one of first studies to explore an underlying mechanism linking team regulatory focus and both team innovation and member creativity. We provide a more complete view of the creative and innovation implications of team-level self-regulation.

Introduction

Because innovation is crucial for an organization in highly competitive environments, researchers in organizational behavior and management have devoted considerable attention on how to enhance innovation (e.g., Khazanchi and Masterson, 2011; Gong, Cheung, Wang and Huang, 2012). Among other perspectives, scholars have adopted regulatory focus theory regarding promoting innovation in the workplace (e.g., Rietzschel, 2011). Two distinct modes of regulatory focus have been examined: a promotion focus, in which people are primarily focused on

achievement, growth, and the realization of aspirations; and a prevention focus, in which people are primarily focused on security, safety and responsibility (Higgins, 1998; Shah, Higgins, and Friedman, 1998). Prior studies have shown that individual promotion focus has a positive relationship with individual creativity and innovative performance, but individual prevention focus has not (Wallace et al., 2016; Lam and Chiu, 2002).

Recent research has showed that collective regulatory focus in a team relates to team innovation because collective regulatory focus is a contextual factor that exerts motivational influence on workplace performance (Rietzsehel, 2011; Shin, Kim, Choi, and Lee, 2016). Team promotion focus refers to a shared understanding of the extent to which a team emphasizes attaining positive outcomes (Faddegon, Scheepers, and Ellemers, 2008), which has been shown to promote team innovation; whereas, team prevention focus emphasizes avoiding negative outcomes (Faddegon et al., 2008), which may inhibit team innovation. Despite all of this accumulated knowledge, little research has been done to explore how team/collective regulatory focus can influence team innovation. Furthermore, when team innovation requires that members initially choose to engage in creative behaviors (Gong, Kim, Lee and Zhu, 2013; Somech and Drach-Zahavy, 2013), it thus begs the question of whether team regulatory focus also relates to member creativity, and if so, how. However, assuming that team regulatory focus has the same relationship with individual creativity as team regulatory focus has with team innovation is problematic, because individuals respond differently to the same workplace context (Shin, Kim, Lee, and Bian, 2012). Overall, we aim to develop and test a creativity and innovation model regarding the team-level and cross-level influence of team regulatory focus.

To explore how team regulatory focus influences team innovation and member creativity, we adopt motivated information processing perspective (De Dreu, Nijstad, Bechtoldt and Baas, 2011; Nijstad and De Dreu, 2012). This perspective indicates that an employee's desire to learn and explore engages him or her in systematic information processing activities, which have been shown to enhance workplace innovation and creativity (Grant and Berry, 2011). Given the notion of team

regulatory focus as a team-level motivational state in which members regulate their efforts for collective goals (Shin et al., 2016), we argue that team regulatory focus either motivates or inhibits information processing among team members through influencing members' motivations to learn and explore. Integrating with the motivated information processing perspective, we propose an indirect relationship that team regulatory focus has with team innovation through team-level information processing. We focus on team perspective taking, which entails sharing, discussing, and integrating the viewpoints of each teammate, and has been shown to enhance team innovation (Hoever, van Knippenberg, van Ginkel and Barkema, 2012). This is because innovation is a function of generating good ideas and developing these ideas beyond their initial state (Somech and Drach-Zahavy, 2013), which requires members not only considering different viewpoints but also integrating them (Hoever et al., 2012). Of the individual-level information processing activities, this study focuses on individual information elaboration – the searching for and consideration of teammates' information and perspectives regarding team tasks, which has been shown to enhance generating new ideas (Li, Lin, Tien and Chen, 2015). As a result, we examine both indirect relationships, via team perspective taking and employee information elaboration, that team regulatory focus have with team innovation and member creativity.

The degree of fit/misfit between the characteristics of team structure and regulatory focus determine the members' impression and team's ultimate effectiveness (Beersma, Homan, Van Kleef, and De Dreu, 2013; Johnson, Smith, Wallace, Hill and Baron, 2015). Thus, members not only may engage, more or less, in systematic information processing when they are in distinct regulatory focused states, but may also perform at different levels, depending on the structural characteristics of teams in which they work in (Dimotakis, Davison, and Hollenbeck, 2012). Generally, in team task placed an emphasis on creativity and innovation, a team should be structured to be less bureaucratic with more informal and decentralized (Kratzer, Gemünden, and Lettl, 2008). As prior research has indicated, team bureaucracy largely inhibits team members' creative impression (Hirst, van Knippenberg, Chen, and Sacramento, 2011). We expect that a natural misfit (fit) exists between

promotion focus (prevention focus) and team bureaucratic structure. Specifically, team bureaucracy may hinder (facilitate) the motivational tendency for systematic information processing associated with team promotion focus (team prevention focus). As a result, we examine the influences of team bureaucracy on the relationship that team regulatory focus has with team perspective taking (individual information elaboration), and subsequently team innovation (member creativity).

Extending previous research, we delineate and test a multi-level model (Figure 1) that integrates regulatory focus as a collective self-regulatory process in teams (Johnson et al., 2015) within a multilevel framework of team innovation and member creativity. We aim to advance the multilevel theory of regulatory focus with respect to the innovation process. Second, by integrating motivated information processing, we uncover the mechanism for the indirect effect of team regulatory focus on team innovation (member creativity) and demonstrated that team perspective taking (employee information elaboration) is a mediator. This extension facilitates demonstrating how team regulatory focus relates to innovation and creativity in teams. Finally, we enrich the growing body of literature on team/collective regulatory focus by employing regulatory fit perspective to investigate how team regulatory focus interacts with team structures to influence team functioning and performance.

[Please insert Figure 1 here.]

Theory and hypotheses

Previous research has typically treated regulatory focus as an individual and stable disposition and focused on individual-level analysis. However, regulatory focus can also exist at the team level (Brockner and Higgins, 2001) and be conceptually treated as the collective motivation of team members (Faddegon, Ellemers, and Scheepers, 2009). Team regulatory focus is an emergent team motivational state, which is distinguishable from individual motivational states of regulatory focus, resulting from the interaction between team contexts and a social learning process among team members (Crowe and Higgins, 1997). Thus, employing the notion of the referent-shift consensus

model from the composition theory (Chan, 1998), we operationalize team regulatory focus as a team's shared beliefs regarding the direction, amount, and duration of efforts required for achieving collective goals.

We adopt the two-dimension typology of regulatory focus (promotion focus and prevention focus). In addition to being used in individual regulatory focus and individual creativity (e.g., Lam and Chiu, 2002), this typology has also been initially adopted in team-level regulatory focus (Rietzschel, 2011). A team displaying a strong promotion focus is more concerned with the attainment of positive outcomes, in which team members perceive the states as approach motivation encouraging members to take risks and pursue hopes, ideals, and aspirations. Whereas, a team with a strong prevention foci, in which team members perceive their team as having vigilance or avoidance motivation to fulfill their own duties and follow rules (Kark and Van Dijk, 2007), is more concerned with avoiding negative outcomes.

