



Does Entrepreneurial Leadership Foster Creativity Among Employees and Teams? The Mediating Role of Creative Efficacy Beliefs

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Abstract

The purpose of this study is to gain a better understanding of how entrepreneurial leadership relates to workplace creativity in organizations from the compatibility perspective. Drawing on social cognitive theory, we propose that individual creative self-efficacy and team creative efficacy beliefs mediate the relationships between entrepreneurial leadership and individual and team creativity. This study examines the relationship between entrepreneurial leadership and creativity through creative efficacy. Survey data were collected from multiple sources, including 43 leaders and 237 employees in eight Chinese companies. Cross-level relationships are tested by means of a hierarchical linear modeling analysis (HLM). The results reveal that entrepreneurial leadership is positively related to employee and team creativity, and these relationships are found to be mediated by both employee creative self-efficacy and team creative efficacy. Furthermore, team creative efficacy is found to exert a cross-level mediating influence on the entrepreneurial leadership-employee creativity relationship. This study suggests that employees and teams led by entrepreneurial leaders are likely to produce creative outcomes. The findings further confirm the important role of creative efficacy beliefs in explaining how entrepreneurial leadership relates to employee and team creativity, as such beliefs serve as a within-level and cross-level mediating mechanism in these relationships. Our study is among the first to empirically investigate the concept of entrepreneurial leadership in a broader organizational context. We examine how entrepreneurial leadership contributes to workplace creativity. Our study shows that creative efficacy beliefs exert both within-level and cross-level mediating influences in the entrepreneurial leadership-creativity relation.

Keywords Entrepreneurial leadership · Employee creativity · Team creativity · Creative self-efficacy · Team creative efficacy · Multilevel research

Introduction

Contemporary, innovative organizations are seeking ways to stimulate employee and team creativity (Anderson et al. 2014; Chen et al. 2013; Shalley et al. 2004). Recent studies suggest that through their leadership style, managers can either encourage or inhibit employee and team creativity (e.g. Mainemelis et al. 2015; Mumford et al. 2002). It is therefore

important to understand the influences of different leadership styles on creativity (e.g. Shalley and Gilson 2004). The majority of prior research has focused on examining how traditional leadership styles (e.g. transformational leadership) relate to creativity (e.g. Gong et al. 2009). However, how managers lead in current organizations is changing (e.g. Uhl-Bien et al. 2007), resulting in the emergence of more entrepreneurial leadership styles exerting an influence on creativity. In this paper, we add to the limited understanding of the entrepreneurial leadership-creativity relationship (Renko et al. 2015; Shin 2015) by studying how entrepreneurial leadership influences employee and team creativity in organizations.

An entrepreneurial leadership style integrating leadership and entrepreneurship (Cogliser and Brigham 2004; Vecchio 2003) received considerable attention in the management literature (e.g. Hmieleski and Ensley 2007; Ireland et al. 2003; Kuratko 2007; Leitch and Volery 2017; Renko et al. 2015; Ruvio et al. 2010). A definition of entrepreneurial leadership

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that emerged, and is adopted in this study, is as follows: “influencing and directing the performance of group members toward the achievement of organizational goals that involve recognizing and exploiting entrepreneurial opportunities” (Renko et al. 2015, p. 55). In line with this, organizations that aspire for innovation and creativity need entrepreneurial leaders who support their co-workers in creatively recognizing and exploiting new opportunities for the benefit of the organization (Gaglio 2004; Huang et al. 2014; Mueller 2007; Wales et al. 2011). Based on this, it can also be argued that entrepreneurial leadership mobilizes co-workers to have confidence in their creative potential (Frese and Gielnik 2014; Zhao et al. 2005) and display creative performance (Chen 2007; Hitt et al. 2011).

