Journal of Innovation & Knowledge 7 (2022) 100196

Journal of Innovation & Knowledge

https://www.journals.elsevier.com/journal-of-innovation-and-knowledge

Team *zhongyong* thinking and team incremental and radical creativity

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ARTICLE INFO

Article History:
Received 31 December 2021
Accepted 23 April 2022
Available online 6 May 2022

Keywords:
Zhongyong thinking
team decision comprehensiveness
environmental dynamism
team incremental creativity
team radical creativity

JEL codes:
M54

ABSTRACT

Zhongyong thinking is a cognitive thinking style that plays a pivotal role for Chinese employees and organizations, and whether it harms or benefits creativity has long been discussed. In this study, we empirically examine the relationship between team *Zhongyong* thinking and team incremental and radical creativity. Specifically, we propose that team *Zhongyong* thinking has a stronger indirect relationship with team incremental creativity than with radical creativity via team decision comprehensiveness. Furthermore, environmental dynamism moderates this indirect relationship, and team *Zhongyong* thinking has a stronger indirect effect on team creativity via team decision comprehensiveness when environmental dynamism is higher. Data collected from 106 teams comprising 770 subordinates and 106 supervisors in China using the survey method reveal that team *Zhongyong* thinking is positively related to team incremental creativity but not team radical creativity via team decision comprehensiveness. Moreover, environmental dynamism moderates the influence of team *Zhongyong* thinking on team incremental creativity via team decision comprehensiveness. Specifically, when environmental dynamism is higher, this influence is stronger. These findings imply that via extensive information searching and inclusive decision-making, team *Zhongyong* thinking can benefit team incremental creativity, especially in a changing environment, but this thinking style has no significant influence on team radical creativity.

Introduction

With the rising and flourishing of Chinese enterprises, researchers worldwide have become increasingly interested in Chinese management philosophy and practices, and one of the most studied areas is the impact of Chinese traditional culture on organizational management (Li, 2016; Tan, 2020). For instance, Ren Zhengfei, CEO of Huawei, absorbed Chinese traditional culture and developed the management philosophy of adaptability to changing circumstances, tolerance, and acceptance of contradictions. He also believed that enterprises have to exist in a "gray area" in which two sides of any contradiction coexist in active harmony. Among the many elements of Chinese traditional culture, Chinese ways of thinking (Peng & Nisbett, 1999)—especially ZY[1] (meaning "middle-way") thinking—have been heatedly debated regarding their relationship with scientific innovation in modern China. "*Zhong*" indicates the principle of appropriateness, which centers around "*he*" or harmony, while "*yong*" means "the way" or the application of the principle of appropriateness (Zhou, Hu, Sun, Li, Guo & Zhao, 2019). ZY thinking plays a pivotal role in Chinese people's lives (Cai & Geng, 2016) and refers to the style that people use to search for and process information, make decisions, form attitudes and motivations, and select courses of action (Ning, Omar, Ye, Ting & Ning, 2021). The core of ZY thinking is "mastering the extremes but deploying the mean" (Yang & Zhao, 1997). Therefore, ZY is a thinking style that considers all perspectives, embraces diversity holistically, takes a third-party perspective when integrating contradictory elements and resolving problems, and seeks to create harmony (Wu & Lin, 2005; Zhou, Zhang, Li, Sun & Luo, 2021).

Disclosure statement No potential conflict of interest was reported by the authors.

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[1] The abbreviations applied in this paper are as follows: DC for team decision comprehensiveness; ED for environmental dynamism; IC for incremental creativity; MIP-G for Motivated Information Processing in Groups; RC for radical creativity; ZY for *Zhongyong*.

https://doi.org/10.1016/j.jik.2022.100196

Previous research has investigated the impact of ZY thinking on organizations, teams, and individuals (for a systematic review, see Ning et al., 2021), but their results have been largely inconsistent. The findings regarding the relationship between ZY thinking and creativity have been especially controversial. Some studies have found a negative effect of ZY thinking on creativity (e.g., Yao, Yang, Dong & Wang, 2010; Tang, Ma, Naumann & Xing, 2020), whereas others have found a positive association between the two (e.g., Wei, Chen, Zhang & Zhang, 2020; Zhou, Zhang, Li, Sun & Luo, 2021). More research is, therefore, needed to find the boundary conditions of the relationship between ZY thinking and creativity.

Another reason for the inconsistent findings regarding the effect of ZY thinking on creativity may be the lack of analysis of different types of creativity. The "essence of creativity cannot be captured in a single variable" (Sternberg, 1999, p. 84), and creative ideas can range from minor adaptations to radical breakthroughs (Mumford & Gustafson, 1988). Two basic forms of creativity exist: incremental creativity, which refers to creative ideas that build on an existing framework, offering minor modifications or extensions of existing practices or products; and radical creativity, which refers to creative ideas that differ substantially from an organization's existing practices (Madjar, Greenberg & Chen, 2011; Tiberius, Schwarzer & Roig-Dobón, 2021). Research suggesting a positive relationship between ZY thinking and creativity has proposed that ZY thinking embraces different perspectives and integrates various elements by generating new linkages among these elements, thus leading to an increase in creativity (Liao & Dong, 2015; Zhou et al., 2021). Further, multiple thinking and the pursuit of harmony—characteristics of ZY thinking—help employees to learn and adapt, which is beneficial for creativity (Wei et al., 2020). Contrarily, research proposing a negative relationship between the two (e.g., Yao et al., 2010; Tang et al., 2020) has argued that individuals with high levels of ZY thinking pay much attention to the background elements of the environment and consider others' needs prosaically; therefore, it is unlikely that they would be able to generate ideas substantially different from the status quo. These findings suggest the possibility that ZY thinking is more strongly related to incremental creativity (as implied in previous positive findings) than radical creativity (as implied in previous negative findings). In our research, thus, we aim to examine the relationship between ZY thinking and incremental and radical creativity.

Simultaneously, teams have become the most popular working units in recent decades, as they are believed to increase firms' flexibility and adaptability (Somech, 2006; Anderson, Potočnik & Zhou, 2014). Particularly, teams can be an important medium for the development of creative ideas. Thus, researchers have been advocating for more research on the factors that promote team creativity (Anderson et al., 2014). At the same time, previous studies suggest a team's cognitive style can contribute significantly to explaining team creativity (e.g., Miron-Spektor, Erez & Naveh, 2011; Post, 2012; de Visser, Faems, Visscher & de Weerd-Nederhof, 2014). However, little research has investigated the influence of team ZY thinking on team creativity (except Chen, Qi, Chen & Tian, 2018). In our study, thus, we conceptualize ZY thinking at the team level and define team ZY thinking as a "team's pooled preferences" (Post, 2012, p. 559) for ZY thinking, and investigate its influence on team creativity. Similar to Cai, Jia and Li's (2017) study on ZY thinking at the team level, and based on multilevel theory, we apply the additive composition model (Chan, 1998)—which suggests that constructs at different hierarchical levels have a homogenous functional relationship (Chen, Mathieu & Bliese, 2004)—and consider team ZY thinking as "a linear summary of individual origins, regardless of its individual-level variances" (Cai et al., 2017, p. 405). That is, not all team members must be ZY thinkers for ZY thinking to be a team-level property. Rather, each team should have a ZY thinking score based on the mean of all members' ZY thinking scores. Following this, we further study the influence of team ZY thinking on team creativity, expecting that team ZY thinking will be more strongly associated with team incremental creativity than radical creativity.