Information processing typically occurs in two ways: shallow, noncritical information processing that relies on familiar-associated or known information, and systematic, effortful information processing that entails elaborating evaluations of relevant information. Team members may engage more in systematic information processing if they have epistemic motivation, which may result from individual differences (Shin et al., 2012) or contextual cues or states (Lee and Yang, 2015). Thus, team regulatory focus as a motivational state invites or hinders members' engagement in concomitant in-depth information processing such as employee information elaboration or collective perspective taking.

Team regulatory focus, team perspective taking, and team innovation

Team innovation refers to the introduction and application of ideas that are new to a team and are designed to be useful, which illustrate two stages: the creativity and the implementation of innovation (George, 2007). Team members need to take perspectives with each other when the implementation of innovation requires integrating multiple perspectives (Shin et al., 2012). This promotes achieving innovative goals because, in addition to facilitating information exchange, team

perspective taking enables a more comprehensive evaluation of different perspectives from teammates (Hoever et al., 2012). This, in turn, helps teams recognize the alternatives of useful ideas and discard those ideas that seem useless to facilitate innovation implementation (Somech and Drach-Zahavy, 2013). Regarding team perspective taking, we focus on the provision or receipt of job-related perspectives or know-how regarding a product or a procedure from teammates. In line with prior work (Hoever et al., 2012), we conceptualize perspective taking as an emergent team process that is based on characteristic level of team member behavior of considering another's viewpoint (Chan, 1998). Thus, team perspective taking reflects the behavioral aspect of a team's inter-member interactions that promote its goal achievement.

We argue that team regulatory focus either motivates or inhibits team perspective taking, because the shared contextual state influences collective goal-striving behavior such as information processing (Gong et al., 2013). When the goal to gain becomes shared on a promotion-focused team, team members are more motivated to exert effort toward exploring alternative task procedures, assisting team members and being attentive to their requirements that are associated with the emotional and cognitive nature of perspective taking (Grant and Berry, 2011), respectively. Because of the learning and development-oriented nature of a promotion focus (Johnson et al., 2015), members with team focus desire new knowledge acquisition that leads them to pay heightened attention to considering information from multiple perspectives, such as teammates' job-related information. In addition to new knowledge acquisition, team members on a promotion-focused team are motivated to identify ways for helping their team members (Neubert, Kacmar, Carlson, and Chonko, 2008) that facilitate the adoption of perspectives within in a range of other members. Thus, there is a positive relationship between team promotion focus and team perspective taking, which might be attributable to the nature of learning and development triggered by promotion foci.

A team prevention focus seems to discourage the consideration and adoption of others' perspectives for several reasons. First, a prevention focus leads to focusing on avoiding making

mistakes and being criticized (Higgins, 2000). Consequently, team members in a prevention-focused team are more likely to concentrate on fulfilling their own basic duties or responsibilities (Kark and Van Dijk, 2007) and therefore are less likely to identify alternatives from different parties, including teammates. Second, with the shared goals of avoiding losses, members on a prevention-focused team are not likely to engage in the learning and information exchange (Nijstad and De Dreu, 2012) that are necessary for perspective taking (Grant and Berry, 2011). Finally, because the prevention focus is associated with avoiding errors (Higgins, 1997), such a focus leads to being more sensitive toward others' negative reactions that may arise from discussing each other's perspectives. This is because misevaluating teammates' perspectives can be perceived as a sign of incompetence. In other words, by shifting their attention on how to avoid error and fulfill their own duties, members are less likely to adopt other teammates' perspectives to make their work efficient and effective.

Hypothesis 1. Team perspective taking will mediate the positive relationship between team promotion focus and team innovation.

Hypothesis 2. Team perspective taking will mediate the negative relationship between team prevention focus and team innovation.

Team regulatory focus, employee information elaboration, and member creativity

Team innovation is clearly a function of the creativity of individuals on the team (Somech and Drach-Zahavy, 2013). To fully understand how team regulatory focus promotes innovation in teams, we should look simultaneously at team-level influence on team innovation and individual-level influence on member creativity. Accordingly, we examine how the motivational states of team regulatory focus will affect member creativity. Individual creativity emerges when individuals gather and process job information to generate novel ideas (Amabile, 1988). Employee information elaboration is an important way of acquiring and creating novel ideas to get creative results (Li et al., 2015). Although employee information elaboration is related to employee learning, employee learning is a broad concept that involves testing assumptions, reflecting errors, and experimenting

(Edmondson, 1999). In this study, employee information elaboration is more focused on acquiring and considering job information from other members.

With the shared motivation of pursuing growth and development (Higgins, 1997), team members may interact with others to learn their job-related information and perspectives to identify potential ways of problem-solving (Fay and Frese, 2001). Teammates may have a variety of information and perspectives regarding work issues (Li et al., 2015). They are motivated to draw on this information to evaluate potential events that may occur if they initiate development for the realization of their goals (Gong et al., 2012). By accumulating informational resources and improving their knowledge base, members in a promotion-focused team are likely to develop novel ideas and test these ideas for solving identified problems.

A team prevention focus may discourage team members from elaborating on job information derived from teammates. We suggest two reasons supporting this argument. First, a prevention focus might lower members' epistemic motivation, and lead them to engage less in deep and deliberate processing of available and new information (Lunn, Sinclair, Whitchurch, and Glenn, 2007). This is because the overarching team focus is to prevent loss and errors rather than to actively strive to maximize gains. Furthermore, seeking job information from others may be perceived as involving the risk of being incompetent (Gong et al., 2013). Thus, when members share a state of prevention focus, they may consider seeking information from teammates as risky behavior, consequently reducing information elaboration. This is because of the nature of prevention focus associated with low risk-taking (Gino and Margolis, 2011).

Because creativity is the production of both novel and useful ideas, individuals require focus not only on novelty but also on usefulness. By searching, considering, and combining job information from teammates, members are likely to distinguish which novel ideas are useful for solving task problems (Litchfield, 2008). Together, these arguments suggest that employee information elaboration is a crucial process linking team regulatory focus and individual creativity. Based on this, we expect that

Hypothesis 3. Employee information elaboration will mediate the positive relationship between team promotion focus and member creativity.

Hypothesis 4. Employee information elaboration will mediate the negative relationship between team prevention focus and member creativity.

Moderating role of team bureaucratic structure

This study embraces the regulatory fit perspective that focuses on the fit/misfit between team bureaucracy and team regulatory focus. Team bureaucracy imposes exactly motivational constraints on systematic information processing and innovation. Thus, we expect that the team promotion focus will motivate systematic information processing behaviors, but this potential can be released more when a team is structured to be less bureaucratic; whereas team bureaucracy also interacts with team prevention focus, but in a negative way in which systematic information processing was more constrained.