While several studies have touched upon the entrepreneurial leadership-creativity link (e.g. Chen 2007; Hitt et al. 2011; Newman et al. 2017), these studies seem to target macro-level creativity (e.g. Frese and Gielnik 2014; Renko 2017) and have not sufficiently demonstrated the distinctiveness and effectiveness of entrepreneurial leadership in relation to follower creativity (e.g. Newman et al. 2017). To further examine the relationship between entrepreneurial leadership and workplace creativity in organizations, we follow the compatibility principle (Ajzen 2005). That is, we can propose that when the attitudes and behaviours of subordinates are directed toward the same targets as their entrepreneurial leaders who are natural creators (Antonakis and Autio 2006), employees’ sense of compatibility with their supervisors (i.e. initiating changes, taking risks and being open to new ventures) may lead to an increased willingness to contribute creatively to opportunity-driven goals and outcomes (Gupta et al. 2004; Koseoglu et al. 2017; Uhl-Bien et al. 2014; Van Knippenberg and Hogg 2003).

Renko et al. (2015) note that entrepreneurial leaders “enhance followers’ beliefs in their own entrepreneurial skills and abilities and ignite passion for innovation and creativity” (p. 58). To explore these beliefs, we draw on Bandura’s (1986) social cognitive theory (SCT), which suggests that creative efficacy beliefs enable the development of workplace to flourish creative ideas (Tierney and Farmer 2002, 2011). We argue that there are parallel motivational processes at both the individual and the team levels (Chen and Kanfer 2006). That is, entrepreneurial leadership fosters employees’ creative self-efficacy to perform creatively (Chen 2007; Zhao et al. 2005), as well as team creative efficacy toward team creativity (Ford 1996; Shin and Eom 2014). Furthermore, since team creative efficacy directs employees towards creative activities (e.g. Shin and Zhou 2007), we propose that team creative efficacy exerts a cross-level mediating influence on the relation between entrepreneurial leadership and employee creativity. Figure 1 depicts our hypothesized model.

Answering the research question of *why and how entrepreneurial leadership contributes to employee and team*

creativity, our paper makes several contributions. First, by broadening our understanding of the relationship between entrepreneurial leadership and creativity, we highlight the significance of entrepreneurial leadership as a distinctive leadership style in creativity research from a compatibility perspective. In doing so, we empirically extend the conceptualization and operationalization of Renko et al. (2015) to explore the influence of entrepreneurial leadership on both employee and team creativity in organizations. Second, by examining how entrepreneurial leadership relates to creative efficacy beliefs towards workplace creativity, we respond to calls to identify level-specific mechanisms in the leadership-creativity relation by identifying a similar pathway at multiple levels. Moreover, we extend the cross-level influences to enrich the growing research on the generalization of the effects of team variables regarding employee creativity (Hülshager et al. 2009; Li et al. 2014) by showing that both self- and team efficacies support employee creativity.

Theory and Hypotheses

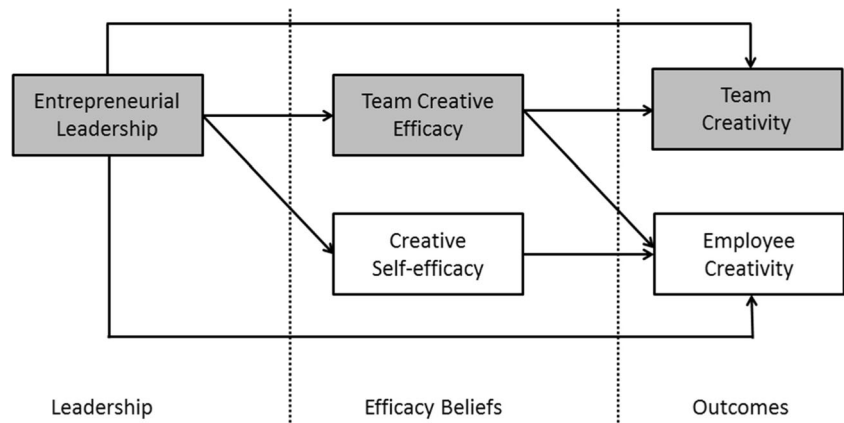
Creativity: the Role of Entrepreneurial Leader

Creativity has been a topic of interest for both scholars and practitioners for more than 35 years (Amabile and Pillemer 2012). Considerable research has approached the study of creativity at different levels (e.g. employee level and team or group level) (e.g. Anderson et al. 2014). Specifically, employee creativity refers to the generation of novel and useful ideas, products and processes by individual employees (e.g. Anderson et al. 2014; Woodman et al. 1993), while team creativity refers to team members’ joint development and production of novel and useful ideas, products and processes (Shin and Zhou 2007). Both employee and team creativity significantly facilitate organizations toward innovation and success; therefore, organizations seek ways to augment workplace creativity.