Based on the MIP-G model (De Dreu, Nijstad & Van Knippenberg, 2008; Nijstad & De Dreu, 2012), in this research, we intend to study whether, how, and when team ZY thinking is related to team creativity. According to the MIP-G model, a team can be viewed as an information processor that is primarily driven by two types of motivation: epistemic motivation (low−high) and social motivation (pro-self −pro-social). Epistemic motivation drives a team's depth of information processing, whereas a team's social motivation drives the type of information processed or bias in information processing. The model predicts that "high-quality team outcomes may be expected, especially when high epistemic motivation is coupled with pro-social motivation, because under this condition, groups process information extensively to foster collective goals" (Nijstad & De Dreu, 2012, p. 87). Furthermore, epistemic and social motivation are assumed to be functions of a myriad of dispositional and situational variables (De Dreu et al., 2008). In this study, we propose that ZY thinking drives thorough information searching and analysis (epistemic motivation) and a consideration of multiple stakeholders' interests and needs (pro-social motivation), both of which generate a high level of team DC and, in turn, enhance team creativity. Team DC is the extent to which a team is exhaustive and inclusive in searching for and integrating different elements when making decisions (Simons, Pelled & Smith, 1999; Atuahene-Gima & Li, 2004). Thus, we propose team DC as a new mechanism in the relationship between team ZY thinking and team creativity. Furthermore, by emphasizing the importance of a combination of different perspective and balance of contradictions (Atuahene-Gima & Li, 2004), team DC will, in turn, be more strongly related to incremental creativity than radical creativity. Therefore, we propose that team ZY thinking will have a stronger indirect relationship with team incremental creativity than with radical creativity via team DC.

Additionally, we investigate the critical boundary condition of environmental dynamism, which suggests that the external team environment is changing and ambiguous (Schilke, 2014). We propose that the effect of team ZY thinking on team DC and, subsequently, the indirect effect of team ZY thinking on team creativity via team DC are stronger when environmental dynamism is higher. According to the MIP-G model, when team members' input indispensability is high, team information processing becomes more important for effective decision-making, and epistemic and pro-social motivation will have a greater impact on the decision-making process and results (De Dreu et al., 2008; Nijstad & De Dreu, 2012). Environmental dynamism increases the need for team members' input because in such complex and ambiguous situations, encouraging team members to search through and integrate their opinions will lead the team closer to optimal decisions. Therefore, the effect of ZY thinking on DC, as well as its indirect effect on team creativity, is stronger when environmental dynamism is high. Overall, we posit that environmental dynamism interacts with team ZY thinking to produce a stronger conditional indirect effect on team incremental creativity than radical creativity via team DC.

We intend to make three distinct contributions to the extant literature. First, in this study, we probe into the enduring debate on the relationship between ZY thinking and creativity and demonstrate the complex association between the two. Specifically, different from previous studies, we investigate this question at the team level and further distinguish between team incremental creativity and radical creativity, revealing the differential effect of team ZY thinking on the two types of creativity. Second, we identify a new mechanism to explain how team ZY thinking influences team creativity. Based on the MIP-G model, we propose that team DC mediates the positive effect of team ZY thinking on team creativity and enriches the understanding of the influential process of ZY thinking. Moreover, we contribute to DC literature by finding a new antecedent, i.e., team ZY

thinking. Third, we reveal a critical boundary condition of the effect of ZY thinking, i.e., environmental dynamism. Reconciling the inconsistent findings regarding the relationship between ZY thinking and creativity requires that potential moderators be investigated. Thus, we propose the moderating effect of environmental dynamism, which is an important reality that almost every team needs to face today. By revealing the boundary condition of environmental dynamism, we offer new insights into enhancing team creativity in an uncertain and changing business environment through this study.

Theory and hypotheses

Team Zhongyong *thinking and team creativity through the lens of the MIP-G model*

As a metacognitive thinking style reflecting Confucian culture (Pan & Sun, 2017), ZY thinking emphasizes accepting contradictions and dealing with contradictions in a holistic, balanced, integrated, and harmonious way. Following previous studies (Cai et al., 2017), we conceptualize ZY thinking at the team level and define it as the teams' pooled preference for acquiring, processing, maintaining, and using information for problem-solving. That is, the level of a team's ZY thinking is higher when members' averaged preference for ZY thinking increases. Specifically, similar to individual ZY thinking (Wu & Lin, 2005), we define team ZY thinking as comprising three dimensions: 1) multiple thinking, a thinking style that highlights the dialectic nature of two sides of an objective. Team members attend to conflicting elements and analyze various elements holistically and dynamically, view problems from multiple perspectives to complement and promote different elements, and avoid extremes; 2) integration, which refers to considering both internal needs and the external environment, identifying the connection between conflicting sides, and trying to satisfy multiple needs in a "both/and" way. It also contains a contingency perspective, which emphasizes the integration of the time, place, and situation in which to evaluate alternatives to choose the most appropriate solutions; 3) harmoniousness, which refers to an ideal relationship between individuals and groups, as well as between conflicting elements. It refers to the goal of generating mutual complementation and promotion between contradictory elements. The aim of harmony is to find ways to balance unity with diversity and thoroughly recognize and respect different perspectives.

According to the MIP-G model (De Dreu et al., 2008), work teams can be viewed as information processors. This model assumes that team members search for and process information through communication, and individual-level information processing becomes integrated at the group level. Two types of motivation drive team information processing: epistemic motivation and social motivation. Epistemic motivation refers to teams' willingness to gain a thorough, rich, and accurate understanding of tasks or problems. Social motivation, on the other hand, refers to team members' preference for distributing outcomes between individuals and groups and can be considered pro-self (i.e., team members are concerned with their own outcomes only, and the team is more likely to focus on information conducive to achieving personal goals) or pro-social (i.e., team members are concerned with joint outcomes and fairness, and the team is more likely to seek, share, and process information conducive to bettering the team rather than achieving personal goals to preserve harmony). Epistemic and social motivation can be either trait-based or state-based, which means that they depend on dispositional tendencies (including preferred cognitive styles) and can be activated by situational cues (Bechtoldt, De Dreu, Nijstad & Choi, 2010). The model predicts that high epistemic motivation, coupled with pro-social motivation, should be positively related to high-quality team outcomes because this condition leads teams to process information more extensively and effectively to achieve collective goals (Nijstad & De Dreu, 2012). Empirical evidence has also found that high epistemic motivation, combined with pro-social orientation, leads teams to produce more creative ideas (Bechtoldt et al., 2010). Furthermore, in combination with epistemic motivation, the pro-social orientation leads to better performance on a convergent task than on a divergent task (Beersma & De Dreu, 2005).