Previous studies have distinguished two main dimensions of team bureaucratic structure: the centralization of decision-making and the formalization of rules and procedures (Raub, 2007). Both are ways for regulating and controlling team member behavior that are associated with low discretion of team members concerning team tasks. In this study, centralization relates to the extent to which team decision authority is shared between a team leader and members (Hirst et al., 2011). Under the decentralized team structure, members are encouraged to participate in team decision-making, in which they are likely to provide more of their perspectives because of the empowering nature of low centralization. Individuals on a promotion-focused team are motivated to search for and consider job information because this improves opportunities for accomplishing tasks. However, centralization hinders information elaboration by reducing chances for other members to provide original thoughts about critical issues facing a team (Chen, Kirkman, Kanfer, Allen, and Rosen, 2007). By contrast, low centralization fosters psychological empowerment that promotes enthusiasm and intrinsic motivation in individuals (Bolin and Harenstam, 2008).

Centralization thus attenuates the creative benefits of a promotion focus that derives from epistemic motivated engagement in information elaboration. With the shared goal of avoiding negative outcomes, members on a prevention-focused team are likely to avoid work challenges that invite the search and consideration of information from their teammates. Because of the lack of contextual support for proactively engaging with work challenges, high centralization reinforces the motivation of members on a prevention-focused team to fulfill their own duties, which largely inhibits the motivational tendency for systematic information processing such as information elaboration. Thus, in addition to its inhibiting influence on the relationship between team promotion focus and member creativity, centralization can bolster the negative relationship between team prevention focus and member creativity.

Hypothesis 5a. Centralized team structure moderates the indirect relationship between team promotion focus and member creativity: the team promotion focus is indirectly positively related to member creativity through individual information elaboration, when centralization is low, but not when centralization is high.

Hypothesis 5b. Centralized team structure moderates the indirect relationship between team prevention focus and member creativity: the team prevention focus is indirectly negatively related to member creativity through individual information elaboration, when centralization is high, but not when centralization is low.

In this study, formalization refers to a team structure in which rules and procedures are clearly specified and standardized (Raub, 2007). The formalized team structure constrains members' ability to engage in discretionary behaviors, such as exploration (Hirst et al., 2011), which can reduce the motivation to search for new knowledge regarding task problem solving. Formalization reduces opportunities for individuals to engage in job challenges because it creates a climate that requires individuals to follow clear procedures and rules. Thus, if a team structure is characterized by high formalization, behaviors of members on the team would be homogenized to a limit of choices offering less freedom. Thus, they would feel less empowered and thus would be less likely

to engage in systematic information processing (Nijstad and De Dreu, 2012).

Based on the motivated information processing view, members of a promotion-focused team have the motivation to engage in systematic information processing to get the results of growth and development. A highly formalized team structure attenuates the motivational influence of a promotion focus on information elaboration because it restricts members from expressing their perspectives by limiting discretion. Unlike a decentralized team structure, which may inspire active engagement in job challenges, clear behavioral protocols and rules invite individuals to avoid job challenges, which may inhibit acts of systematic information search and elaboration. As a result, formalization creates a team context with limited freedom and few opportunities to attempt new approaches that members of a prevention-focused team perceive as unsupportive of risky activities (Hirst et al., 2011). This context reinforces team members' motivation to fulfill their own duties only, which elicits less willingness to engage in information elaboration. Taken together, we hypothesize:

Hypothesis 6a. Formalized team structure moderates the indirect relationship between team promotion focus and member creativity: the team promotion focus is indirectly positively related to member creativity through individual information elaboration, when formalization is low, but not when formalization is high.

Hypothesis 6b. Formalized team structure moderates the indirect relationship between team prevention focus and member creativity: the team prevention focus is indirectly negatively related to member creativity through individual information elaboration, when formalization is high, but not when formalization is low.

For members of a promotion-focused team, motivation to engage in systematic information processing may depend on the extent to which they perceive that they are likely to be rewarded for their behaviors (Johnson et al., 2015). Regarding team information processing, we expect that members on a team with strong promotion focus are responsive enough to the encouragement from their work context to exchange information and then to accept different

teammates' perspectives. This is because such behaviors can result in rewards for accomplishing tasks effectively. In decentralized team structures, where members are encouraged to contribute novel idiosyncratic views, members on a promotion-focused team may engage more in team discussion to demonstrate their competence, through which they are more likely to accept different teammates' views. By contrast, when members on a prevention-focused team work in a team structure where a team leader arrives at decisions with little invitation to participate, they will become less likely to engage in taking different perspectives. This is because they may assume that their leader discourages them from bringing different perspectives into the decision-making processes, which inhibits their motivational tendency for perspective sharing by avoiding negative evaluation from their team leader. Thus, we expect that members on a prevention-focused team are less likely to engage in perspective taking when centralization is high rather than when it is low.

Hypothesis 7a. Centralized team structure moderates the indirect relationship between team promotion focus and team innovation: the team promotion focus is indirectly positively related to team innovation through team perspective taking, when centralization is low, but not when centralization is high.

Hypothesis 7b. Centralized team structure moderates the indirect relationship between team prevention focus and team innovation: the team prevention focus is indirectly negatively related to team innovation through team perspective taking, when centralization is high, but not when centralization is low.

Teams with high formalization of rules and procedures provide an environment in which clarity as to the desired ways to engage in job challenges is enforced. Thus, in a context with higher formalization of rules and procedures, members on a promotion-focused team have clear information as to how they can demonstrate their competence regarding performing their job well. In effect, this attenuates their tendencies to actively engage in complex problem solving to address work challenges, making them less motivated to exchange each other's views – the very views that might facilitate team perspective taking (Johnson, 1977). Furthermore, formalized team structure

creates a team context with clear guidelines and few opportunities to proactively contribute in solving work challenges (Hirst et al., 2011). In this context, the absence of explicit encouragement to actively address critical job issues may be perceived by individuals as unsupportive of providing original thoughts and team discussion, which is detrimental for team perspective taking. Thus, to avoid negative evaluation, members on a prevention-focused team that work in this team structure may be less likely to engage in perspective taking than individuals on otherwise focused teams. This is because they are more likely to assume that exchanging and discussing different views will elicit negative feedback from their leaders, and thus be less motivated to discuss different approaches. Taken together, we hypothesized:

Hypothesis 8a. Formalized team structure moderates the indirect relationship between team promotion focus and team innovation: the team promotion focus is indirectly positively related to team innovation through team perspective taking, when formalization is low, but not when formalization is high.

Hypothesis 8b. Formalized team structure moderates the indirect relationship between team prevention focus and team innovation: the team prevention focus is indirectly negatively related to team innovation through team perspective taking, when formalization is high, but not when formalization is low.

Method

Sample and data collection

This study collected data from 56 R&D teams in two multinational high-tech organizations with headquarters located in Taiwan. These teams typically perform tasks such as technological R&D, improvements on intricate processes, and prototype design work. On these teams, members interacted frequently and worked collaboratively toward common team goals. With the permission of the two organizations, all members of these R&D teams were invited to complete a questionnaire. All team members that participated in the study also participated in the survey.