Given the critical role of workplace creativity for organizational survival and competence, scholars have investigated the influence of leaders on creative outcomes in organizations. However, research to date has focused primarily on these well-researched leadership approaches developed in the 1980s and 1990s, such as transformational and/or charismatic leadership (e.g. Behrendt et al. 2017; Gottfredson and Aguinis 2017), which do not provide detailed explanations of employee creativity for opportunity recognition and exploitation (e.g. Rosing et al. 2011). The mixed findings of the effects of these leadership styles on creativity suggest a more specific and effective leadership style to support creativity that serves opportunity recognition and exploitation in the current business environment.

Entrepreneurial leadership is a concept arising at the intersection between entrepreneurship and leadership (e.g.

Fig. 1 A theoretical model of the multilevel effects of entrepreneurial leadership on efficacy beliefs and creativity. Shaded box = team-level construct; white box = individual-level construct



Cogliser and Brigham 2004; Vecchio 2003). It specifically reflects that the evolution of leadership styles is context specific (i.e. in the current entrepreneurial setting). That is, organizational and entrepreneurial success relies primarily on leaders who have strong entrepreneurial indications and influence followers to think and act in a creative and innovative manner (Gupta et al. 2004; Kuratko 2007; Surie and Ashley 2008; Thornberry 2006). Specifically, in the turbulent business context of innovation, an entrepreneurial leader, unlike other types of leaders, specifically emphasizes opportunity recognition and utilization as important organizational goals (Gupta et al. 2004; Renko et al. 2015). With regard to opportunity-driven behaviour, an entrepreneurial leader concentrates on creating opportunities (Schumpeter 1934) and/or identifying opportunities (Kirzner 1973) to develop new businesses through innovation. By means of enacting the (entrepreneurial) leadership style in his/her daily managerial practices, he/she aims to mobilize people towards creative outcomes to explore and exploit these opportunities (Renko et al. 2015; Surie and Ashley 2008).

Previous research has often primarily emphasized the entrepreneurial traits of leaders (e.g. entrepreneurial passion) with regard to fulfilling their leadership role. These studies overlook the distinctive opportunity-related conceptualization of entrepreneurial leadership within the leadership research field. Primarily, an entrepreneurial leader concentrates on exploring, specifying and exploiting the opportunities to create new products, services and business processes (Gupta et al. 2004; Renko et al. 2015; Shane and Venkataraman 2000). A main distinctive characteristic of an entrepreneurial leader is that (s)he motivates co-workers to follow and join the opportunity-driven process by becoming and being creative and creatively committed to the identification and exploitation of opportunities for new businesses by creating new products, services and business processes. Particularly, (s)he stimulates creativity-oriented behaviour among co-workers and aims to leverage followers creative potential, such as building their confidence in and shaping their responsibilities and obligations toward creative endeavours (e.g. Gupta et al. 2004). In

this way, the goal of entrepreneurial leadership is to influence and inspire followers' creative attitudes and behaviours with regard to exploring and exploiting opportunities for their organizations (Bagheri 2017; Renko et al. 2015; Surie and Ashley 2008).