In the current study, we expect team ZY thinking to generate high epistemic motivation and pro-social motivation, which will, thus, lead to a high level of team creativity. This is because the core features of team ZY thinking—namely, to embrace multiple perspectives, seek diverse ideas, integrate different elements based on a deep understanding of their nature and connections, comprehensively and holistically understand the external environment and internal needs to satisfy multiple stakeholders, and reach the ideal state of harmony—will help to generate high-level epistemic motivation and pro-social motivation (Wu & Lin, 2005; De Dreu et al., 2008; Nijstad & De Dreu, 2012; Pan & Sun, 2017; Ning et al., 2021). Furthermore, generating creative ideas in a team context requires members to openly share and learn diverse, even contradictory, ideas without the fear of criticism (Camacho & Paulus, 1995); find connections among objects, people, and the environment based on learning and thorough information analysis; and develop ideas that create a balance between contradictions (Nijstad, Stroebe & Lodewijkx, 2003). According to the MIP-G model, these processes should benefit from epistemic and pro-social motivation (Nijstad & De Dreu, 2012). Therefore, we expect team ZY thinking to be positively associated with team creativity.

In addition, as mentioned previously, epistemic motivation, combined with a pro-social orientation, will lead to better performance on a convergent task than on a divergent task (Beersma & De Dreu, 2005). Given the different natures of incremental creativity (a build-on type of creativity, similar to a convergent task) and radical creativity (creativity dramatically divergent from current practices, similar to a divergent task), we expect team ZY thinking to be more strongly related to incremental creativity than radical creativity. In the following, we propose the underlying mechanism and boundary condition of the relationship between team ZY thinking and incremental and radical creativity.

The effect of team Zhongyong *thinking on team creativity via team decision comprehensiveness*

Team DC reflects "the extent to which a team is exhaustive or inclusive in the process of making decisions" (Fredrickson, 1984, p. 445). It is a team process in which team members use a wide lens to view problems and consider multiple approaches, multiple courses of action, and multiple decision criteria (Simons et al., 1999). Cognitive styles are closely associated with the decision-making process (Abubakar, Elrehail, Alatailat & Elçi, 2019). Based on the MIP-G model, we propose that team ZY thinking will lead to a high level of team DC by generating high epistemic and pro-social motivation.

First, team ZY thinking leads the team to view tasks or problems from multiple perspectives and understand issues dialectically and holistically (Wu & Lin, 2005). This generates high epistemic motivation in that team members extensively and thoroughly search for and analyze information to gain a comprehensive understanding of various aspects of a problem. This also produces pro-social motivation in that team ZY thinking prompts the team to value diversity and heterogeneity, as well as consider different positions and conflicting needs, when making decisions (Wei et al., 2020). Therefore, team members will have both a strong epistemic urge to seek out, respect, and try to understand different, even dissenting, perspectives (Tjosvold & Sun, 2003), as well as a pro-social orientation to attend to others' concerns and avoid extremes. Thus, the team will openly, thoroughly, and exhaustively consider alternative processes and

solutions, all of which promote team DC (Mitchell, Nicholas & Boyle, 2009).

Second, the connotation of the integration of team ZY thinking emphasizes the consideration of various, especially conflicting, elements (e.g., external circumstances and internal needs, exploration and exploitation, idea novelty and usefulness) to create a synergistic effect. Herein, the team pays special attention to the connections among different elements and seeks ways to integrate them under the framework of collective goals. This generates epistemic motivation to analyze connections among elements and produces pro-social motivation to consider joint benefits, thus encouraging team members to analyze information more deeply and develop the ability to integrate a variety of resources (Wu & Lin, 2005). Team members, thus, "repeatedly think, learn, and optimize so that they can effectively and efficiently solve problems" (Wei et al., 2020, p. 712). That is, the team is continuously and increasingly processing information thoroughly, making sense of emerging situations, and creating solutions in a comprehensive and integrated way.

Third, team ZY thinking centers on the goal of achieving harmony. After accounting for tensions and potential conflicts, the team chooses alternatives that balance individual needs and collective interests, allowing them to make reasonable choices that take into consideration multiple stakeholders to achieve a mutually beneficial situation (Wei et al., 2020). This leads team members to make the effort to gain a thorough and rich understanding of others' needs, as well as to increasingly seek, encode, and apply cooperative information and exchange this type of information (De Dreu et al., 2008). The team will then have deep communication and interactions, and team members will have a high level of connectivity, all of which have been suggested to be associated with a positive emotional atmosphere (Losada & Heaphy, 2004). When the team experiences positive emotions, the team members will be more likely to broaden their thought–action repertoires, collect and share more resources, and see more possibilities for action (Fredrickson, 2001), all of which will lead to a high level of team DC (Carmeli, Friedman & Tishler, 2013). Thus, Hypothesis 1 is proposed as follows:

Hypothesis 1. ***Team* Zhongyong *thinking is positively related to team decision comprehensiveness.***

In the following, we propose that team ZY thinking will be more strongly related to team incremental creativity than radical creativity via team DC. Research on team creativity has differentiated between two types of creativity: team incremental creativity and team radical creativity. Team incremental or "adaptive" creativity refers to team ideas that make incremental changes in frameworks and offer minor modifications to existing practices and products; team radical or "divergent" creativity, on the other hand, refers to team ideas that differ substantially from an organization or industry's existing practices and suggest new and rule-breaking frameworks or processes (Madjar et al., 2011; Tang & Ye, 2015). Moreover, previous research has suggested that there are different antecedents for the two types of creativity (Gilson & Madjar, 2011). However, studies investigating the impact of ZY thinking on creativity have found inconsistent results, and no study has differentiated between the two types of creativity. Therefore, we propose that the associations between team ZY thinking and team incremental creativity and radical creativity are different.

We first illustrate the relationship between team DC and team incremental and radical creativity. Previous research has found a positive relationship between team DC and team creativity (Mitchell et al., 2009; Slotegraaf & Atuahene-Gima, 2011) in that the openness and diversity involved in team DC contribute to a larger pool of new ideas for creative idea generation, while sharing and integrating a variety of information increase the chances of finding novel and useful solutions. However, we further submit that team DC is more strongly related to team incremental creativity than radical creativity.

First, team DC aims to integrate different needs and interests to find a solution that benefits all parties involved (Carmeli et al., 2013). Previous research has suggested that team processes that value inclusiveness and efficient coordination (such as team DC) lead teams to perform better on convergent tasks than on divergent tasks (Beersma & De Dreu, 2005). Furthermore, team incremental creativity is more closely related to convergent tasks than radical creativity because incremental creativity is largely built on existing concepts and seeks to improve or extend current products or practices; it is also analogous with the exploitation strategy (Madjar et al., 2011). Radical creativity, on the other hand, is more closely related to divergent tasks than incremental creativity and deviates substantially from current practices and frameworks. Radical creativity relies on rule-breaking heuristics and breakthroughs that depart from existing relationships and is, thus, analogous with the exploration strategy (Madjar et al., 2011). Therefore, team DC is expected to be more strongly related to team incremental creativity than radical creativity.