Participation was voluntary, and the respondents were assured of the anonymity of their responses. The participants completed the questionnaire in conference rooms during their work shifts after research assistants introduced the purpose of each survey. To minimize the potential problems associated with common method variance, we collected data from team members and their leaders. The team members evaluated their team's regulatory focus, information sharing, and bureaucratic context, and their own information elaboration tendencies. The leaders reported their team members' individual creativity and team innovation.

We conducted a time-lagged design in this study, in which participants completed surveys at three points in time. At Time 1, we collected the measures of team regulatory focus, team bureaucratic context, and control variables. After one month (Time 2), we collected mediating variables including team information sharing and employee information elaboration. In the final survey (Time 3), which was administered three months later, research assistants interviewed each leader of the R&D teams who were asked to assess the individual creativity of their team members and the innovation of their teams.

In this study, data was collected from 377 matched questionnaires and 56 teams. The average number of employees from each team was 6.73 (5 to 7 employees). Of the team members, 14.6% of the employees were female. The average age was 30.05 years (s.d. = 3.48) and the average organizational tenure was 8.97 years (s.d. = 1.16). Of the supervisors, 23 percent were female; their average age was 42.13 years; and their average organizational tenure was 11.3 years.

Measures

Individual creativity. We measured individual creativity by the 4 items developed by Farmer, Tierney, and Kung-McIntyre (2003). Following previous research, we asked team leaders to assess the extent to which each of the four creative activities characterized each team member. Factor loadings of each item ranged from .72 to .75. The Cronbach's alpha for this measure was .84.

Team innovation. Using the four-item measure developed by De Dreu (2002), team leaders were asked to assess the extent to which their members displayed creative behaviors. Sample item

is “Team members often implement new ideas to improve the quality of our products.” Factor loadings of each item ranged from .75 to .82. The Cronbach’s alpha for this measure was .87.

Employee information elaboration. The four-item scale developed by Li and his colleagues (2015) was adapted to measure employees’ information elaboration in this study. Team members were asked to assess the extent to which they searched for, elaborated, and integrated task information provided by their teammates. Factor loadings of each item ranged from .69 to .75. The Cronbach’s alpha for this measure was .82.

Team perspective taking. Since there are no suitable measures for the field survey, we developed our own. Drawing on prior definitions and measures (Hoever et al., 2012), as well as discussions with two management theory experts, we developed four items. The two researchers helped check the face validity, clarity, and relevance of the four-item scale. From the feedback we made several changes in the instrument to improve its clarity and to ensure effective communication with the respondents. This study then conducted a pilot-test to assess the validity. We gathered data from 178 top team members in 38 high-tech firms. This study measured team perspective taking, team information sharing (Bunderson and Sutcliffe, 2003), and team learning behavior (Edmondson, 1999), which are related to team information processing. Next, this study tested a three factor measurement model with a CFA. The results showed that all items loaded significantly on the expected constructs, indicating convergent and discriminant validity of the measures. The fit indexes showed that the three factor model fit the data reasonably well (chi-square = 29.34, df = 32, RMSEA = 0.00, GFI = 0.97, AGFI = 0.95, RMR = 0.02), and better than one-factor model (chi-square = 242.30, df = 35, RMSEA = 0.18, GFI = 0.75, AGFI = 0.61, RMR = 0.09). This study conducted a series of CFAs to test whether a two-factor model of these three measures would fit better than a one-factor model for every pair of constructs (Bagozzi, Yi, and Phillips, 1991). In each case, the chi-square for the constrained model was significantly greater than the chi-square for the unconstrained model. The results provide evidence of discriminant validity. The three measures of team perspective taking, team information exchange, and team learning behavior

were moderately correlated, providing evidence of convergent validity. In this study, our four-item scale measured perspective taking ($\alpha = 0.82$), which asked key informants to indicate the extent to which they took in each member's perspectives at work and during the group discussion. The measure of agreement among team members' ratings produced the mean rwg of .0.93 (rang = 0.83-0.99), an ICC (1) of .21, and an ICC (2) of .60, suggesting that aggregating the responses to the team level was appropriate, supporting the proposed consensus model (Chen, Mathieu, and Bliese, 2004).

Team regulatory focus. To measure team regulatory focus, we used the adapted version of Neubert's et al. (2008) scale, which was generated based on the referent shift model (Chan, 1998). Shin et al. (2016) had already adapted Neubert's et al. (2008) scale to assess the team regulatory focus by changing the referent from the individual to the team. To further assess the validity of the team-level regulatory focus measure, we collected separate data from 178 team members in 38 R&D teams. Subsequently, we conducted confirmatory factor analyses to examine the two-factor structure of regulatory focus. The results showed that all items loaded significantly on the expected constructs, indicating convergent validity. The fit indices showed that the two-factor model fit the data reasonably well (chi-square = 184.26, df = 134, RMSEA = .03, GFI = .95, AGFI = .94, RMR = .02), and more optimally than the one-factor model (chi-square = 1746.68, df = 135, RMSEA = .17, GFI = .49, AGFI = .35, RMR = .13).

Next, in the formal survey, the test of the within-team agreement for team regulatory focus showed that the mean rwg for team promotion focus was .95 (range = .88 - .99) and team prevention focus was .95 (range = .84 - .99). The ICC(1) estimates were .18 for team promotion focus and .19 for team prevention focus. The ICC(2) estimates were .58 and .81, respectively. Thus we aggregated the employee-level response to the team level in line with the proposed consensus model (Chen et al., 2004).

Team centralization context. To measure team centralization context, we used the adapted version of Hirst and his colleagues' (2011) scale, which was generated based on the referent-shifted

model in which the referent is shifted to the team's leader. We then used four items to measure team centralization context and reverse-scored the scale so that higher ratings reflected greater centralization of decision-making. Sample item is "gives all work group members a chance to voice their opinions." Cronbach's alpha for this measure was .83. The value of lowest rwg for team centralization context was .87, higher than .99. Thus, we aggregated team members' responses to the team level.

Team formalization context. Using the three-item scale developed by Rafferty and Griffin (2004), team members were asked to assess the extent to which work was structured and regulated by rules and protocols to assess formalization on their teams. Sample item is "There are a lot of rules and regulations on this team." Cronbach's alpha for this measure was .77. The value of lowest rwg for team formalization context was .83, higher than .99. Thus, we aggregated team members' responses to the team level.

Control variables. We included several control variables at both the individual and team levels. Following previous research, we controlled for gender (male = 1; female = 0), educational level (the number of years of post-high school education), and job tenure (the number of years working in a specific organization) at the individual level, which have been found to significantly influence individual creativity. At the team level, we controlled for team size, average team tenure, and team's task requirement to partial out their influence on the team creativity (Li et al., 2015; Moon, 2013). To measure the type of project task performed, we used three dummy variables including basic or non-mission tasks, applied or mission-oriented tasks, new product or process development, and existing product or process improvement. Finally, because task interdependence might influence the creative process, we controlled for the task interdependence of each individual team member with other team members and used single item to measure this variable (Shin and Zhou, 2007) as rated by team members.

