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Ethical Leadership and Team-Level Creativity: Mediation of Psychological Safety Climate and Moderation of Supervisor Support for Creativity

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Abstract

This study explores how and when ethical leadership predicts three forms of team-level creativity, namely team creativity, average of member creativity, and dispersion of member creativity. The results, based on 230 members of 44 knowledge work teams from Chinese organizations, showed that ethical leadership was positively related to team creativity and average of member creativity but was negatively related to dispersion of member creativity. Consistent with the predictions of uncertainty reduction theory, psychological safety climate mediated the relationship between ethical leadership and the three forms of team-level creativity. Furthermore, supervisor support for creativity positively moderated the effect of ethical leadership on psychological safety climate and the indirect effects of ethical leadership on the three forms of team-level creativity through psychological safety climate. The analysis offers significant theoretical and practical implications on ethical leadership and creativity in organizations.

Keywords Ethical leadership · Psychological safety climate · Supervisor support for creativity · Team creativity · Average of member creativity · Dispersion of member creativity

Introduction

Teams have emerged as major means for promoting creativity in contemporary organizations (Farh et al. 2010; Gino et al. 2010). Previous studies have identified various predictors of the creativity of work teams, such as membership diversity, group climate, and interpersonal exchanges among members (Hülsheger et al. 2009). The creativity in and of

work teams is also significantly influenced by various forms of leadership, such as transformational leadership, supportive leadership, and empowering leadership (Eisenbeiss et al. 2008; Shin and Zhou 2003; Zhang and Bartol 2010). Scholars have recently demonstrated that ethical leadership increases individual creativity (Chen and Hou 2016; Tu and Lu 2013). With the increasing significance of business ethics in contemporary organizations, it is important to understand how leaders can enhance the creativity of their employees while improving ethical practices in the workplace as both constitute crucial business outcomes. Therefore, this study theoretically elaborates *why* and *when* ethical leadership enhances the creativity in and of work teams.

Ethical leaders can enhance employee creativity by addressing the inevitable uncertainty of creative efforts because they establish a work environment characterized by predictability and integrity, which reduce the social risks for employees who engage in proactive behavior (Loi et al. 2012). To further ascertain the effects of ethical leadership as a predictor of team-level creativity, we identify distinct aspects of creativity at the team level. We follow the recommendations of Sacramento et al. (2015) and conceptualize team-level creativity using three distinct models (Chan

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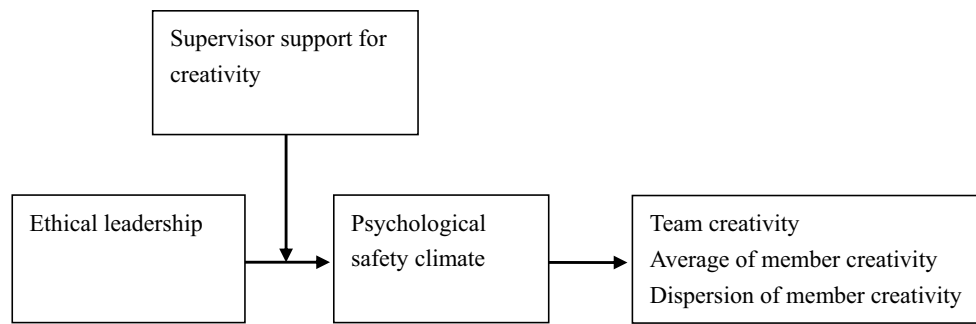


Fig. 1 Hypothesized research model

1998; Kozlowski and Klein 2000): (a) the referent-shift consensus model, which conceptualizes team-level creativity as an overall level of creativity of a team as a whole (hereafter, *team creativity*); (b) the additive model, which denotes team-level creativity by additively combining or aggregating the creativity of individual members (*average of member creativity*); and (c) the dispersion model, in which team-level creativity captures the extent to which members exhibit different levels of creativity, thereby offering uneven contributions to team creativity (*dispersion of member creativity*).

Previous studies on team creativity have mostly focused on either one of the first two conceptualizations, thereby ignoring potential variation and dispersion across the creative contributions of members (e.g., Mo et al. 2017; Tu and Lu 2013). However, the dispersion of member creativity must be considered as a property of team-level creativity given the inevitable disequilibrium of individual creativity within a team (Pirola-Merlo and Mann 2004; Sacramento et al. 2015). The reduction of member creativity dispersion can improve the overall level of team creativity by fully utilizing the creative potential of each member (Farh et al. 2015; Sacramento et al. 2015). A highly creative team is characterized by high team creativity and a high average of member creativity, as well as a low dispersion of member creativity because these three aspects jointly determine creativity at the team level. In this study, we propose that ethical leadership is particularly critical in reducing the dispersion of member creativity while increasing overall team creativity and average of member creativity.

This study also analyzes the intermediate process through which ethical leadership affects team-level creativity. Drawing on uncertainty reduction theory (Lind and van den Bos 2002), we identify psychological safety climate as a mechanism for explaining the relationship between ethical leadership and team-level creative processes. Psychological safety climate captures the characteristics of an environment where individuals are free of the risk and uncertainty associated with proposing new solutions, challenging the status quo, and behaving innovatively (Nembhard and Edmondson 2006). Therefore, we propose that psychological safety

climate mediates the relationship between ethical leadership and team-level creativity.

To elaborate the leadership process toward multiple forms of team-level creativity, we consider another component of leadership properties that may promote the ethical leadership function toward creativity. Reducing uncertainty through ethical leadership can be further accentuated by providing a supportive environment specifically targeting creativity (Chen and Hou 2016). Given the high uncertainty that underlies the creative process, employees depend on their supervisor for the necessary security and resources to cope with inherent risks (Madjar et al. 2002). Apart from receiving normative guidance from ethical leaders, employees can rely on supervisor support to address the risks involved in creativity (George and Zhou 2007). Therefore, supervisor support for creativity reinforces the role of ethical leadership in establishing a psychological safety climate to promote team-level creativity.