Recently, scholars have consistently proposed the treatment of entrepreneurial leadership as a specific leadership style in order to recognize its significant role in management research (e.g. Gupta et al. 2004; Renko et al. 2015; Thornberry 2006). Thus, entrepreneurial leaders can be seen as directing and assisting followers in achieving organizational goals by recognizing and exploiting opportunities via their creative contribution (Renko 2017). The opportunity-utilizing focus enables followers to initiate such innovative endeavours as creating new options, situations, propositions and benefits, i.e. by creatively developing innovative practices for the benefit of the firm (Renko et al. 2015). This line of entrepreneurial leadership conceptualization clearly reflects the creative-oriented leadership style described in creativity studies (Mainemelis et al. 2015; Mumford et al. 2002; Shalley and Gilson 2004). Given the above, we expect that entrepreneurial leadership motivates and challenges employees to engage in creative behaviour and outcomes. In a similar vein, past research, acknowledging the influence of transformational leadership on motivating workforce creativity (e.g. Gong et al. 2009), also indicates that transformational leadership can have a stimulating influence on follower creativity. However, there are distinct differences between the concepts of transformational and entrepreneurial leadership. Transformational leadership aims to stimulate and reward the creative behaviour of individuals in the organization, while entrepreneurial leadership goes several steps further and stimulates like-minded people to dynamically produce something new by taking advantage of fleeting opportunities (Renko et al. 2015; Thornberry 2006). Moreover, entrepreneurial leadership not only creates acceptable goals to lead employees toward creative goal realization but also promotes a sense of taking risks and taking advantage of opportunities for value creation (Gupta et al. 2004). Such behaviours match workplace

creative endeavours to generate positive effects for entrepreneurial leaders pursuing innovation to trigger creativity.

Entrepreneurial Leadership and Employee and Team Creativity

Entrepreneurial leaders who pursue innovation and creativity (Covin and Slevin 1991; Hitt et al. 2011; Newman et al. 2017) meet the challenges of creating a vision and influence employees to foster its realization (Ruvio et al. 2010). Specifically, entrepreneurial leaders serve as role models for employees (Jaussi and Dionne 2003; Renko 2017). They motivate employees to internalize the willingness to engage in creative endeavours (Gong et al. 2013). By targeting value creation, entrepreneurial leaders motivate employees to contribute to creative activities (Chen 2007; Gupta et al. 2004). Moreover, during the process of creating value, entrepreneurial leaders provide necessary support with regard to creativity, for instance, by designing and adjusting achievable goals to stimulate employee perseverance and by working with employees to generate different perspectives and to resolve uncertainties, problems and challenges. Based on the above, we propose the following hypothesis:

Hypothesis 1. Entrepreneurial leadership is positively related to employee creativity.

Research suggests that teams are a key source of new ventures (Chen 2007), and Gupta et al. (2004) show that entrepreneurial leaders focus on motivating employees working together toward collective creativity. Specifically, by realizing the growth potential of creative team capacity (Chen 2007), entrepreneurial leaders may inspire employees to work together (Gupta et al. 2004), which may lead to collaboration toward creative results. During the process mentioned above, in order to achieve entrepreneurial goals in a dynamic business environment (Bagheri and Pihie 2011; Ruvio et al. 2010), entrepreneurial leaders can stimulate higher creativity in teams and emphasize the importance of teams working toward challenges (Chen 2007; Gupta et al. 2004). Team members may then realize that working together can generate more energy and can in turn facilitate opportunity exploration and risk taking towards creativity (Chen 2007). Entrepreneurial leaders may also encourage team members' creative initiatives for their team's benefit (Morgeson et al. 2009). The team's creative achievements will thus be greater when leaders display an entrepreneurial leadership style. Based on this reasoning, we propose the following hypothesis:

Hypothesis 2. Entrepreneurial leadership is positively related to team creativity.

Creative Efficacy Beliefs as Mediators

SCT proposes that efficacy belief has an important role as a key psychological driver of desirable outcomes, as it relates to confidence in an individual's abilities, which may internally motivate them to approach goals, tasks and challenges (Bandura 1986, 1997). With regard to enhancing creativity (Tierney and Farmer 2002, 2004), efficacy tends to increase the level of individual effort and persistence that is crucial for successfully generating creativity (Bandura 1986; Ford 1996; Stajkovic and Luthans 1998). Tierney and Farmer (2002) apply creativity-oriented constructs of efficacy to offer a better understanding of the specific effects of efficacy in predicting creative outcomes (e.g. Shin and Zhou 2007; Tierney and Farmer 2002). As such, in our study, we follow the prior research and expect that both creative self-efficacy (individual level) and creative team efficacy (team level) mediate the relationship between entrepreneurial leadership and creativity.