Second, team DC focuses on being "realistic and effective in assessments of [the] environment" (Sniezek, 1992, p. 133) and involves the team applying multiple decision criteria to the evaluation and selection of alternative courses of action (Miller, Burke & Glick, 1998). For instance, when designing new products, the team considers how the new product is different from and more creative than the existing ones while simultaneously evaluating its costs and probability of success. Incremental creativity will, thus, be considered more appropriate in this situation and will have a higher chance of being accepted and implemented compared to radical creativity. Radical creativity, however, often requires larger input but incurs greater risks and higher chances of failure (Gilson & Madjar, 2011), which may result in it being filtered out during the decision-making process. In fact, previous research has suggested that analytical information processing may suppress the departure from current practices (Goncalo & Staw, 2006) and hamper radical creativity (de Visser et al., 2014). Since DC involves a rational, controlled, conscious, and reflective thinking mode, which is similar to analytical information processing, we suggest that:

Hypothesis 2. ***Team decision comprehensiveness has a stronger positive relationship with team incremental creativity than radical creativity.***

Based on Hypotheses 1 and 2, we further propose that team ZY thinking will have a stronger indirect effect on team incremental creativity than radical creativity via team DC. This is because teams with a high level of ZY thinking emphasize the consideration of multiple elements, realize the dialectical relationship between contradictory factors, integrate different elements holistically, and seek to satisfy multiple needs to reach a harmonious state, all of which lead to the team extensively searching for information and being exhaustive and inclusive in making decisions. Team DC considers multiple perspectives, emphasizes environmental fit, and applies multiple decision criteria when selecting alternatives (Miller et al., 1998) and is, thus, more beneficial to team incremental creativity than radical creativity. Therefore, we propose that:

Hypothesis 3. ***Team* Zhongyong *thinking has a stronger positive relationship with team incremental creativity than radical creativity via team decision comprehensiveness.***

The moderating effect of environmental dynamism on the effect of team Zhongyong *thinking on team decision comprehensiveness*

Previous research has obtained inconsistent findings regarding the relationship between ZY thinking and creativity (for a systematic review, see Ning et al., 2021), suggesting that boundary conditions may exist. According to the MIP-G model, high epistemic motivation, coupled with pro-social motivation, is especially beneficial for team

decision-making when team members' input indispensability is high (De Dreu et al., 2008; Nijstad & De Dreu, 2012). We posit that environmental dynamism moderates the relationship between ZY thinking and team DC because a dynamic external environment increases the level of team members' input indispensability.

First, in a changing and volatile environment, new opportunities or threats constantly emerge in markets and industries, and teams need a higher level of member input to take advantage of the talents of each team member (Hmieleski & Ensley, 2007). Additionally, a team constantly has to integrate individual members' insights to reconfigure the team's knowledge base (Men, Luo, Fong, Zhong & Huo, 2020). Team members are at the forefront of the market and, thus, are closest to changes in the environment. Consequently, they often have unique interpretations of the situation (Lawler, 1992), as well as valuable personal ideas (Seppälä, Lipponen, Bardi & Pirttilä-Backman, 2012). In this situation, team ZY thinking's epistemic motivation to actively and extensively seek information, deeply analyze various new elements in the work context, and integrate diverse information will particularly benefit team decision-making. The team will constantly and comprehensively inquire about and incorporate team members' ideas and suggestions, as well as process emerging and complex information, more extensively and effectively. The relationship between team ZY thinking and team DC is, thus, strengthened when environmental dynamism is high.

Contrarily, in a stable and predictable environment, the team can rely on existing knowledge to respond to problems and make effective decisions, and the need for team members' input is lower. The multiple thinking and integration of team ZY thinking are, thus, less beneficial for team decision-making in this situation than in situations wherein the environment is volatile and ambiguous. Therefore, the effect of team ZY thinking on team DC will be weakened when environmental dynamism is lower. Additionally, previous research has found that thorough and collectively oriented information processing is more beneficial when tasks are complex, ambiguous, and uncertain but not when tasks are simple and routine and the environment is predictable (Nijstad & De Dreu, 2012; Nijstad & Oltmanns, 2012).

Last, environmental dynamism can cause anxiety, stress, and risks in teams (Waldman, Ramirez, House & Puranam, 2001), making team members' participation and contribution essential; the atmosphere of cooperation and sharing, as well as a strong sense of collective identity and collaboration, that is generated by team members' input will alleviate these negative feelings of team members (Jansen, Vera & Crossan, 2009). Therefore, in a dynamic environment, the pro-social motivation that team ZY thinking generates is valued, as it emphasizes achieving goals harmoniously and making reasonable choices to achieve joint outcomes. Previous studies have also suggested that a higher level of ZY thinking helps people to cope better with work stress and transform challenge-related stress into job satisfaction (Chou, Chu, Yeh & Chen, 2014). This is especially true when environmental dynamism is high because sharing, cooperation, and harmony among individuals are essential in alleviating feelings of tension and uncertainty (Jansen et al., 2009). The resulting positive affective atmosphere in teams will lead team members to view the changing environment as a source of opportunity (Jansen et al., 2009), encouraging them to actively search for information to create solutions. Therefore, ZY thinking is more strongly associated with team DC in a dynamic environment. Thus, Hypothesis 4 is as follows:

Hypothesis 4. ***Environmental dynamism moderates the relationship between team* Zhongyong *thinking and team decision comprehensiveness in such a way that this positive relationship is stronger when environmental dynamism is higher rather than lower.***

The moderating effect of environmental dynamism on the indirect effect of team Zhongyong *thinking on team creativity via team decision comprehensiveness*

Based on Hypotheses 3 and 4, we further suggest a first-stage moderated mediation process in which team ZY thinking will have a stronger indirect effect on team creativity when environmental dynamism is higher. When the environment is volatile and uncertain, team members, who are closest to the market, are more likely to acquire unshared information or have unique ideas regarding product improvement. In this situation, team ZY thinking's focus on information searching and sharing, knowledge integration, and cooperation becomes more important for enhancing team DC, and subsequently, team creativity will increase. In fact, Sung and Choi (2012) found that knowledge utilization (i.e., the process of using the knowledge available to the team) is only positively related to team creativity when environmental uncertainty is high (i.e., when the environment is unpredictable and unfamiliar) but not when it is low. Therefore, we propose the following hypothesis:

Hypothesis 5. ***Environmental dynamism moderates the indirect relationship between team* Zhongyong *thinking and team creativity via team decision comprehensiveness in such a way that this positive indirect relationship is stronger when environmental dynamism is higher rather than lower.***

Combining this hypothesis with Hypothesis 3, which states that team ZY thinking has a stronger positive relationship with team incremental creativity than radical creativity via team DC, we further posit that:

Hypothesis 6. ***Environmental dynamism interacts with team* Zhongyong *thinking to produce a stronger conditional indirect effect on team incremental creativity than radical creativity via team decision comprehensiveness.***

The theoretical model of our study is shown in Figure 1.

Methodology

Participants and procedure

We collected data from MBA and executive development program students from two universities in Beijing, China, using the

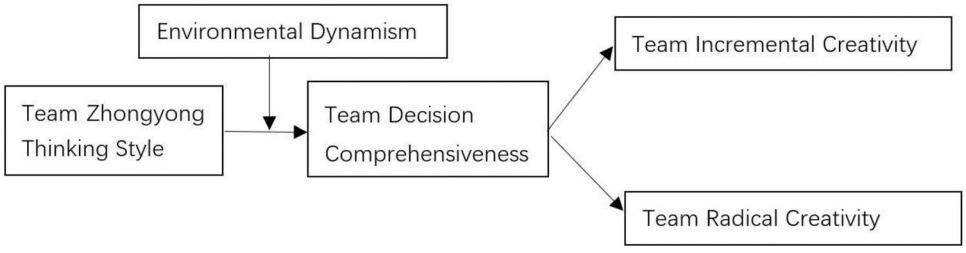

Fig. 1. Theoretical model.

survey method. The students were invited to participate in the survey only if they had more than six months of work experience (Harris, Li, Boswell, Zhang & Xie, 2014) and were team leaders with more than two followers because our study focuses on the team level. They were informed that their responses would be used for research purposes only and kept strictly confidential. The students (team supervisors in their own companies) who met these requirements received a link to the survey website, through which they completed the survey for leaders and provided the e-mail addresses of their subordinates. After receiving the students' responses, emails were sent to the students' subordinates with an invitation to participate in the subordinate's survey and a link to the survey website. To protect the confidentiality of participants, they were assigned random identification numbers, which also allowed us to match supervisors' responses with those of their subordinates. Supervisors provided their own demographic information, team size, and an assessment of their teams' incremental and radical creativity, while subordinates provided their own demographic information and an assessment of their ZY thinking, team DC, and perceived team environmental dynamism.