This study contributes to the literature in three ways. First, we investigate the effect of ethical leadership on team-level creativity and extend previous studies mostly conducted at the individual level (e.g., Chen and Hou 2016). In doing so, we expand the conceptual domain of team-level creativity by including three aspects of team creativity. Ethical leadership may be particularly relevant in reducing the dispersion of creativity among members of the same team, which has been neglected in the literature (Pirola-Merlo and Mann 2004). Second, drawing on uncertainty reduction theory, we identify the psychological safety climate as a critical intermediate process through which ethical leadership affects team-level creativity. An exploration on the theoretical underpinnings of the relationship between ethical leadership and team-level creativity offers new insights into this important phenomenon. Third, we propose supervisor support for creativity as a boundary condition that can strengthen the effects of ethical leadership on nurturing psychological safety climate and consequent team-level creativity. The interplay between two distinct leadership properties in shaping team-level creative processes can offer theoretical and practical insights (Fig. 1).

Literature Review and Hypotheses

Ethical Leadership

Ethical leadership refers to “the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making” (Brown et al. 2005, p. 120). Ethical leadership comprises two components, namely moral person and moral manager (Treviño et al. 2003). Moral person suggests that ethical leaders possess moral traits, such as altruism, credibility, honesty, and trustworthiness (Kalshoven et al. 2011), whereas moral manager implies that ethical leaders display moral managerial behaviors, such as articulating ethical disciplines, discussing ethical issues with followers, and showing genuine concern and respect for employees (Brown and Treviño 2006).

Over the past decade, researchers have broadened their understanding of the influence of ethical leadership from the ethical and deviant behaviors of followers to their prosocial and proactive behaviors (De Hoogh and Den Hartog 2008; Tu and Lu 2016). Empirical evidence indicates that ethical leaders lead their followers to work proactively for the betterment of their team and the organization (Mayer et al. 2009; Shin et al. 2015). Compared with other types of leadership (e.g., transformational and transactional leadership), ethical leadership excels in shaping employee behavior by establishing normative rules, setting an ethical tone for the group, and aligning the behavior of followers with organizational interests (Brown and Treviño 2006). Therefore, the outcomes of ethical leadership can be extended to the proactive behavior of followers because ethical leaders expect and encourage their followers to exert spontaneous efforts that benefit their organization.

Team-Level Creativity

Creativity refers to the production of novel and useful ideas in terms of products, services, and processes (Oldham and Cummings 1996). Given the increasing importance of teams as core operational units in contemporary organizations, team-level creativity received considerable research attention (Eisenbeiss et al. 2008; Farh et al. 2010). However, the multilevel characteristic of creativity and its nature are still understudied without much consensus (e.g., Pirola-Merlo and Mann 2004; Taggar 2002), as Sacramento et al. (2015) recently affirmed, “scholars engaged in multilevel research on team (rather than individual) creativity are on a somewhat difficult footing and

will face increased difficulties concerning theoretical, measurement, and analysis issues” (p. 276).

Two emergent processes in multilevel studies can be applied in measuring team creativity: composition and compilation processes (Kozlowski and Klein 2000). Sacramento et al. (2015) identified three measurement approaches by applying these processes to conceiving a multilevel construct for assessing team-level creativity. As previously explained, team creativity, average of member creativity, and dispersion of member creativity reflect different conceptualization and operationalization of team-level creativity. First, the first two approaches reflect the composition process in which group-level properties emerge through a certain function of lower-level units (e.g., inter-member interaction, simple combination), whereas the last approach is driven by the compilation process involving configural properties of lower-level units (e.g., diversity, Kozlowski and Klein 2000). Configural unit properties underscore the array of different contributions across members to the whole team and do not assume the convergence of team members as isomorphic contributors to the team (Sacramento et al. 2015). Second, the referents of the average and dispersion of member creativity are team members, whereas the referent of team creativity is the team as a whole (Chan 1998).

These three measurement approaches involving team-level creativity have some similarities and differences but clearly reflect various aspects of creativity of a team. Separate examinations of the aggregated individual or collective team creativity can lead to atomistic fallacies or to overlooking specific micro-level mechanisms (Pirola-Merlo and Mann 2004). Individual and team processes representing disparate composition models should be investigated simultaneously to capture different facets of team-level creativity and to fully understand the role of ethical leadership toward creativity in and of teams. In conclusion, we propose that ethical leadership can shape these three distinct aspects of team-level creativity by increasing team creativity and average of member creativity, as well as by decreasing the dispersion of member creativity.

Ethical Leadership and Team-Level Creativity

To specify the roles of ethical leaders in shaping the creativity of the team and its individual members, we adopted Hackman's (1992) differentiation between ambient and discretionary group stimuli for members. Ambient group stimuli “are available to all group members and pervade the group setting,” in which all members are equally and collectively exposed (Choi et al. 2003, p. 358). Shared group environment or group values and norms are examples of ambient stimuli that shape the interpersonal and behavioral reactions of the entire team and generate team-level variations. Discretionary group stimuli “are transmitted or made

available to individuals differentially and selectively at the discretion of the other group members” (Hackman 1992, p. 20). This type of group stimuli exerts differential influences across different members within the same group, thereby varying reactions across individual members within the same team (Choi et al. 2003). We propose that ethical leadership predicts team creativity through the ambient stimuli route, while affecting the average and dispersion of member creativity through the discretionary stimuli route.

As ambient stimuli for a team, ethical leadership enhances the creativity of an entire team by setting role model and shaping the normative appropriateness that are shared across its members. Ethical leaders stick to discipline and “walk the talk” approach in their daily lives (Brown and Treviño 2006). Exposed to such role modeling behavior observable to all team members, they tend to identify with their leader and willingly accept his/her normative influences. In an organizational context, the interests of an organization are used as criteria for judging normative appropriateness (Brown et al. 2005). With such criteria in mind, ethical leaders communicate the importance of organizational interests and goals to their followers (Resick et al. 2013). These leaders expect their members to work for the betterment of the organization, which in turn nurtures a normative climate that promotes continuous improvement. Therefore, team members are driven to devise new approaches and modify current procedures to improve the task operations of the team.

Ethical leaders always ask, “What is the right thing?” to foster the ethical climate and practices, not just to maintain ethicality but also to benefit the organization. This practice encourages employees to report rather than hide work-related issues (Brown et al. 2005), thereby allowing them to learn from their mistakes and promptly addressing inefficiencies and potential problems at work. As a result, under the supervision of ethical leaders, team members become more willing to challenge the status quo without fear of being penalized. They then spontaneously develop novel ideas to improve their products and processes and contribute to the betterment of their organization. This study hypothesizes the following:

Hypothesis 1a Ethical leadership is positively related to team creativity.