For the last step, we conducted a CFA on these individual-rated variables (employee information elaboration, employee creativity, team perspective taking, team promotion focus,

team prevention focus, team centralization context, and team formalization context) to examine the distinctiveness of our scales. The results indicated that each measure loaded significantly on the expected constructs, which demonstrated convergent validity. The model fit indexes (chi-square [608] = 718.86; GFI = .91, AGFI = .89, SRMR = .02) suggested that the model fit is acceptable. Given the multilevel nature of the data, we performed multilevel CFA, which models individual- and team-level constructs simultaneously at both levels, to test the multilevel structure (Dyer, Hanges, and Hall, 2005). We constructed within- and between-team CFA models comprising our research variables (chi-square [882] = 1306.91; RMSEA = 0.04; CFI = 0.95). Although the fact that the sample size was low for testing multilevel CFA, the model indexes were satisfactory.

Analytical Strategies

Because our data contained a hierarchical structure in which responses of individual-level variables were nested within teams, we conducted a multilevel analysis. To test our multilevel mediation hypotheses (Preacher, Zyphur, and Zhang, 2010), we applied multilevel path analysis with Mplus 7 (Muthén and Muthén, 2012), in which the covariances among the Level 1 (i.e., the employee-level) random effects had to be estimated to estimate random indirect effects (Bauer, Preacher, and Gil, 2006). The multilevel path analysis do not conflate the individual-level and team-level relationships. Following the recommendations of Wallace et al. (2016), we adapted the simultaneous multilevel regression procedure (Bauer et al., 2006) and applied it within the moderated mediation approach (Preacher et al., 2010) to test whether bureaucratic context moderates the indirect relationship between team regulatory focus and individual creativity (team innovation) through employee information elaboration (team perspective taking). To reduce possible problems of multicollinearity (Raudenbush and Bryk, 2002), following recommendations, we group-mean-centered all employee-level (Level 1) variables except for gender. Team-level (Level 2) variables were not centered (Preacher, Curran, and Bauer, 2006).

Results

Descriptive statistics, reliability estimates, and correlations are shown in Table 1. The

statistics in the upper portion of the table pertain to the correlations among individual-level variables and those in the lower portion pertain to the team level of analysis.

Hypothesis 1 predicted that the team promotion focus would have an indirect positive relationship, through employee information elaboration, with individual creativity. The result of model 1 in Table 2 shows that the team promotion focus was significantly related to employee information elaboration ($\gamma = .24, p < .001$). Employee information elaboration was significantly related to individual creativity (Table 2: $\gamma = .25, p < .01$). Based on the procedure of MacKinnon, Lockwood, and Williams (2004), the bootstrapping test indicated that the indirect relationships that the team promotion focus had with individual creativity via employee information elaboration were significant. The 95% CI of the indirect relationship were .016 and .127, excluded zero. Thus, the results supported Hypothesis 1. Hypothesis 2 predicted that the team prevention focus would have an indirect negative relationship, through employee information elaboration, with individual creativity. The result of model 1 in Table 2 shows that the team prevention focus was significantly related to employee information elaboration ($\gamma = -.25, p < .001$). The bootstrapping test based on MacKinnon et al. (2004) confirmed the significance of the indirect relationship that the team prevention focus had with individual creativity via employee information elaboration (95% CI excluded zero: [-.118, -.019]). Thus, the results supported Hypothesis 2.

[Insert Table 1, 2 & 3 here.]

Hypothesis 3 predicted that the team promotion focus would have an indirect positive relationship, through team perspective taking, with team innovation. The result of model 1 in Table 3 shows that the team promotion focus was significantly related to team perspective taking ($\gamma = .19, p < .001$). Team perspective taking was significantly related to team innovation (Table 3: $\gamma = .49, p < .001$). The bootstrapping test based on MacKinnon et al. (2004) confirmed the significance of the indirect relationship that the team promotion focus had with team innovation via team perspective taking (95% CI excluded zero: [.0.18, .198]). Thus, the results supported Hypothesis 3. Hypothesis 4 predicted that the team prevention focus would have an indirect negative relationship, through

team perspective taking, with team innovation. The result of model 1 in Table 2 shows that the team prevention focus was significantly related to team perspective taking ($\gamma = -.12, p < .05$). The bootstrapping test based on MacKinnon et al. (2004) confirmed the significance of the indirect relationship that the team prevention focus had with individual creativity via employee information elaboration (95% CI excluded zero: [-.072 -.014]). Thus, the results supported Hypothesis 4.

Hypothesis 5 predicted that the centralized team structure would moderate the indirect relationship that the team regulatory focus has with individual creativity via employee information elaboration. The interaction between the team promotion focus and the team centralization context was significantly related to employee information elaboration (model 2, Table 2: $\gamma = -.12, p < .05$), but the moderating effect of the centralized team structure in the relationship between team prevention focus and employee information elaboration did not exist, thus the Hypothesis 5b was not supported. We used the first-stage moderation model to examine whether the moderated indirect relationship was significant. Results indicated that the indirect effect of team promotion focus on member creativity via employee information elaboration differed as a function of centralized team structure. The simple slope of the relationship that the team promotion focus had with employee information elaboration was weaker (simple slope = .19, $p < .05$) when the team centralization context was high, but was higher (simple slope = .37, $p < 0.001$) when it was low. As shown in Figure 2, team promotion focus related much more weakly to employee information elaboration when centralization was high but not when it was low. The indirect relationship that the interaction term of team promotion focus and team centralization had with individual creativity was significant (95% CI excluded zero: [-0.069, -.002]). Thus, Hypothesis 5a was supported. Nevertheless, the results showed that neither Hypothesis 6a nor Hypothesis 6b was supported.

[Please insert Figure 2 here.]

Hypothesis 7 predicted that the centralized team structure would moderate the indirect relationship that the team regulatory focus has with team innovation via team perspective taking. The interaction between the team promotion focus and the team centralization context was

significantly related to team perspective taking (model 2, Table 2: $\gamma = -.10, p < .01$), but the moderating effect in the relationship between team prevention focus and team perspective taking did not exist, thus Hypothesis 7b was not supported. We used the first-stage moderation model to examine whether the moderated indirect relationship was significant. Results indicated that the indirect effect of team promotion focus on team innovation via team perspective taking differed as a function of centralized team structure. The simple slope of the relationship that the team promotion focus had with team perspective taking was weaker and nonsignificant (simple slope = $-.07, n.s.$) when the team centralization context was high, but was higher (simple slope = $.21, p < 0.001$) when it was low. As shown in Figure 3, team promotion focus had a much weaker relationship to team perspective taking when centralization was high but not when it was low. The indirect relationship that the interaction term of team promotion focus and team centralization had with team innovation was significant (95% CI excluded zero: $[-0.102, -.016]$). Thus, Hypothesis 7a was supported.

[Please insert Figure 3 here.]