Through this process, 775 subordinates and their 107 supervisors were invited to participate in the online survey. The supervisors and subordinates' responses were then matched. The final sample included only teams from which at least two subordinates responded. The final sample consisted of 106 teams comprising 770 subordinates and 106 supervisors. Among the supervisors, 81.13% were male, 83.02% had a bachelor's degree or above, the average age was 37.16 years (SD = 4.25), and the average leading tenure on their current team was 2.88 years (SD = 2.67). Among the subordinates, 56.10% were male, 77.01% had a bachelor's degree or above, the average age was 31.20 years (SD = 4.89), the average organizational tenure was 2.97 years (SD = 1.26), and they had been working with their current leader for an average of 3.46 years (SD = 1.57).

Questionnaire design

The measures used in this study are mature scales translated from English to Chinese following the translation and back-translation procedure (Brislin, 1980, p. 431). Two bilingual research assistants who were blind to the nature of the study and hypotheses completed the translation. Disagreements were resolved through consensus-based discussion among the authors, translators, and other bilingual researchers.

***Zhongyong* thinking.** In our study, we applied the ZY thinking scale that Wu and Lin (2005) developed to measure our subordinate participants' ZY thinking using a seven-point Likert scale (1 = *strongly disagree* to 7 = *strongly agree*), the same scale that has been applied in many established international journals (e.g., Wei et al., 2020; Fan, 2021). This 13-item scale comprises the three dimensions of multiple thinking, integration, and harmoniousness. Sample items included, "I am used to thinking about one thing from different perspectives" (for the multiple thinking dimension), "I often try to find acceptable opinions in a situation of disagreement" (for the integration dimension), and "I usually adjust my behavior for overall harmony" (for the harmoniousness dimension). The alpha reliability value of the scale was 0.93 in our study.

To operationalize team ZY thinking, we averaged the subordinates' ZY thinking scores into team-level ZY thinking. This operationalization was consistent with our conceptual framing of a team's cognitive style as an "additive composition of its individual-level origins" (Cai et al., 2017, p. 410), which indicates a straightforward, homogenous, functional relationship between constructs at the individual and team levels (Chen et al., 2004). Similar to Cai et al. (2017), we treated team ZY thinking as a linear summary of individual-level ZY thinking, ignoring its individual-level variance. Therefore, we operationalized team ZY thinking as the mean of the team members' ZY thinking scores in the current study.

Environmental dynamism. We applied the five-item scale that Schilke (2014) developed to measure our subordinate participants' perceived team environmental dynamism on a seven-point Likert scale. A sample item was, "The environmental demands on us are constantly changing". Its alpha reliability value was 0.93 in our study. We calculated the teams' mean scores of environmental dynamism as the measure of team-level environmental dynamism. We also checked the validity of this measurement by examining both between-group differences and within-group agreement, i.e., intra-class correlations (ICCs) (e.g., James, 1982; Bliese, 2000) and r_{wg} (e.g., James, Demaree & Wolf, 1984). The ICC(1) and ICC(2) values were 0.12 and 0.49, respectively, with $F(105, 664) = 1.97$ ($p < 0.001$). The mean r_{wg} value was 0.87. Although the ICC(1) and ICC (2) values were relatively low, other researchers (e.g., Kozlowski & Hattrup, 1992; Chen & Bliese, 2002) have suggested that the aggregation is valid as long as it is justified by theory and supported by a high r_{wg} and significant between-group variance, as was the case in our dataset.

Decision comprehensiveness. DC was measured on a seven-point Likert scale using the three items that Simons et al. (1999) developed. A sample item was, "Our team uses multiple criteria for eliminating possible courses of action". The alpha reliability value was 0.92 in our study. We also checked the validity of adding the individual scores of DC to the team-level DC by examining the ICCs and r_{wg}. The ICC(1) and ICC(2) values were 0.12 and 0.49, respectively, with $F(105, 664) = 1.95$ ($p < 0.001$). The mean r_{wg} value was 0.91. As mentioned previously, the above results suggest that the aggregation was appropriate.

Incremental creativity and radical creativity. Following Tang and Ye (2015), we measured team incremental creativity and radical creativity by applying the scale that Madjar et al. (2011) developed. This scale measures the two types of creativity with three items each on a five-point Likert scale. Sample items included, "This team is a good source of highly creative ideas" (for team radical creativity) and "This team uses previously existing ideas or work in an appropriate, new way" (for team incremental creativity). The alpha reliability value was 0.79 for incremental creativity and 0.73 for radical creativity.

Control variables. Before conducting the survey, we interviewed some of the employees taking part in the survey and found that the team supervisor plays an important role in influencing the team's decision-making process and outcomes. Accordingly, we controlled for 1) the team supervisor's gender: Female and male leaders differ in terms of their influence on their team's decision-making process and outcomes (Eckel & Grossman, 2008; Chen, Crossland & Huang, 2016); 2) the team supervisor's age: Leaders of different ages may prefer different information processing styles and may have high or low expectations for team creativity (Yim, 2013; Serfling, 2014); 3) the team supervisor's education level: Previous research has suggested that education greatly influences a leader and their team's ability to process information, as well as their openness to reform or innovation (Kimberly & Evanisko, 1981; Ng & Feldman, 2009); 4) the team supervisor's team-leading tenure: A team's cognitive thinking styles and decision-making process may develop over time under the influence of the leader (Ali, Wang & Johnson, 2020). We also controlled for team size because team size influences the team's internal processes and results to a certain extent (Somech, 2006). In addition, we controlled for the organization's type (state-owned or otherwise) and industry (manufacturing, service providing, other) because different types or industries of organizations experience different levels of environmental changes, and teams may have different perceptions of and responses to these changes.

Data analysis

Common method variance test

Since we adopted the questionnaire survey method, the potential existed for the common method variance problem. Therefore, we applied the Harman single-factor test to determine the level of common method variance in our study. The results showed that the variance of the first common factor accounted for was 24.99%, which is far below the 50% standard (Yong & Pearce, 2013), indicating that there was no serious common method variance problem among our measured variables.