Along with the ambient stimuli route for enhancing the creativity of an entire team, ethical leaders also develop differential relationship with their subordinates (Brown and Treviño 2006), thereby offering discretionary stimuli for each employee to perform creatively. Ethical leaders respect the nature of each of their followers, and they are considered people oriented (Kalshoven et al. 2011). These leaders delegate responsibilities and assign tasks to their followers daily in line with each follower’s unique interests, needs,

and abilities, thereby offering them discretion to make decisions and opportunities for personal development (Tu and Lu 2013). These leader behaviors make followers feel respected, trusted, and valued in the organization (Gong et al. 2009). Ethical leaders can effectively envision how the individual effort of each member can contribute to the betterment of the team and the entire organization by establishing a psychological bond with their followers. In turn, followers work in line with the treatments of their leaders and engage in creativity to improve their performance. Thus, ethical leaders enhance the individual creativity of their followers, resulting in a high average level of creativity of team members.

Hypothesis 1b Ethical leadership is positively related to the average of member creativity.

Apart from enhancing the individual creativity of their followers, ethical leaders reduce the dispersion of creativity in their teams. Even though the team-level dispersion of member creativity has been ignored in previous studies, encouraging all members to participate in the creative process, instead of relying on few creative members, could promote the generation of innovative solutions and enable proper development, refinement, and implementation of such solutions as a team (Farh et al. 2015; Sacramento et al. 2015). This collaborative approach to creativity also equips a team to address further adaptive challenges as a viable problem-solving unit regardless of changes in membership. Compared with other types of leadership, ethical leadership can be particularly effective in encouraging followers and diminishing the variation in the involvement and contribution of each member to the team-level creative processes.

Ethical leaders may bridge the gap in the creative efforts of their followers in several ways. First, based on their conviction to ethical management, ethical leaders avoid falling victim to consequentialism by valuing the employed procedures (Brown and Treviño 2006). By treating their members fairly regardless of the resulting performance levels (Li et al. 2014; Xu et al. 2016), these leaders do not discourage or isolate their low-creativity members from the team process. Second, based on their egalitarian values, ethical leaders may offer extra care and support for members with low creative performance to improve their creativity (Brown and Treviño 2006). These leaders also help members with low creativity to escape a negative spiral, thereby reducing the gap between members with high and low creativity. Third, the support of ethical leaders for low-performing members can operate as a role modeling behavior for other members. Team members are encouraged to perform altruistic and prosocial behaviors (Newman et al. 2014), such as sharing creative ideas with coworkers, providing constructive comments on others’ suggestions, and assisting others in developing new solutions (Sacramento et al. 2015). Taken

together, ethical leadership balances the creative processes across members and reduces the variation among them.

Hypothesis 1c Ethical leadership is negatively related to the dispersion of member creativity.

Ethical Leadership and Psychological Safety Climate

Given that creativity is commonly acknowledged as an activity full of risks and uncertainty (Madjar et al. 2011), employees can only demonstrate creativity when uncertainty is properly controlled. According to uncertainty reduction theory (Lind and van den Bos 2002), uncertainty is an aversive experience that diminishes predictability and manageability, thereby threatening one's sense of control (Tangirala and Alge 2006; van den Bos et al. 2008). In the workplace, psychological safety represents an environmental state that provides employees with sufficient certainty and predictability to be creative (Gong et al. 2012). In his engagement model, Kahn (1990) defined psychological safety as "the sense of being able to show and employ one's self without fear of negative consequences to self-image, status, or career" (p. 708). Kahn (1990) also highlighted that psychological safety reflects supportive management, role clarity, and freedom of self-expression in the workplace. Edmondson (1999) expanded this construct to team level and defined psychological safety climate as the shared belief among team members that they can safely engage in interpersonal risk taking. Taking these views together, psychological safety climate portrays an environment characterized by role clarity, interpersonal trust, and respect for individuality.

From the evolutionary perspective, people have an innate need to reduce uncertainty to understand and react to their environment. To this end, they are motivated to search, process, and utilize information from the environment to reduce uncertainty (Ashford and Cummings 1985). Leaders function as a significant source of information that can help employees reduce uncertainty at the workplace. Ethical leaders reduce uncertainty by articulating moral standards and clarifying behavioral norms and roles for their followers (Loi et al. 2012; Mayer et al. 2012). Kahn (1990) argued that role clarity diminishes uncertainty and facilitates psychological safety. Apart from establishing role clarity, ethical leaders enhance the interpersonal trust and respect for each follower, thereby promoting a psychological safety climate (Mo et al. 2017; Newman et al. 2014). For example, ethical leaders consider the personal situation of their employees, show genuine concern for them, and communicate with openness (Resick et al. 2013). Furthermore, ethical leaders respect the interests of their followers and provide them with instrumental and emotional support (Brown et al. 2005). These behaviors help team members feel they are being valued and respected, thereby creating a shared perception of

psychological safety that allows these members to express their true selves (Loi et al. 2012). Therefore, we propose the following:

Hypothesis 2 Ethical leadership is positively related to psychological safety climate.

Psychological Safety Climate as an Intermediate Process

Existing studies have shown that ethical leadership promotes individual or team creativity through several distinct mechanisms, such as intrinsic motivation (Tu and Lu 2013; Feng et al. 2016), voice behavior (Chen and Hou 2016), and knowledge sharing (Ma et al. 2013). These studies have underscored the motivational and behavioral intention that may explain the effect of ethical leadership on creativity. Extending prior research, the present study focuses on team-level context that may shape the creative processes of individual members and the team. Considering the uncertainty and risks associated with creativity (Madjar et al. 2011), team climate that reduces uncertainty for members seems to be a plausible intervening mechanism. Thus, we propose that ethical leadership reduces uncertainty in the teamwork context by providing a psychologically safe climate for members, thereby encouraging them to perform creatively as a team and as individuals.

Psychological safety climate not only contributes to team creativity and average of member creativity but also balances creativity levels among members. In a high psychological safety climate, team members are liberated from interpersonal risks and potential harms to their personal image that may result from free expression of creative and often half-baked ideas (Kahn 1990; Liang et al. 2012). Members of interpersonally nonthreatening teams willingly propose novel ideas because they do not fear any criticism for challenging the status quo or possible failures (Detert and Burris 2007; Leana and van Buren 1999). By suppressing distracting interpersonal concerns, psychological safety allows team members to focus on their work and to discover opportunities for improvement (Edmondson 1999). Therefore, psychological safety climate promotes the creativity of each team member and the team as a whole, thereby mediating the effects of ethical leadership on team creativity and average of individual creativity.