Creative self-efficacy, namely, the degree to which employees believe that they are capable of being creative (Tierney and Farmer 2002), is likely to increase employees' confidence in their capacity to exhibit creativity (Choi 2004; Gong et al. 2009). People with a high sense of creative self-efficacy are expected to choose creative goals and to then mobilize their potential to realize these goals (Tierney and Farmer 2002). Similarly, creative team efficacy, which refers to team members' shared belief regarding their team's ability to produce creative outcomes (Shin and Zhou 2007), may facilitate both team and employee creativity (Ford 1996; Shin and Zhou 2007). At the team level, creative team efficacy emphasizes collective interactions to build a team's confidence in generating creative actions and performance (Shin and Eom 2014). At the individual level, researchers have shown the top-down influence (Chen et al. 2013; Chen and Kanfer 2006) of creative team efficacy in terms of motivating individuals' creative engagements. Additionally, prior research indicates that leadership predicts both individuals' appraisals of themselves (self-efficacy) and their team members (team efficacy) (Chen and Bliese 2002; Walumbwa et al. 2004). Thus, consistent with previous research, we examine whether entrepreneurial leadership instils a sense of creative capabilities (i.e. creative team efficacy and creative self-efficacy) and fosters creativity.

Creative Self-efficacy

Creative self-efficacy is affected by contextual variables (Tierney and Farmer 2002) since employees seek information from their working contexts to develop self-efficacy regarding their creativity (Ford 1996). Existing research shows that supervisors nurture the development of employees' creative self-efficacy (e.g. Tierney and Farmer 2004) by displaying positive behaviours (e.g. providing assistance and encouragement and

acting as role models for engagement). For example, leadership can significantly enhance employees' creative self-efficacy, as supervisors' desired behaviours can raise expectations in regard to creativity and effectively stimulate employee motivation and belief in their ability to solve problems in a creative way (Gong et al. 2009; Wang et al. 2014).

In line with existing studies on the relationship between leadership and creative self-efficacy (Tierney and Farmer 2002), we theoretically explain how entrepreneurial leadership increases employees' creative self-efficacy. Specifically, entrepreneurial leaders are often more creative in taking risks (Chen 2007; Covin and Slevin 1988). They guide subordinates in behaving creatively (Gupta et al. 2004); thus, they serve as a role model in creative engagement (Renko et al. 2015). Second, as entrepreneurial leaders communicate with employees to accomplish creative achievements (Chen 2007), they have the power to convince subordinates that the latter are capable of being creative (Tierney and Farmer 2002). Moreover, entrepreneurial leaders foster their employees' involvement in creative problem-solving and innovative behaviours by providing support and encouragement (Gupta et al. 2004). Therefore, employees are likely to feel confident generating new ideas. Finally, to realize achievements (Gupta et al. 2004), entrepreneurial leaders help subordinates in their personal development to facilitate the success of their subordinates (Renko et al. 2015). Consequently, employees may experience personal attainment and view themselves as being skilful in displaying creativity. Thus, we propose the following hypothesis:

Hypothesis 3. Entrepreneurial leadership is positively related to creative self-efficacy.

Existing conceptual and empirical studies have found a positive relation between creative self-efficacy and employee creativity (e.g. Tierney and Farmer 2002, 2011). Specifically, individuals are motivated through the establishment of high goals to attain creative outcomes (Bandura 1986, 1997). Their creative expectations, which are influenced by their creative self-efficacy, are likely to motivate them to devote effort to generating creative ideas (Gong et al. 2009; Tierney and Farmer 2002; Wang et al. 2014). Additionally, creativity requires individuals to take risks, and therefore, they need to gain confidence in addressing difficulties and problems (Amabile 1996). Creative self-efficacy provides internal and sustaining support to inspire efforts toward creative activities (Baer et al. 2008; Tierney and Farmer 2004).