Measurement model

We assessed the discriminant and convergent validity of the measurement model following Hair, Black, Babin and Anderson (2014). We evaluated the convergent validity for all latent measures using satisfactory standardized factor loadings; we had to remove one item from environmental dynamism because it loaded below 0.40. We included three criteria for the evaluation of convergent validity: Cronbach's alpha value, composite reliability (CR), and the average variance extracted (AVE). As demonstrated in Table 1, the alpha values for all variables ranged from 0.73 to 0.93, reaching Nunnally's criterion of 0.70 or above (Nunnally & Bernstein, 1994). The CR values ranged from 0.85 to 0.95, agreeing with Hair et al.'s (2014) criterion of 0.70 or above. Finally, the AVE values of all variables ranged from 0.55 to 0.87, reaching the criterion of 0.50 or above (Fornell & Larcker, 1981). Therefore, all of the results satisfied the criteria for convergent validity. Additionally, we evaluated divergent validity using the AVE−SV comparison (Fornell & Larcker, 1981). As demonstrated in Table 2, all of the square roots of the AVE were higher than the correlation among the constructs, satisfying the criteria for divergent validity (Fornell & Larcker, 1981).

We performed confirmatory factor analysis of Level 1 variables to evaluate the overall measurement model. As demonstrated in Table 3,

Table 1
Descriptive statistics of the main variables, and validity and reliability of latent variable constructs.

Construct	Standardized factor loading	Mean	SD	Cronbach's alpha	Construct reliability (CR)	AVE
Level 1 variables						
1. Individual *Zhongyong* (ZY) thinking style		5.94	0.76	0.93	0.94	0.55
ZY1	0.50	6.06	1.04			
ZY2	0.76	5.88	1.11			
ZY3	0.78	6.18	0.98			
ZY4	0.78	5.90	1.07			
ZY5	0.57	5.86	1.08			
ZY6	0.82	6.03	1.04			
ZY7	0.62	6.03	0.95			
ZY8	0.71	5.82	1.06			
ZY9	0.79	5.77	1.06			
ZY10	0.80	5.65	1.16			
ZY11	0.77	6.08	0.99			
ZY12	0.82	5.95	1.01			
ZY13	0.80	6.01	0.95			
2. Individual perceived team decision comprehensiveness (DC)		5.82	0.91	0.92	0.93	0.87
DC1	0.94	5.72	1.05			
DC2	0.93	5.89	0.94			
DC3	0.91	5.86	0.95			
3. Individual perceived environmental dynamism (ED)		5.97	0.86	0.93	0.95	0.84
ED1	0.90	6.05	0.88			
ED2	0.95	6.00	0.92			
ED3	0.95	6.04	0.87			
ED4	0.84	5.79	1.14			
ED5	0.23	5.54	1.36			
Level 2 variables						
4. Supervisor gender		0.19	0.39			
5. Supervisor age		37.16	4.25			
6. Supervisor education level		4.04	0.71			
7. Supervisor leading tenure		2.88	2.67			
8. Team size		21.03	18.45			
9. Industry 1		0.26	0.44			
10. Industry2		0.47	0.50			
11. Organization type		0.25	0.43			
12. Team *Zhongyong* thinking style		5.92	0.43			
13. Team decision comprehensiveness		5.83	0.46			
14. Environmental dynamism		5.90	0.42			
15. Team incremental creativity		3.91	0.50	0.79	0.88	0.70
IC1	0.92	3.89	0.59			
IC2	0.91	3.88	0.60			
IC3	0.90	3.95	0.61			
16. Team radical creativity		3.92	0.50	0.73	0.85	0.65
RC1	0.83	4.00	0.55			
RC2	0.79	3.70	0.68			
RC3	0.81	4.07	0.64			

Note. For level 1 variables, N=770; for level 2 variables, N=106.
AVE= average variance extracted, ZY=*Zhongyong* Thinking Style, ED=Environmental Dynamism, DC=Decision Comprehensiveness.
The mean, standard deviation, Cronbach's alpha, CR, and AVE of individual perceived environmental dynamism were calculated after deleting the last item (factor loading < 0.40).
Organization type: 0=non-state owned, 1=state-owned.
Industries are classified into manufacture industry, service industry, and other industries. Two dichotomous variables (industry1, industry2) were created to differentiate the three industries.

Table 2
Discriminant validity: AVE and correlation comparison.

	1	2	3
Level 1 variables			
1. *Zhongyong* thinking style	**0.74**		
2. Decision comprehensiveness	0.64**	**0.93**	
3. Environmental dynamism	0.64**	0.52**	**0.91**
Level 2 variables			
1. Team incremental creativity	**0.83**		
2. Team radical creativity	0.10	**0.81**	

Note. Values in diagonal show the square root of AVE.
†p<0.1; * p < 0.05; ** p < 0.01.

the hypothesized three-factor (ZY thinking, environmental dynamism, and DC) model provided a good fit, with all of the fit indices at acceptable levels (χ^2/df = 5.29, RMSEA = 0.08, SRMR = 0.04, CFI = 0.94, TLI = 0.93, IFI = 0.94). After examining the fit of all alternative models, we found that the three-factor model offered a superior fit for the data. All of the above tests, thus, supported the discriminant validity of the constructs. Therefore, the constructs could be used to investigate the conceptual model (Hu & Bentler, 1999).

Results

Following previous studies (Mao, Quan, Li & Xiao, 2021), we tested the hypotheses using multiple regression analysis. Specifically, the analysis comprised three parts. In the first part, we tested the main effect of team ZY thinking on team DC (*H1*), the main effect of team DC on team creativity (*H2*), and the indirect effect of team ZY thinking on team creativity via team DC (*H3*). In the second part, we tested the moderating effect of environmental dynamism on the relationship between team ZY thinking and team DC (*H4*). In the third part, we tested the overall model of the moderated mediation effect (*H5* and *H6*) using Monte Carlo (MC) simulation.

As demonstrated in Table 4, we entered team ZY thinking into the regression analysis after the control variables (Model 1), with team DC as the dependent variable. Team ZY thinking was positively related to team DC (Model 2: β = 0.64, $p < 0.01$), so *H1* was supported. *H2* proposed that team DC has a stronger relationship with team incremental creativity than radical creativity. As demonstrated in Table 5, we entered team DC into the regression analysis after the control variables (Model 4), with team incremental creativity as the dependent variable. The results showed that team DC was positively related to team incremental creativity (Model 5: β = 0.23, $p < 0.05$). Similarly, we entered team DC into the regression analysis after the control variables (Model 6), with team radical creativity as the dependent variable, but the relationship between team DC and radical creativity was not significant (Model 7: β = 0.10, *n.s.*). These results supported *H2*, which stated that team DC has a stronger positive relationship with team incremental creativity than radical creativity. Further, *H3* proposed that team ZY thinking has a stronger indirect relationship with team incremental creativity than radical creativity via team DC. To test this hypothesis, we calculated the indirect effect of team ZY thinking on incremental and radical creativity by applying RMediation (Tofighi & MacKinnon, 2011). The results of the RMediation procedures revealed that the indirect effect of team ZY thinking on incremental creativity was significant (*estimate* = 0.26, 95% confidence interval [CI] = 0.10, 0.46), but the indirect effect on radical creativity was not significant (*estimate* = 0.06, 95% CI = -0.07, 0.21). These results supported *H3*.

Table 4
Regression results of team decision comprehensiveness as dependent variable.