As members with shared perceptions toward psychological safety show genuine concern and respect for their coworkers and anticipate that they will not be exploited in the workplace, they tend to support one another in their creative efforts (Liang et al. 2012). When experimenting with new ideas, psychological safety urges team members to help instead of criticize one another by providing feedback to further develop and refine ideas, which can be particularly

helpful for those with low creativity (Mueller and Kamdar 2011). Such climate may diminish the gap between members with high and low creativity by encouraging mutually supportive interactions among members. In summary, we propose the following mediation hypothesis.

Hypothesis 3 Psychological safety climate mediates the relationships of ethical leadership with team creativity (H3a), average of member creativity (H3b), and dispersion of member creativity (H3c).

Supervisor Support for Creativity as a Moderating Contingency

To achieve a certain degree of predictability in the highly uncertain processes of creativity, individuals seek the “the direct, explicit information about authority’s trustworthiness” (Lind and van den Bos 2002, p. 10). Ethical leadership offers such trustworthiness by clearly establishing roles, normative expectations, and interpersonal trust (Brown et al. 2005), all of which promote psychological safety climate for followers to engage in creativity. However, ethical leadership is still deficient in direct cues or explicit information specified for creativity. A direct and explicit support for creativity from the authority can sharpen or clearly channel the effects of ethical leadership on psychological safety and team-level creativity. Therefore, we identify supervisor support targeted at creativity as a critical contingency factor for creativity.

Support for creativity essentially reflects “expectation, approval, and practical support of attempts to introduce new and improved ways of doing things in the work environment” (West 1990, p. 315). Supervisor support for creativity involves the instrumental and socioemotional support by leaders to motivate employee creativity (Amabile et al. 2004; George and Zhou 2007). The positive effect of ethical leadership on psychological safety climate is strengthened by supervisor support for creativity in two ways.

First, leaders who support creativity signal that creativity is valued, encouraged, and supported by the organization (Baer and Oldham 2006), thereby attributing normative appropriateness to creativity. Employees may turn to ethical leaders in their search for resources and encouragement to reduce the uncertainty related to their creative efforts. Thus, the relationship between ethical leadership and psychological safety climate is stronger when supervisor support for creativity is high. By contrast, teams that lack such support fail to clarify that they value creativity, thereby resulting in ambiguity on the normative appropriateness of creativity. In such an environment, ethical leaders fail to reduce the uncertainties and interpersonal risks experienced by team members when they engage in creative efforts. Thus, these members perceive low psychological safety climate.

Second, ethical leaders provide general moral guidance for their employees, whereas supervisor support for creativity has a specific target and purpose directed to creativity. When supervisor support for creativity is high, employees have specific resources for creativity to make them feel psychologically safe, which will supplement or channel the relatively general influence of ethical leadership to a specific direction. By contrast, if supervisor support for creativity is low, even when employees receive general normative support from ethical leaders, then these employees may experience ambiguity because of the lack of direct and specific social cues to translate the general normative support into psychological safety. Therefore, we propose the following moderation hypothesis:

Hypothesis 4 Supervisor support for creativity positively moderates the relationship between ethical leadership and psychological safety climate, such that this relationship is stronger when the supervisor support for creativity is high than when it is low.

Hypothesis 3 posits that psychological safety climate mediates the effects of ethical leadership on the three measures of team-level creativity. Given the moderating role of supervisor support proposed in Hypothesis 4, the mediated relationship can be extended to a moderated mediation. Thus, the effect of ethical leadership on team-level creativity will be mediated by psychological safety, and the resulting indirect effect will be moderated by supervisor support for creativity.

Hypothesis 5 Supervisor support for creativity positively moderates the indirect effects of ethical leadership on team creativity (H5a), average of member creativity (H5b), and dispersion of member creativity (H5c) via psychological safety climate.

Method

Sample and Data Collection Procedure

We contacted the HR managers of 50 organizations in Beijing, Shanghai, Wuhan, and 12 other cities in China. Given the current outcomes of team-level creativity, we asked these HR managers to identify one or two knowledge-based work teams that are expected to propose novel ideas and develop new work procedures or products (e.g., marketing, research and development, and process engineering). With the help of these managers, we distributed the questionnaires to the members and leaders of 58 teams. Participants were instructed to return completed questionnaires in the sealable envelopes we provided.

Among the 350 questionnaires distributed to 58 teams, 248 were returned from 50 teams in 45 organizations. After matching the member and leader questionnaires, we retained teams with four members or more to meet the threshold of sample split and data aggregation. The final analysis sample consisted of 230 members and 44 leaders from 44 teams with an average of 5.23 members per team. We received final response rates of 65.7 and 75.9% for members and leaders, respectively. The member sample comprised 50% females with a mean age of 31.7 years ($SD = 8.29$), 15.2 years ($SD = 2.47$) of formal education, and 3.3 years ($SD = 4.34$) of organizational tenure. The leader sample comprised 20% females with a mean age of 41.3 years ($SD = 10.22$). The 44 teams were drawn from various industries such as finance, education, construction, machinery, and medicine.

Measure

The instruments used in the present study were originally developed in English. Thus, we employed the translation and back-translation procedure to prepare the scales in Chinese under the double-blind principle (Brislin 1980). Two proficient bilingual researchers with expertise in organizational behavior and human resource management conducted the translation. All instruments used a five-point Likert scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Members evaluated ethical leadership, psychological safety, supervisor support for creativity, and team creativity, whereas leaders assessed the creativity of each member to calculate the average and dispersion of member creativity.

Ethical Leadership

We used the ten-item scale ($\alpha = .929$) developed by Brown et al. (2005) to assess ethical leadership. A sample item states, “My supervisor has the best interest of employees in mind.” The scores of ethical leadership as reported by individual members were aggregated to the team level using a mean for our team-level analysis. Thus, we computed the aggregation statistics. The ethical leadership scale obtained ICC1, ICC2, and r_{wg} values of .343, .732, and .941, respectively, thereby supporting the team-level aggregation of this scale (Bliese, Halverson, and Schriesheim 2002).