Hypothesis 8 predicted that formalized team structure would moderate the indirect relationship that the team regulatory focus has with team innovation via team perspective taking. The interaction between the team prevention focus and formalization was significantly related to team perspective taking (model 2, Table 2: $\gamma = -.19, p < .001$). We used the first-stage moderation model to examine whether the moderated indirect relationship was significant. Results indicated that the indirect effect of team prevention focus on team innovation via team perspective taking differed as a function of formalization team structure. The simple slope of the relationship that the team prevention focus had with team perspective taking was negative (simple slope = $-.23, p < 0.01$) when formalization was high, but was nonsignificant (simple slope = $.02, n.s.$) when it was low. As shown in Figure 4, team promotion focus had a much stronger relationship to team perspective taking when formalization was high but not when it was low. The indirect relationship that the interaction term of team prevention focus and team formalization had with team innovation was

significant (95% CI excluded zero: [-0.175, -.033]). However, the moderating effect in the relationship between team promotion focus and team perspective taking did not significant. Thus, Hypothesis 8b was supported, but Hypothesis 8a was not.

[Please insert Figure 4 here.]

Discussion

In sum, our findings revealed that team promotion focus was positively related to employee information elaboration (team perspective taking), which in turn was positively related to individual creativity (team innovation). Team prevention focus, on the other hand, was negatively related to employee information elaboration (team perspective taking) and subsequently to individual creativity (team innovation). Finally, we observed that team bureaucratic context suppressed the indirect relationship between team regulatory focus and creativity. When the team centralization was high, the indirect relationship with individual creativity (via employee information elaboration) and team innovation (via perspective taking) was weaker for team promotion focus. Our findings demonstrated that the indirect relationship with team innovation (via team perspective taking) was stronger for team prevention focus when team formalization was high.

Implications for theory and research

This study provides several theoretical contributions to the creativity and regulatory focus literature. First, we extend the existing research on the team-level influence of self-regulation by demonstrating how team regulatory focus relates to team innovation. In a critical departure from Rietzschel (2011), who found that team regulatory foci have different kinds of influence on team innovation, this study shows that both team regulatory foci have indirect linear relationships with team innovation through team perspective taking. In particular, we observed that the differing motivational functions of team regulatory focus on information processing bring out distinct influences on team innovation. Team promotion focus is beneficial for team innovation through inducing perspective taking among team members, but team prevention focus does not, because

its avoidance motivation inhibits higher level of team perspective taking. Therefore, this study, together with that of Rietzschel (2011), suggests that future research on the creative implications of team-level self-regulation would both benefit from a consideration of the role of information processing as a key mediating mechanism.

It is important to highlight that our cross-level findings enrich the research on the multi-level influence of self-regulation. Prior research has shown that individual regulatory focus is the ones that actually determine individual creativity (e.g., Herman and Reiter-Palmon, 2011), and that team regulatory focus significantly influences team innovation (Rietzschel, 2011). However, little research has been done to explore the cross-level relationship between team regulatory focus and individual member creativity. This study departed from the common scholarly practice of studying how regulatory focus affects individual creativity at a single level by examining the relationships that team regulatory focus has with individual creativity and team innovation. Team promotion focus has an indirect positive, cross-level relationship with individual creativity, whereas team prevention focus has an indirect negative, cross-level relationship. Thus, we extend the understanding of team-level influence of self-regulation and demonstrated that different kinds of team regulatory foci also have distinct individual creative implications, which is in line with the extant literature on individual creativity (Neubert et al., 2008). Nevertheless, it should be noted that the member creativity measure in this study was more associated with originality generation. Since prior research has indicated that prevention focus is beneficial for the usefulness or appropriateness aspect of creativity (Herman and Reiter-Palmon, 2011), future research should explore the relationship between team regulatory focus, specifically prevention focus, and other aspects of member creativity.

By articulating the motivated information processing perspective, this study posits team perspective taking (employee information elaboration) as a crucial process linking team regulatory focus with team innovation (member creativity). On the one hand, because of the lack of research on team regulatory focus approaches to member creativity, little if any research has explored any

potential explanation mechanism underlying this cross-level link. In particular, this study found that team promotion focus has a positive indirect relationship with individual creativity, while team prevention focus has a negative one, fully through employee information elaboration. One implication of this finding is that team promotion and prevention focus induce members' epistemic motivations differently, and consequently display different creative expressions (De Dreu, Nijstad, and van Knippenberg, 2008). Thus, since prior research on creativity has found inconsistent results concerning the effect of prevention focus (Bass, De Dreu, and Nijstad, 2011), the influence of prevention focus on epistemic motivation, which is crucial to individual creativity, may need to be considered (De Dreu et al., 2008). On the other hand, according to the team level findings, team prevention focus, at first sight, does not appear to be directly related to team innovation (Shin et al., 2016). This implies that its focus on following rules and avoiding errors does not damage members' creative behaviors. However, the examination of team perspective taking as a process revealed an indirect negative relationship that team prevention focus has with team innovation. This finding is crucial, because scholars may simply focus on the its seemingly nonsignificant relationship with team innovation without considering its avoidance motivation, which largely inhibits members' epistemic motivation. This study in sum provides a more complete view of the creative and innovation implications of team-level self-regulation.

Another crucial finding of this study is that the indirect relationships that team regulatory focus have with team innovation varied as a function of the team bureaucracy. It is interesting that decentralized decision making helped bring out an indirect relationship for team promotion focus, but low formalization did not, whereas for prevention-focused teams, this relationship existed for low formalization but not for low centralization. An implication of these results is that one kind of bureaucratic structure may inhibit one specific motivational state but not another. A possible explanation for this is that the active and engaging nature of low centralization is likely to trigger the motivational state of promotion focus, whereas the passive nature of low formalized team structure is likely to trigger the motivational state of prevention focus. These team-level findings

complement previous work that has demonstrated the influence that team structure can have on regulatory focus (Shin et al, 2016) by demonstrating how team regulatory focus includes specific collective motivation that different team structures are better or worse suited to activate.

We extend regulatory fit theory by documenting how regulatory characteristics of a team interact with team structure (team bureaucracy) to determine individual-level creativity. We found that the relationship team promotion focus has with member creativity is moderated by centralized team structure, but team prevention focus was not exist. This provides new insight into the fit and misfit between specific team regulatory foci and different team structures in individual-level creativity, thus contributing the growing body of regulatory fit research at the cross level relationship. This illustrates that regulatory fit perspective can operate in the multilevel model of self-regulation.

Managerial implications

Our study provides practical implications. Because teams are widely used in organizations, understanding how team states and contexts influence creative activities is of practical importance to managers. To get creative results, team leaders may find it advantageous to promote a team promotion focus by creating a decentralized context. For example, team leaders can facilitate developing a team promotion focus by emphasizing risk taking and flexibility, by encouraging optimism and new ways of working, and by cultivating an open system culture (Shin et al., 2016). Moreover, they can create a team context characterized by highly decentralized decision making, which can unleash the benefits of team promotion focus to facilitate team perspective taking (employee information elaboration) and team innovation (individual creativity). It should be noted that a high team promotion focus does not necessarily benefit innovation and creativity. Team leaders should provide institutionalized platforms or channels for exchanging knowledge to lead team members to appreciate one another's perspectives and seek novel and useful solutions. To conclude, creativity or innovation is gained most effectively by discouraging prevention focus, promoting decentralized decision making, and thus, allowing promotion-focused teams to flourish.