	Team Decision Comprehensiveness					
	Model 1		Model 2		Model 3	
	b	se	b	se	b	se
Control variables						
Supervisor gender	0.02	0.12	0.01	0.09	-0.01	0.08
Supervisor age	-0.02	0.01	-0.01	0.01	-0.01†	0.01
Supervisor education	-0.09	0.07	-0.11*	0.05	-0.11*	0.05
Supervisor leading tenure	-0.001	0.002	-0.01	0.01	-0.004	0.01
Team size	-0.002	0.002	-0.002	0.002	-0.001	0.002
Industry 1	0.01	0.10	-0.06	0.08	-0.11	0.08
Industry 2	0.09	0.10	-0.01	0.08	-0.07	0.07
Organization type	0.07	0.11	0.11	0.09	0.14†	0.08
Independent variables						
Zhongyong thinking style			0.64**	0.09	0.47**	0.11
Environmental dynamism					0.40**	0.10
Interaction						
Zhongyong thinking style ×Environmental dynamism					0.30**	0.10
R^2	0.07		0.42		0.52	
Adj. R^2	-0.003		0.36		0.47	
$\triangle R^2$			0.35**		0.10*	
F	0.96		7.67**		9.35**	

Note. N=106.
†p<0.1; * p < 0.05; ** p < 0.01.

H4 proposed the moderating effect of environmental dynamism on the relationship between team ZY thinking and team DC. As demonstrated in Model 3 of Table 4, the coefficient of the interaction between team ZY thinking and environmental dynamism was significant (β = 0.30, $p < 0.01$), so *H4* was supported. In addition, Figure 2 and simple slope tests showed that the relationship between team ZY thinking and team DC was stronger when environmental dynamism was high (simple slope = 0.64, $p < 0.01$) and weaker when environmental dynamism was low (simple slope = 0.37, $p < 0.01$).

H5 proposed that environmental dynamism moderates the indirect relationship between team ZY thinking and team creativity via team DC. As mentioned above, the effect of team DC and the indirect

Table 3
Results of model fit estimates and chi-square difference test.

Model	Factors	*χ2*	*df*	*△χ2*	*RMSEA*	*SRMR*	*CFI*	*TLI*	*IFI*
Baseline	ZY, ED, DC	883.99	167		0.08	0.04	0.94	0.93	0.94
Model 1	ZY+ ED, DC	2783.96	169	1899.97**	0.14	0.07	0.78	0.75	0.78
Model 2	ZY+DC, ED	2059.20	169	1175.21**	0.12	0.07	0.84	0.82	0.84
Model 3	ZY, ED +DC	2244.61	169	1360.62**	0.13	0.09	0.82	0.80	0.82
Model 4	All variables combined	3889.49	170	3005.50**	0.17	0.09	0.68	0.64	0.68

Note. N=770.
ZY=*Zhongyong* Thinking Style, ED=Environmental Dynamism, DC=Decision Comprehensiveness.
†p<0.1; * p < 0.05; ** p < 0.01.

Table 5
Regression results of team incremental creativity and radical creativity as dependent variables.

	Team Incremental Creativity				Team Radical Creativity			
	Model 4		Model 5		Model 6		Model 7	
	b	se	b	se	b	se	b	se
Control variables								
Supervisor gender	-0.12	0.13	-0.12	0.13	-0.13	0.12	-0.13	0.12
Supervisor age	-0.02	0.01	-0.01	0.01	-0.01	0.01	-0.01	0.01
Supervisor education	0.001	0.07	0.02	0.07	-0.05	0.07	-0.04	0.07
Supervisor leading tenure	-0.02	0.02	-0.02	0.02	0.05*	0.02	0.05*	0.02
Team size	-0.004	0.003	-0.003	0.003	0.002	0.003	0.003	0.003
Industry 1	-0.03	0.12	-0.03	0.11	0.10	0.11	0.10	0.11
Industry 2	0.003	0.11	-0.02	0.10	0.06	0.10	0.05	0.10
Organization type	0.01	0.12	-0.004	0.12	-0.12	0.12	-0.13	0.12
Mediator								
Team decision comprehensiveness			0.23*	0.11			0.10	0.11
R^2	0.05		0.10		0.12		0.12	
Adj. R^2	-0.02		0.01		0.04		0.04	
$\triangle R^2$			0.05*				0.001	
F	0.70		1.14		1.59		1.51	

Note. N=106.
†p<0.1; * p < 0.05; ** p < 0.01.

effect of team ZY thinking on radical creativity were not significant; thus, there was no need to test the moderating effect of environmental dynamism on the relationship between team ZY thinking and radical creativity via team DC. Therefore, we only tested the moderating effect of environmental dynamism on the relationship between team ZY thinking and incremental creativity via team DC. We applied a path analysis using Mplus 7.4, and we calculated the confidence interval using MC simulation, with 20,000 replications using R (http://www.quantpsy.org/medmc/medmc111.htm) (Bauer, Preacher & Gil, 2006; Preacher & Selig, 2010). An estimation of the conditional indirect effect revealed that the indirect effect of team DC on incremental creativity via team DC was stronger when environmental dynamism was high (*estimate* = 0.29, 95% CI = 0.11, 0.55) rather than low (*estimate* = 0.16, 95% CI = 0.04, 0.34), and the difference was significant (*estimate* = 0.13, 95% CI = 0.02, 0.29). The index of moderated mediation was also significant (*estimate* = 0.12, 95% CI = 0.02, 0.25). Therefore, the moderating effect of environmental dynamism on the relationship between team ZY thinking and incremental creativity via team DC was significant, so *H5* was supported.

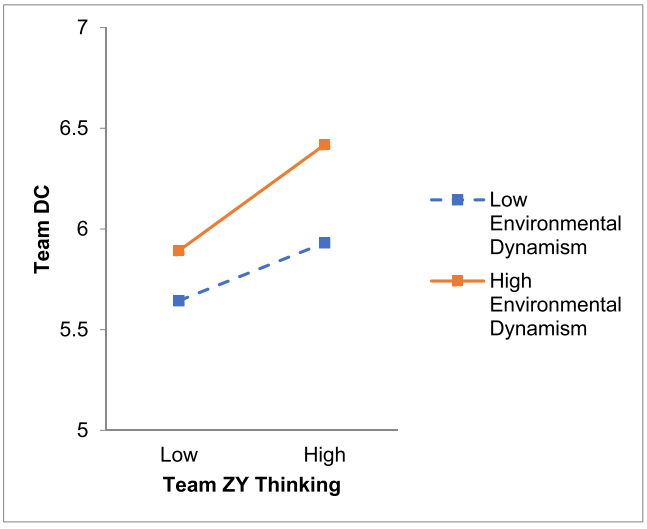

Fig. 2. Interactive effect of team ZY thinking and environmental dynamism on team decision comprehensiveness.

Discussion

In this study, we intended to reveal whether, how, and when team ZY thinking is related to team incremental and radical creativity. Drawing on the MIP-G model, we posit that team ZY thinking is positively related to team creativity via team DC, and team ZY thinking has a stronger positive relationship with team incremental creativity than radical creativity via team DC. For the boundary condition, we suggested that environmental dynamism moderates the indirect relationship between team ZY thinking and team creativity via team DC. Furthermore, this moderated mediation effect is stronger for team incremental creativity than radical creativity. In this study, we found empirical evidence to show that team ZY thinking is positively related to team incremental creativity but not team radical creativity via team DC. Furthermore, environmental dynamism interacts with team ZY thinking to influence team incremental creativity via team DC. Specifically, when environmental dynamism is higher, team ZY thinking exerts a stronger indirect positive effect on team incremental creativity via team DC.