Psychological Safety Climate

We used five items ($\alpha = .730$) adopted from Liang et al. (2012) to assess psychological safety climate. A sample item was “In my work unit, I can express my true feelings regarding my job.” This scale indicated ICC1, ICC2, and r_{wg} values of .322, .713, and .809, respectively, thereby justifying its team-level aggregation.

Supervisor Support for Creativity

We employed three items ($\alpha = .894$) adapted from Tsui et al. (2006) to evaluate supervisor support for creativity. An original scale was designed to evaluate organizational innovation culture, which reflects the extent to which an organization supports and encourages creativity (Tsui et al. 2006). Following a common scale adaptation procedure (Eisenberger et al. 2002; Rhoades and Eisenberger 2002), we modified the items by changing the referent to supervisor in order to evaluate the supervisor’s support and encouragement of creativity in the team. A sample item states, “My supervisor encourages innovation.” This scale showed ICC1, ICC2, and r_{wg} values of .272, .661, and .812, respectively, thereby justifying its team-level aggregation.

Team Creativity

We used three items ($\alpha = .743$) to measure team creativity. These items were developed by modifying Oldham and Cummings’ (1996) original scale to the team level and the specific Chinese industrial context. Members rated items, such as “Our team creates new ideas that are original and useful.” The ICC1, ICC2, and r_{wg} values of this scale were .456, .814, and .859, respectively, thereby supporting the team-level aggregation.

Average and Dispersion of Member Creativity

The leaders of the participating teams rated the creativity of each member using four items ($\alpha = .897$) adopted from Farmer et al. (2003). One of the items states, “(This employee) seeks new ideas and ways to solve problems.” The ICC1, ICC2, and r_{wg} of the member creativity scale were .556, .867, and .819, respectively. Using the operationalization of group-level aggregation of the LMX mean (Boies and Howell 2006) and the LMX differentiation across members (Erdogan and Bauer 2010; Liao et al. 2010), we computed the team-level mean of creativity to operationalize the average of member creativity and the team-level variance of creativity to yield the dispersion of member creativity.

Control Variable

Given that team size is a meaningful factor that underlies team processes and outcomes (Anderson et al. 2014; Shin 2014), we included team size in our analysis as a control variable. In addition, we controlled for team function considering that team function or task has implications on creativity of a team (Gong et al. 2012; Shin 2014). We dummy coded financial task as 1 and others as 0 in the current analysis because financial task was the most common in the current sample (i.e., 36%).

Table 1 Means, standard deviations, and correlations

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. Team size	5.227	.985	1							
2. Financial task	.364	.487	-.273	1						
3. Ethical leadership	3.734	.605	-.047	.144	1					
4. Psychological safety climate	3.502	.485	.059	.013	.619***	1				
5. Supervisor support for creativity	3.559	.705	.066	.215	.482**	.494**	1			
6. Team creativity	3.380	.639	.035	-.106	.343*	.499**	.607***	1		
7. Average of member creativity	3.610	.630	-.078	.107	.449**	.487**	.432**	.439**	1	
8. Dispersion of member creativity	.425	.348	.342*	-.158	-.330*	-.353*	-.105	-.118	-.510***	1

n = 44 teams. **p* < .05; ***p* < .01; ****p* < .001

Analytic Strategy

Although data were collected from multiple sources, common method variance (CMV) remains a concern because all predictors and team creativity were reported by team members. We employed the split-group technique to address CMV by randomly assigning members of each team to two subgroups (Du and Choi 2010). We then used the ethical leadership and psychological safety climate scores reported by Subgroup A and the supervisor support for creativity and team creativity scores reported by Subgroup B. Each subgroup included a minimum of two members from the focal team (Takeuchi et al. 2009; Yoon and Suh 2003; Yoon et al. 2004). By applying the split-group design, the core predictors, including ethical leadership and psychological safety climate, and the outcome of team creativity were reported by different subsets of members from the same team (Subgroups A and B) to reduce the confounding effects of CMV. The current analysis results using this technique as reported below were identical to the results based on the entire dataset, although the latter provided more significant findings because of the inflated correlations among the variables drawn from a single-source data. The average and dispersion of member creativity were still aggregated for the entire team membership because they were reported by leaders rather than by members.

We performed bootstrapping to estimate the conditional indirect effects of ethical leadership on the team-level creativity measures to test the moderated mediation hypotheses. Bootstrapping is particularly advantageous in the present analysis because indirect effects typically do not follow a normal distribution and the current sample size is relatively small (Shrout and Bolger 2002). Following Edwards and Lambert (2007) and Hayes (2013), we used PROCESS macro to estimate the conditional indirect effects at different levels of the moderator (i.e., supervisor support for creativity). All independent variables were grand-mean centered in the statistical analyses.

Results

Table 1 reports the means, standard deviations, and inter-scale correlations of variables at team level. Before testing our hypotheses, we examined the empirical distinctiveness of the variables in our data by performing confirmatory factor analysis (CFA). We conducted CFA at the individual level before sample-splitting and aggregating individual-level data because the constructs were measured at the individual level and then aggregated to the team level using split-group design. The CFA results in Table 2 indicate that the hypothesized four-factor model neatly fits the data ($\chi^2 = 400.256$, $df = 183$, CFI = .929, TLI = .907, and RMSEA = .072). The four-factor model outperformed any of the alternative factor structures (Chi-square difference tests, all $p < .001$), thereby confirming the divergent validity of the current study variables.¹

¹ If we conduct CFA at the team level without any item parcels, the parameters that need to be estimated (48) are more than the sample size ($n = 44$), which clearly violates the typically expected desirable level of the sample-to-parameter ratio of 5 to 1 as suggested by Bentler and Chou (1987). Therefore, given that the variables in the present study are measured at the individual level and then aggregated at the team level, we conducted a multilevel CFA instead of a team-level CFA, with 230 employees nested in 44 teams. To reduce the parameters for estimation in the small sample CFA, we employed item parcel technique (Bagozzi and Edwards 1998; Mo et al. 2017). Considering that ethical leadership is unidimensional and contains ten items, we constructed three parcels using the single-factor method as recommended by Landis et al. (2000). Accordingly, the first parcel combined the items of the first, tenth, and second highest factor loadings. The second parcel combined the items of the third, ninth, and fourth highest factor loadings. The third parcel combined the remaining four items. The results of multilevel CFA revealed an acceptable fit for the data ($\chi^2 = 257.378$, $df = 142$, CFI = .931, TLI = .912, and RMSEA = .059).