Although team prevention focus brings few creative benefits, one is an improved team task performance (Shin et al., 2016). Our findings indicated that to enhance team task performance team leaders can create a low formalization context in which the benefits of team prevention focus can be thrived.

Limitations and future research directions

This study of our study should be interpreted within the context of the study's limitations. First, because our study adopted a cross-sectional design, it cannot establish causality in relationship. For example, a team with previous success in creativity might reinforce its tendency of information processing for creativity, which in turn may regulate the focus on how to gain novelty in an R&D task. We assumed that the previously mentioned concerns may not significantly influence our interpretation due to the hypotheses proposed in this study that are based on theory. In addition, although we conducted a time-lagged design in our study, the causal influence still cannot be treated as conclusive. Thus, future research should use a longitudinal or experimental design to demonstrate the direction of causality.

A second limitation is that the findings of this study were based on self-reported data. Thus, common method variance may have potentially affected the results. We used two ways to approach this problem. We implemented a temporally lagged design: the independent variables and the moderator were all collected at Time 1, the mediator was collected at Time 2, and the dependent variable was collected at Time 3. We also collected data from multi-sources to eliminate potential bias. Team leaders rated the dependent variable and employees provided the mediators and the moderator. Finally, following the recommendations of Podsakoff, Podsakoff, MacKenzie and Klinger (2013), we conducted a CFA by adding a common method factor that did not significantly improve the model fit. We therefore believe that common method variance was not a severe problem in our study.

Third, this study treated team regulatory focus as a shared property only. However, team members may also differ in individual regulatory focus, which begs a different question: whether

diversity in individual regulatory focus is related to creativity, and then how. One interesting direction for future research would be to explicitly examine how diversity in individual regulatory focus influences team innovation, because it may give rise to conflicts and prevent the exchange of information that determines team innovation.

Fourth, we note that the direct cross-level effect of team regulatory focus on individual-level employee information elaboration in this study should be more carefully interpreted. It represents the effect of a team-level variable covariate on the individual-level variables intercepts (as the between-level or group means), whereas our testing cannot interpret the within-group variance of individual-level variables (LoPilato and Vandenberg, 2015). For instance, the cross-level direct effect of team regulatory focus in this study cannot explain why some members engage in less information elaboration when others in the same team engage in more information elaboration. Another interesting direction for future research would be to develop and test a theoretical model to explore how team regulatory focus relates to the within-group variance of employee information elaboration.

Finally, this study only examined information processing activities as a mechanism that links team regulatory focus and creativity and innovation based on information processing theory. However, other potential mechanisms using various theoretical approaches that might exist should not be ruled out. For example, team regulatory focus may affectively stimulate different types of motivation that influence creative expression (Lanaj, Chang and Johnson, 2012). Future research might develop a model to capture this phenomenon by integrating information processing to further elaborate on our findings.

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Figure 1. Research framework

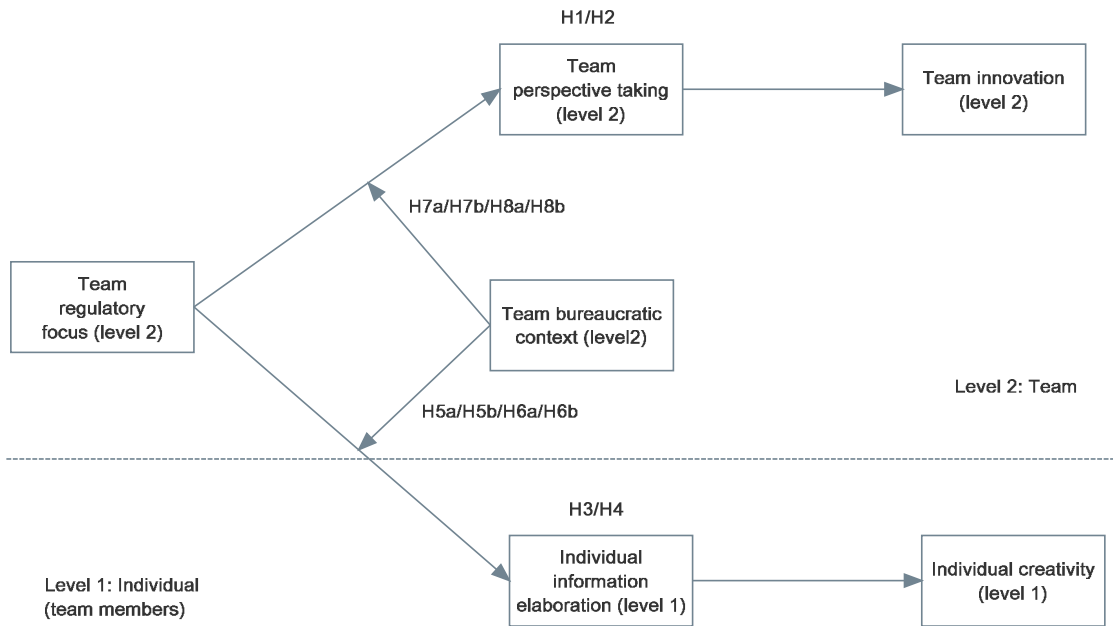


Figure 2. The Moderating Effect of Team Centralization Context on the Relationship between Team Promotion Focus and Employee Information Elaboration

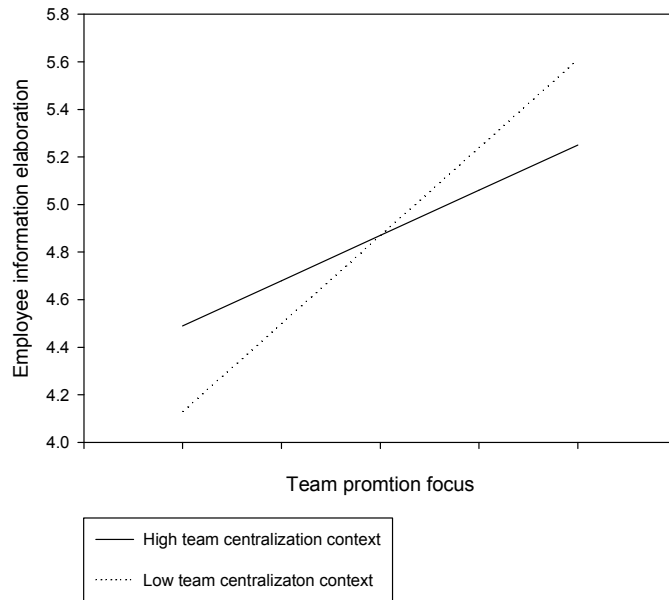


Figure 3. The Moderating Effect of Team Centralization Context on the Relationship between Team Promotion Focus and Team Perspective Taking