Given the hypothesized positive relationship between entrepreneurial leadership and employee creativity, we propose that when leaders display entrepreneurial behaviours, they can effectively foster subordinates' creative self-efficacy, which in turn positively mediates the relation between entrepreneurial leadership and employee creative performance. A higher level

of entrepreneurial leadership may enable employees to feel more motivated to fulfil and put more effort into accomplishing innovative goals (Gupta et al. 2004; Ruvio et al. 2010), which in turn increases their creative performance (Shalley 1995). Based on this reasoning, we propose the following hypothesis:

Hypothesis 4. Creative self-efficacy mediates the relationship between entrepreneurial leadership and employee creativity.

Team Creative Efficacy

Research has suggested that leader behaviours may motivate teams to increase their efficacy (e.g. Chen and Bliese 2002). According to entrepreneurial leadership theory, entrepreneurial leaders are effective at building teams to accomplish innovative goals (Gupta et al. 2004). Such research emphasizes the benefits of entrepreneurial leadership on team-level attributes with regard to desired performance (Chen 2007). To effectively build teams, it can be argued that entrepreneurial leaders reinforce the connections between individuals' and the group's ideas (Gupta et al. 2004; Jung and Avolio 2000). Through dynamic interactions (Chen 2007), team members' connections strengthen the sense that their collaborations will encourage other team members' creative contributions toward the big picture (Brewer and Gardner 1996). Therefore, they become more confident regarding the capabilities of teams as a whole (Gibson and Earley 2007). Moreover, since team members are all consistently supervised by the same entrepreneurial leader, a collective view of their joint efficacy to generate creative outcomes emerges (Lord et al. 2001). Thus, we propose the following hypothesis:

Hypothesis 5. Entrepreneurial leadership is positively related to team creative efficacy.

Building on the top-down influence of team-level creativity on employee performance (Chen and Kanfer 2006; Gully et al. 2002), we expect a potential positive influence of team-level factors (i.e. creative team efficacy) on individual creativity. Specifically, team efficacy increases employee motivation with regard to creativity (Bandura 1997; Ford 1996). Indeed, the perception of team creative efficacy sets expectations for creative achievements that encourage individuals to engage in creative endeavours (Bandura 1997). That is, team members with strong beliefs regarding their team's creative capability are effectively motivated to make breakthroughs in terms of improvements and to persist when they face difficulties (Shin and Zhou 2007) since they know that their endeavours will not be wasted (Shin and Eom 2014).

Furthermore, from the perspective of individual interactions (Ford 1996; Shin and Zhou 2007), employees with strong beliefs regarding their team's creative capability (i.e. creative team efficacy) may initiate creative activities (Bandura 1986) as they are more confident and willing to engage in sustained creative endeavours and are more willing to share and exchange information and ideas to generate creativity (Gibson and Earley 2007; Paulus and Dzindolet 2008). Thus, we propose the following hypothesis:

Hypothesis 6. Team creative efficacy is positively related to employee creativity.

The abovementioned arguments indicate that entrepreneurial leadership is positively related to team creative efficacy and that team creative efficacy is positively related to employee creativity. Therefore, we expect team creative efficacy to serve as a mediator of the entrepreneurial leadership-employee creativity relationship, as entrepreneurial leaders exert a positive influence on team members' efforts to generate creativity by developing the efficacious belief that the team can produce creative outcomes. Thus, we propose the following hypothesis:

Hypothesis 7. Team creative efficacy mediates the relationship between entrepreneurial leadership and employee creativity.

Team creative efficacy relates to team creativity because it motivates team members and develops team creative processes (Shin and Zhou 2007). Members in a team with a high level of efficacy are more likely to be motivated and to gain confidence (Liu et al. 2011a) and, therefore, to generate creative ideas (Kim and Shin 2015; Ma et al. 2017; Zhang et al. 2011). A growing number of studies have found a significant positive relationship between team efficacy and team creativity (e.g. Campion et al. 1993; Guzzo et al. 1993; Jung and Sosik 1999). For example, empirical work by Shin and Eom (2014) shows that teams with high creative efficacy are more likely to achieve higher levels of team creativity.