Table 2 Results of confirmatory factor analyses

Variable	χ^2	df	$\Delta\chi^2/\Delta df$	CFI	TLI	RMSEA
Four-factor model	400.256	183		.919	.907	.072
Three-factor model	555.119	186	51.621	.863	.845	.093
Two-factor model	849.217	188	147.049	.754	.726	.124
One-factor model	1044.651	191	65.145	.683	.651	.139

n = 230 employees

Four-factor model: ethical leadership, psychological safety, supervisor support for creativity, and team creativity

Three-factor model: combining ethical leadership and psychological safety

Two-factor model: combining ethical leadership, psychological safety, and supervisor support for creativity

One-factor model: combining all four constructs into one factor

Table 3 Results of mediating hypotheses

Variables	Psychological safety climate	Team creativity		Average of member creativity		Dispersion of member creativity	
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	1.448**	1.978*	1.115	2.037*	1.369 ⁺	.508	.816
Team size	.036	.006	-.015	-.031	-.047	.113*	.121*
Financial task	-.058	-.205	-.170	.040	.066	-.019	-.031
Ethical leadership	.506***	.387*	.085	.461**	.227	-.179*	-.071
Psychological safety climate			.597**		.462*		-.213 ⁺
<i>R</i> ²	.394**	.142 ⁺	.266**	.206**	.282**	.216**	.269**

Original sample *n* = 44 teams; Bootstrap *n* = 5000. ⁺*p* < .10; **p* < .05; ***p* < .01; ****p* < .001

Main Effect of Ethical Leadership

Hypotheses 1a, 1b, and 1c posit that ethical leadership is positively related to team creativity and average of member creativity but is negatively related to dispersion of member creativity. We tested these main effect hypotheses using regression equations. The Model 2 results in Table 3 support Hypothesis 1a, that is, ethical leadership is positively and significantly related to team creativity ($\beta = .387, p < .05$). Similarly, Model 4 confirms Hypothesis 1b by showing the significant effect of ethical leadership on average of member creativity ($\beta = .461, p < .01$). Model 6 shows that ethical leadership negatively predicts the dispersion of member creativity ($\beta = -.179, p < .05$), thereby supporting Hypothesis 1c.

Mediation by Psychological Safety Climate

Hypothesis 2 proposes a positive relationship between ethical leadership and psychological safety climate, whereas Hypothesis 3 posits that psychological safety climate mediates the relationship between ethical leadership and team-level creativity. To test these mediation hypotheses, we estimated the *a* (effect of ethical leadership on psychological safety climate) and *b* paths (effect of psychological safety climate on team-level creativity in the

presence of ethical leadership) as shown in Table 3. The Model 1 results in Table 3 show that ethical leadership is positively related to psychological safety climate ($\beta = .506, p < .001$), thereby confirming Hypothesis 2. Models 3, 5, and 7 report that psychological safety climate is positively related to team creativity and average of member creativity ($\beta = .597, p < .01$ and $\beta = .462, p < .05$, respectively) but is negatively related to the dispersion of member creativity ($\beta = -.213, p < .10$) in the presence of ethical leadership, which became statistically insignificant across all three creativity measures. These patterns are consistent with Hypothesis 3a, 3b, and 3c.

We estimated the indirect, direct, and total effects as well as their 95% confidence intervals (CI) using the bootstrapping procedure based on PROCESS macro (Hayes 2013) to test the three mediation hypotheses. Table 4 shows that the significance of the influence of ethical leadership on the three measures of team-level creativity can be attributed to its indirect effects through psychological safety climate rather than to its direct effects. Specifically, the indirect effects of ethical leadership through psychological safety climate are significant for team creativity (estimate = .302, 95% CI [.052, .755]), average of member creativity (estimate = .233, 95% CI [.052, .541]), and dispersion of member creativity (estimate = -.108, 95% CI [-.235, -.036]). By contrast, the direct effects are statistically insignificant (i.e.,

Table 4 Indirect effect of mediation models

Model	Indirect effect ([95% LLCI, 95% ULCI])	Direct effect ([95% LLCI, 95% ULCI])	Total effect ([95% LLCI, 95% ULCI])
Ethical leadership (EL)–psychological safety climate–team creativity	.302 ([.052, .755])	.085 ([– .295, .465])	.387 ([.071, .703])
EL–psychological safety climate–average of member creativity	.233 ([.052, .541])	.227 ([– .143, .597])	.461 ([.161, .760])
EL–psychological safety climate–dispersion of member creativity	– .108 ([– .235, – .036])	– .071 ([– .278, .135])	– .179 ([– .344, – .014])

Original sample $n = 44$ teams; Bootstrap $n = 5000$

Table 5 Results of moderating hypotheses

Variables	Psychological safety climate		Team creativity		Average of member creativity		Dispersion of member creativity	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Constant	3.542***	3.473***	3.511***	3.470***	3.622***	3.640***	.434***	.424***
Team size	.017	.030	– .051	– .043	– .057 ⁺	– .060 ⁺	.111	.113
Financial task	– .108	– .089	– .360*	– .349*	– .032	– .037	– .024	– .022
Ethical leadership (EL)	.405**	.356**	.076	.046	.319 ⁺	.332 ⁺	– .190*	– .197*
Supervisor support for creativity (SSC)	.186 ⁺	.153 ⁺	.577***	.557***	.264 ⁺	.273 ⁺	.020	.015
EL × SSC		.307**		.185		– .081		.044
R ²	.448***	.546***	.438***	.459***	.270*	.274*	.217*	.221 ⁺

Original sample $n = 44$ teams; Bootstrap $n = 5000$, ⁺ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

95% CIs including zero) across all three cases. Therefore, Hypotheses 3a, 3b, and 3c are supported.