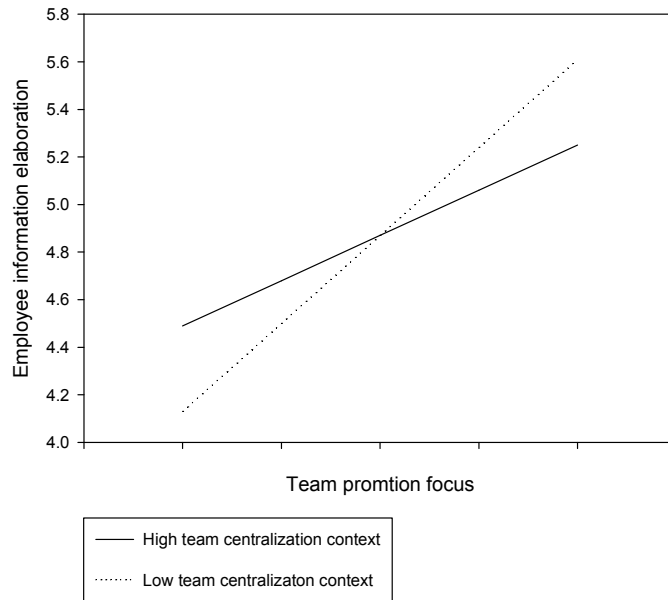


Figure 4. The Moderating Effect of Team formalization Context on the Relationship between Team Promotion Focus and Team Perspective Taking

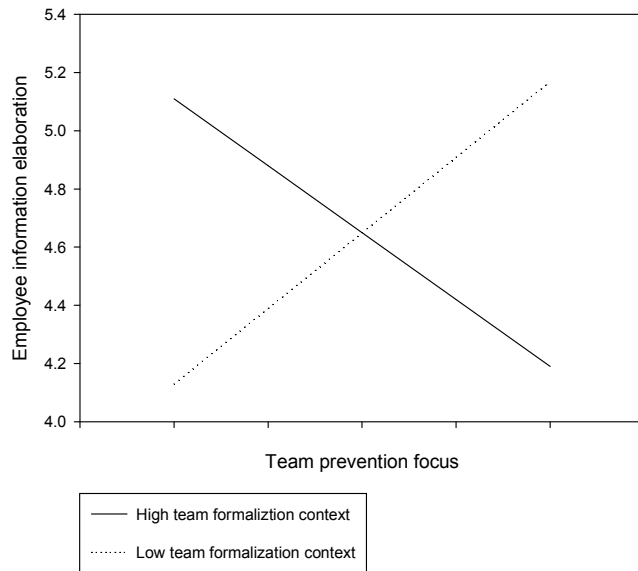


Table 1. Correlation Matrix and Descriptive Statistics of Measures

Individual variables (Level 1) ^a	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Individual creativity	4.86	0.63											
2. Employee information elaboration	4.85	0.61	.15*										
3. Job tenure	4.50	1.46	-.02	.04									
4. Education level	4.27	0.86	-.10*	-.03	.04								
5. Gender	1.15	0.35	.03	-.01	.04	.04							
Team variables (Level 2) ^b	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1. Team innovation	4.85	0.66											
2. Team promotion focus	4.84	0.25	.13										
3. Team prevention focus	4.93	0.31	-.09	-.37									
4. Team centralization context	4.92	0.48	-.17	-.15	.28*								
5. Team formalization context	5.05	0.52	-.22*	.25*	-.06	.14							
6. Team perspective taking	4.84	0.43	.50	.32	-.20	-.34	-.10						
7. Team tenure	3.53	1.11	.08	-.08	-.01	.01	-.01	.07					
8. D1	0.40	0.50	.13	-.15	.17	.07	-.09	-.07	-.03				
9. D2	0.33	0.48	-.01	-.03	.03	-.07	-.17	.06	.24*	-.58*			
10. D3	0.19	0.40	-.14	.18	-.19	-.03	.24*	-.06	-.34*	-.40*	-.35*		
11. Teamwork interdependence	4.43	0.71	.07	.11	-.24*	-.06	.13	-.10	-.14	-.23*	.05	.07	
12. Team size	6.74	0.55	-.17	.02	.05	.18	.09	-.14	.00	-.13	.00	.24*	-.15

Note: * $p < 0.05$. ^a $n = 377$. ^b $n = 56$. For D1: 0 “others,” 1 applied research; D2: 0 “others,” 1 “new project”; D3: 0 “others,” 1 “modifying a current project.” Reliabilities are in parentheses.

Table 2. Results of HLM Analysis by Mplus

Variable	Individual creativity	Employee information elaboration	
		Model 1:	Model 2:
Intercepts	4.87***	4.88***	4.87***
Level 1 control variables			
Education level	-.04	-.02	-.02
Job tenure	.01	-.02	.02
Gender	-.01	.02	-.03
Level 2 control variables			
Team size	-.00	.02	-.01
Team tenure	-.04	.04	.03
D1	-.15	.04	.05
D2	-.08	-.01	.04
D3	-.02	.05	.06
Teamwork interdependence	.06	.06	.07
Level 1 independent variables			
Employee information elaboration	.25**		
Level 2 independent variables			
Team promotion focus	.03	.24***	.24***
Team prevention focus	-.03	-.27***	-.25***
Centralization context			.01
X Team promotion focus			-.12*
X Team prevention focus			-.03
Formalization context			.05
X Team promotion focus			-.02
X Team prevention focus			.01

n = 377 individuals and 56 teams. For D1: 0 “others,” 1 “applied research”; D2: 0 “others,” 1 “new project”; D3: 0 “others,” 1 “modifying a current project.”

Note: * p < 0.05, ** p < 0.01, *** p < 0.001

Table 3. Results of HLM Analysis for team information sharing and team innovation by Mplus

Variable	Team innovation	Team perspective taking	
		Model 1:	Model 2:
Intercepts	4.85***	4.66***	4.65***
Level 2 control variables			
Team size	-.04	-.10	-.03
Team tenure	.03	.00	-.02
D1	.29***	-.11	-.16
D2	.18**	-.04	-.03
D3	.10	-.10	-.12
Teamwork interdependence	.10	-.12	-.08
Level 2 independent variables			
Team promotion focus	-.03	.19****	.18**
Team prevention focus	-.01	-.12*	-.09
Team perspective taking	.49***		
Centralization context			-.14*
X Team promotion focus			-.11*
X Team prevention focus			-.06
Formalization context			-.03
X Team promotion focus			.02
X Team prevention focus			-.19***

n = 377 individuals and 56 teams. For D1: 0 “others,” 1 “applied research”; D2: 0 “others,” 1 “new project”; D3: 0 “others,” 1 “modifying a current project.”

Note: * p < 0.05, ** p<0.01, *** p<0.001