Theoretical implications

Our research contributes to several areas of research. First, we provide more comprehensive theoretical explanations of and empirical evidence for the effect of ZY thinking on team creativity and respond to the literature debating whether ZY benefits or harms creativity (Fan, 2021; Ning et al., 2021; Zhou et al., 2021). We suggest that ZY thinking generates epistemic and pro-social motivation by stimulating the work team to exhaustively search for information, gain a holistic and dialectic understanding of the environment, and pursue harmony and mutual benefits. Thus, teams can make effective and comprehensive decisions, which, in turn, lead to a high level of incremental creativity. The results of our study are also consistent with those of prior empirical research (Liao & Dong, 2015; Zhang & Gu, 2015; Du & Duan, 2017) in that they show that team ZY thinking is positively related to creativity, especially through a thorough analysis of the environment and integrated decision-making. Moreover, for the first time, we reveal the differential effect of ZY thinking on incremental creativity and radical creativity in this study. This contributes to explaining the previous inconsistent findings regarding the relationship between ZY thinking and creativity by suggesting that ZY thinking is beneficial for generating adaptive ideas built on existing concepts (incremental creativity) rather than highly novel ideas that depart from dominant logic (radical creativity).

Relatedly, through this study, we enrich the creativity literature by dividing team creativity into incremental and radical creativity and demonstrating the differential influence of team ZY thinking on these two types of creativity. Although researchers have realized the varying natures and determinants of incremental and radical creativity, few studies to date have compared the differing effects of the antecedents on these two types of creativity (Gilson, Lim, D'Innocenzo & Moye, 2012). Moreover, the results of our study support the view of Madjar et al. (2011), which suggests that the determinants of incremental and radical creativity are different, thus responding to their advocation for more related research.

Third, in this research, we found a new mechanism to explain how team ZY thinking affects team incremental and radical creativity differently, that is, via team DC. Our results agree with findings showing a positive association between team DC and creativity or new product innovation (Slotegraaf & Atuahene-Gima, 2011; Mohan, Voss & Jiménez, 2017) and knowledge creation (Mitchell, Nicholas & Boyle, 2009). Notably, in the research that Atuahene-Gima and Li (2004) conducted, the results demonstrate that strategic DC has a stronger negative relationship with new product performance and quality when technology uncertainty is higher, whereas strategic DC has a stronger positive relationship with new product performance and quality when demand uncertainty is higher. Our study's findings agree partially with their findings. That is, since radical creativity relates closely to technology breakthroughs, it can be inferred that DC is not beneficial for this type of creativity; however, incremental creativity is more related to demand uncertainty, the solution to which involves computational processes based on an existing concept (Madjar et al., 2011), and the positive effect of DC is, thus, more likely to manifest in this case. Additionally, this study found team ZY thinking to be a new antecedent of team DC, contributing to enriching this area of research.

Last, we found environmental dynamism to be a critical boundary condition for the influence of team ZY thinking on team creativity. This result responds to the advocation of Zhou and Hoever (2014) to take an interactionist approach when studying antecedents of creativity by combining the actor-centered and context-centered perspectives. The actor-centered perspective focuses on the impact of the characteristics of a creative actor (e.g., individuals or teams) on creativity, while the context-centered perspective examines creativity as the result of contextual influences (e.g., the task, the physical and social environment). As Zhou and Hoever (2014) suggested, an actor-centered approach is insufficient to reveal the complex influencers of workplace creativity, and the inconsistency of the findings regarding the relationship between ZY thinking and creativity may have occurred since most previous studies have worked from a solely actor-centered perspective, while a broader context may shape the effect of ZY thinking on creativity (Hargadon & Bechky, 2006). Therefore, our finding that environmental dynamism and team ZY thinking have an interactive effect on team creativity reflects the complex actor−context interaction in generating creativity and supports the promising direction of the interactionist perspective.

Practical implications

Our research findings have several important managerial implications. First, the finding that team ZY thinking increases team incremental creativity suggests that team ZY thinking can support the team in generating a high level of modifications or extensions to existing practices and products. Thus, team leaders or organizations aiming for product improvement or refinement could cultivate the ZY thinking style in team members via training programs or in daily interactions (Yang et al., 2020). For instance, team leaders can help their team members to develop multiple thinking skills by cultivating an open and sharing atmosphere; encouraging team members to search for, analyze, and process diverse perspectives without deprecation; and training members in counterfactual thinking skills (Roese, 1997). Leaders can also coach team members to find connections among various elements and integrate these elements holistically to achieve collective goals. In addition, they can teach team members, according to the doctrine of *Zhongyong*, to accept and adapt to tension, cope with interpersonal conflicts by taking a third-party perspective, adopt the wisdom of unity without uniformity, and avoid extreme emotions (Yang et al., 2020). These are particularly beneficial for incremental creativity when the external environment is highly dynamic.

However, we suggest that team ZY thinking is not significantly related to radical creativity. For teams aiming for technology breakthroughs or innovation that deviates substantially from current practices, ZY thinking will not be that beneficial. According to Litchfield (2008), novelty and impracticality are the core features of radical creativity, whereas usefulness and practicality are the core features of incremental creativity. ZY thinking, thus, is better suited to incremental creativity than radical creativity. However, to promote team radical creativity, team members can study other types of cognitive styles, such as divergent thinking (de Vries & Lubart, 2019), and learn to generate abstract, theory-related ideas (Gilson & Madjar, 2011).

Last, the positive relationship that we found between team DC and team incremental creativity also has implications for team leaders or organizations. When incremental creativity is preferred, leaders can elevate team DC through such processes as encouraging extensive member input, being exhaustive and inclusive in searching for and integrating ideas, considering multiple approaches, and applying multiple criteria when evaluating and selecting alternative courses of action (Miller et al., 1998). However, notably, these processes cannot produce high levels of radical creativity in a team. Therefore, before team leaders select their strategies for team decision-making, they should first clarify their teams' objectives, for instance, whether to produce adaptive new ideas or develop groundbreaking frameworks. Managers should also be aware that these two types of creativity require different cognitive thinking styles and decision-making approaches.

Limitations and opportunities

Although our study has several strengths, it also has several limitations that should be considered when viewing our results. First, the cross-sectional design of our study could not reflect causality. Although it is unlikely that team creativity influences team DC or team ZY thinking, future research is needed to validate the results' causality by utilizing, for example, an experimental or longitudinal design. Second, this study was conducted in China, where ZY thinking is the most typical and widely shared thinking style. However, the multiple thinking, integration, and harmoniousness dimensions of ZY are somewhat familiar to Western culture, and they share some commonalities with Western philosophy and concepts such as Aristotle's "doctrine of the mean", the concept of integrative complexity (Suedfeld & Tetlock, 1977), eclectic thinking, and integrated thinking (Zhou et al., 2021). Therefore, future studies could employ Western culture samples to verify the results of our study and validate the utility of ZY thinking in international organizational contexts. Last, although we argue that team ZY thinking is positively associated with epistemic motivation and pro-social motivation, we did not measure these two types of motivation explicitly. Thus, future studies could test motivational explanations for the influence of team ZY thinking on team decision-making and outcomes.

Acknowledgements

This study was supported by National Natural Science Foundation of China (grant number: 71902012); the Fundamental Research

Funds for the Central Universities of China (grant number: YY19ZZB005); the Planning Fund for Humanities and Social Sciences Research by the Ministry of Education of China (grand number: 19YJA630104).

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