Moderation by Supervisor Support for Creativity

Hypothesis 4 predicts that supervisor support for creativity moderates the relationship between ethical leadership and psychological safety climate. The regression results of Model 2 in Table 5 indicate that the interaction between ethical leadership and supervisor support for creativity is a significant, positive predictor of psychological safety climate ($\beta = .307, p < .01$). We drew an interaction plot following the procedures recommended by Dawson (2014). As shown in Fig. 2, simple slope test results show that the effect of ethical leadership on psychological safety climate was more pronounced and positive with high ($b = .572, p < .001$) rather than low ($b = .140, ns.$) supervisor support for creativity, thereby supporting Hypothesis 4. Furthermore, we examined the possibility that supervisor support for creativity moderates the relationship between ethical leadership and team-level creativity. The results of Models 4, 6, and 8 in Table 5 indicate that none of these interactions is statically significant. Moreover, we also conducted additional analysis to test the possibility that supervisor support for creativity operates as the second-stage moderator for the relationship between psychological safety climate and the three forms of

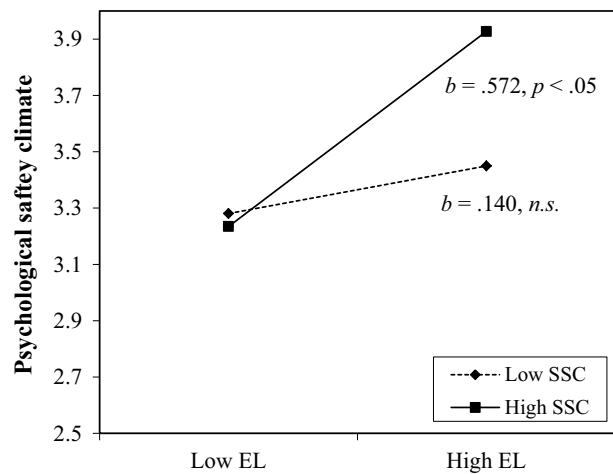


Fig. 2 Interaction plot of ethical leadership (EL) and supervisor support for creativity (SSC) predicting psychological safety climate

team-level creativity. None of these second-stage moderation effects was supported, which further confirms the validity of the role of supervisor support for creativity as the first-stage moderator in this study.

Hypotheses 5a, 5b, and 5c posit that supervisor support for creativity moderates the indirect effects of ethical leadership on team-level creativity through psychological safety

Table 6 Indirect effects of ethical leadership–psychological safety climate–creative outcomes

Independent variable	Mediator	Moderator	Dependent variable	Level of moderator	β	SE	LLCI	ULCI
Ethical leadership	Psychological safety climate	Supervisor support for creativity	Team creativity	Low	.083	.127	-.103	.411
				Medium	.212	.130	.040	.582
				High	.341	.167	.082	.770
			Average of member creativity	Low	.183	.101	.018	.424
				Medium	.064	.093	-.076	.307
				High	.164	.095	.029	.422
			Dispersion of member creativity	Low	.264	.129	.063	.578
				Medium	.142	.084	.011	.351
				High	-.030	.042	-.146	.027
				Index	-.076	.043	-.205	-.017
				High	-.122	.058	-.292	-.039
				Index	-.065	.037	-.169	-.008

Original sample $n = 44$ teams; Bootstrap $n = 5000$

climate. We tested these moderated mediation hypotheses by estimating the conditional indirect effects of ethical leadership on team-level creativity with varying levels of supervisor support for creativity using the PROCESS macro. Table 6 presents the results. For all three measures of team-level creativity, the indirect effects of ethical leadership received larger absolute values as the level of supervisor support for creativity increased from low to medium and then to high. Across all three team-level creativity measures, the 95% CIs of the indirect effects of ethical leadership through psychological safety climate included zero when the moderator (supervisor support for creativity) level was low, but excluded zero and became statically significant when the moderator level was either medium or high. Moreover, the PROCESS macro (version 2.16) provides an overall index of the moderated mediation to test the differences of indirect effects at high and low levels of the moderator. Table 6 reports that all three indexes for the current moderated mediation effects are statistically significant and exclude zero. These patterns offer empirical support for Hypotheses 5a, 5b, and 5c.

Discussion

This study explored *how* and *when* ethical leadership facilitates team-level creativity. We theorized and empirically validated that ethical leadership enhanced team creativity, as well as the average of member creativity, but decreased the dispersion of member creativity. Drawing on uncertainty reduction theory, we confirmed that psychological safety climate mediates the relationship between ethical leadership and team-level creativity. Moreover, supervisor support for

creativity strengthens the effect of ethical leadership on psychological safety climate and the indirect effects of ethical leadership on team-level creativity through psychological safety climate. The following sections highlight the theoretical and practical implications of our findings, discuss the limitations of our work, and propose directions for future research.

Theoretical Implications

The present empirical analysis mostly supported our theoretical framework and provided meaningful theoretical implications. First, the present study demonstrated that ethical leadership has multifaceted effects on various aspects of team-level creativity beyond its individual-level effect on the innovative behavior of a follower (Chen and Hou 2016). Departing from the previous focus on the overall level of team creativity (Mo et al. 2017) or the average of member creativity (Tu and Lu 2013), this study highlighted the dispersion or variation of creativity across different team members, which is a crucial yet neglected phenomenon. Based on the prevailing belief regarding the benefits of creativity to organizational survival and growth (Farh et al. 2010), previous studies have largely focused on the amount of creative ideas proposed by employees and work units. In this regard, the dispersion of creativity across employees is an important yet neglected question that offers meaningful insights above and beyond the absolute amount or level of creativity (Montag et al. 2012). Various conceptualizations of team-level creativity allow us to identify the multifaceted influence of ethical leadership on different forms of team-level creativity. This study calls for future studies to examine the distribution as well as the quantity of creativity across employees.

The present analysis showed an interesting contrast between ethical leadership and supervisor support for creativity in stimulating different aspects of team-level creativity. The results of Models 3, 5, and 7 in Table 5 show that when both aspects of leader-related predictors were considered simultaneously, ethical leadership was positively related to the average of member creativity ($\beta = .319, p < .10$) and negatively related to the dispersion of member creativity ($\beta = -.190, p < .05$). Ethical leadership, however, was not significantly related to team creativity ($\beta = .076, ns.$). By contrast, supervisor support for creativity was positively related to team creativity ($\beta = .577, p < .001$) and average of member creativity ($\beta = .264, p < .10$), but was unrelated to the dispersion of member creativity ($\beta = .020, ns.$). These contrasting patterns suggest the distinct functions of ethical leadership and supervisor support for creativity in shaping different aspects of team-level creativity. Apparently, supervisor support for creativity only affects the level or amount of team and individual creativity, whereas ethical leadership balances the creative contributions of all members and fully exploits their creative potential. This theoretical speculation must be further investigated by comparing the function of ethical leadership with that of other leadership types in relation to various forms of team-level creativity.

Second, this study employed uncertainty reduction theory as an alternative theoretical approach to explain the effect of ethical leadership on organizationally meaningful outcomes. Ethical leaders can significantly reduce uncertainty and promote a psychological safety climate among their team members. Ethical leadership, with normative appropriateness as its core tenet, may provide normative guidance for reducing uncertainty in the workplace (Loi et al. 2012). However, this uncertainty reduction function of ethical leadership has long been overlooked in the literature. With a focus on this function, we linked ethical leadership to team-level creativity and identified psychological safety climate as a meaningful intervening mechanism underlying this process. Through the application of uncertainty reduction theory in explaining the link between ethical leadership and creativity, we respond to calls for elaborating on a distinct theoretical rationale and perspective specific to ethical leadership and identify new avenues for future research (Resick et al. 2013).

Finally, this study demonstrated the role of supervisor support for creativity as a boundary condition that strengthened the effect of ethical leadership on team creative processes. Supervisor support for creativity, which clearly verifies that creativity is normatively appropriate, encourages employees to turn to ethical leaders to address uncertainty and foster a shared belief of psychological safety for their creative endeavors. As an explicit form of support targeted at creative problem solving, supervisor support for creativity provides specific and explicit forms of instrumental and socioemotional resources for creativity (West 1990), thereby

complementing the general and implicit support of ethical leaders. The current analysis confirmed that supervisor support for creativity strengthens the effects of ethical leadership in promoting psychological safety climate and consequently team-level creativity. These patterns are consistent with the findings of Zhang and Tu (2016), who reported that family-supportive supervisor behaviors, which provide domain-specific resources targeted at the family domain, strengthen the relationship between ethical leadership and the work–family enrichment of employees. In summary, ethical leadership can engender various employee and work unit outcomes depending on specific values held by the leader in relation to creativity, family, reliability, safety, or customer satisfaction, thereby reinforcing the connections between leaders' or organizational values and workplace outcomes. This theoretical possibility must be further expanded and empirically investigated to enrich the present understanding on the role of ethical leadership.

Practical Implications

Our findings also offer important practical implications. First, as ethical leadership significantly predicts all three forms of team-level creativity, leaders must demonstrate ethical leadership to enhance the creativity of their teams and members, as well as to decrease the dispersion of creativity across their followers. Organizations can provide special training programs to help managers behave in accordance with the interests of the organization and their followers, abide by moral rules, demonstrate people-orientated behaviors, and make fair and balanced decisions (Brown et al. 2005).

Second, leaders must focus on the nature and intensity of interpersonal risks and uncertainty in the workplace as perceived by employees given that psychological safety climate accounts for the influence of ethical leadership on team-level creativity. To reduce the concerns of employees regarding interpersonal risks, leaders must also consider potential interpersonal conflicts among their members and impose sanctions for opportunistic behaviors of their followers.

Third, supervisor support for creativity facilitates team and member creativity and transforms ethical leadership into a psychological safety climate. Leaders must articulate the organizational expectations for creativity, discuss creative ideas with their followers, encourage mutual support and collaboration in problem solving, and provide rewards and tangible resources for creative efforts (Amabile et al. 2004). These interventions will compel team members to take interpersonal risks and engage in creativity.

Fourth, leaders must focus not only on the quality and quantity of creativity (i.e., team creativity and average of member creativity) but also on the gap or dispersion of creativity across employees. Leaders must decrease the

dispersion of member creativity by encouraging and inviting all members to participate in creative processes in order to maximize creative performance and fully utilize intrateam resources. However, managers should also be aware that blindly pursuing reduced dispersion of member creativity may not always facilitate team-level creativity. Such efforts may result in low team creativity wherein all members exhibit poor creativity, thereby showing a collective degeneration of team creative process. Reducing the dispersion of member creativity is meaningful when accompanied with improved team creativity and high average of member creativity. Otherwise, egalitarianism that tolerates or even encourages collectively low creative performance may occur.

Limitations and Future Directions

The findings of this work must be interpreted with its limitations. First, although we employed the split-group design to address CMV-related concerns, the causal direction among the variables cannot be ascertained because member and leader surveys were administered simultaneously. Given our cross-sectional research design, we cannot preclude the possibility of reverse or reciprocal relationships. For example, psychological safety climate can engender follower perceptions of ethical leadership and high team creativity can be attributed to psychological safety, thereby reversing causal direction. Future studies must employ a longitudinal research design to clarify causal direction and explore potentially reciprocal relationships. Proper time lag or temporal frame for capturing the causal influences of ethical leadership on psychological safety climate and team-level creativity must also be identified.

Second, our team-level sample size was relatively small, which raises concern about the robustness of analysis results. Moreover, considering the small sample, we employed the item-parceling approach in our CFA, which could introduce a certain degree of confounding in the results (Marsh et al. 2013). To address these potential analytic challenges attributed to a small sample, further studies should utilize a large sample at the team level so that robust and comprehensive analytic procedures can be applied to test hypotheses.

Third, guided by uncertainty reduction theory, this study defined psychological safety climate as a key intervening mechanism. However, other theoretical mechanisms may explain the team-, cross-, and individual-level effects of ethical leadership on team and individual creativity. Further conceptual and empirical efforts must focus on the relationship between ethical leadership and various forms of creativity as well as identify other plausible underlying mechanisms that ethical leadership can promote, such as team commitment, cognitive persistence, and unconstrained knowledge sharing.

Despite these limitations, our analysis reveals the critical dynamics initiated by ethical leadership to affect different aspects of team-level creativity. Uncertainty reduction theory posits that people face various uncertainties in their work life and are driven to search for and employ external cues to justify and guide their behavior (Lind and van den Bos 2002). Ethical leaders are legitimate and ideal figures who reduce workplace uncertainty that impedes organizational creativity. By establishing an ethical role model and practicing ethical management (Brown et al. 2005; Brown and Treviño 2006), ethical leaders may establish a psychologically safe environment that allows their followers to express their creative ideas freely, thereby improving creative performance at individual and team levels. Given the distinct roles of ethical leadership and supervisor support for creativity, leadership and creativity literature can be meaningfully expanded and enriched by exploring the possibility for different forms of leadership that yield different forms of creativity at various levels of analysis.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

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

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