Given that we hypothesize that entrepreneurial leadership influences team creative efficacy (Hypothesis 5) and that there is an established positive association between team creative efficacy and team creativity, we expect that entrepreneurial leadership is positively related to team creative efficacy and thus increases team creativity. Therefore, we propose the following as our last hypothesis:

Hypothesis 8. Team creative efficacy mediates the relationship between entrepreneurial leadership and team creativity.

Methods

Research Setting, Sample and Procedure

Our survey is conducted in eight Chinese companies that operate in various industries. We first interviewed senior managers from these companies to acquire the permission and confirm that creativity is a characteristic the companies are aiming to achieve. Next, we randomly chose three to ten teams per firm ($M = 5.4$) and then sent questionnaires to team members (including demographics and independent variable measures) and team leaders (including team and employee creativity measures) through emails. We ultimately received 237 valid questionnaires from team members (response rate of 84.0%) and 43 from team leaders (response rate of 86.0%). Of the participants, 57.0% were men, and 43.0% were women. Their average age was 30.3 years, and the average tenure in their jobs was 8.2 years. The most frequently indicated education level was a bachelor's degree (57.0%), and most participants were technical workers (81.0%).

Measures

We used back-translation (Brislin 1980) to translate our English questionnaire into Chinese. Unless noted otherwise, items were assessed on five-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree".

Entrepreneurial Leadership ($\alpha = 0.91$) We followed the definition of entrepreneurial leadership in Renko et al. (2015) in the present study to show that entrepreneurial leaders direct and encourage employees' behaviours to pursue entrepreneurial goals. Thus, we measured entrepreneurial leadership using eight items from Renko et al.'s (2015) ENTRELEAD-scale, which measures employees' perception of their leaders' entrepreneurial leadership qualities. Showing a high level of internal consistency and validity, this scale featuring the role of entrepreneurial leadership style in leading employees has been validated in the organizational behaviour research. One of the sample items is "My supervisor often comes up with ideas of completely new products/services that we could sell". Employees rated each item regarding their supervisor's entrepreneurial leadership.

Creative Self-efficacy ($\alpha = 0.76$) We used a three-item measure of creative self-efficacy from Tierney and Farmer (2002) to assess employees' creative self-efficacy (e.g. "I have confidence in my ability to solve problems creatively"). Employees were asked to indicate the degree to which the statements accurately describe their efficacy with regard to creative work.

Team Creative Efficacy ($\alpha = 0.85$) We used four items to measure team creative efficacy from Tierney and Farmer (2002) and Shin and Eom (2014) by modifying the creative self-efficacy items to focus on teams' creative efficacy (e.g. "Members of my team have confidence in their abilities to solve problems creatively"). As members constitute the whole team, these items are designed to tap individuals' perceptions of the extent to which each statement describes their team members' shared beliefs in their team's capabilities to perform creative tasks. This team-level efficacy scale appropriately points to the teams' creative capabilities and has been extensively validated in prior research (e.g. Chen & Kao 2011; Kim and Shin 2015; Shin and Eom 2014; Shin and Zhou 2007).

Employee Creativity ($\alpha = 0.84$) We used four items from Farmer et al. (2003) and asked supervisors to report the creativity of each of their employees (e.g. "This employee seeks new ideas and ways to solve problems"). This scale has been developed for the Chinese context to reflect the Chinese view of employee creativity.

Team Creativity ($\alpha = 0.81$) Using Shin and Zhou's (2007) four-item scale, we asked supervisors to measure their team's creative performance (e.g. "How well does your team produce new ideas?"), with a range from 1 = poor to 5 = excellent.

Control Variables At the individual level, we controlled for age (in years), gender (1 = male, 2 = female), education level (1 = "high school", 2 = "institute of technology", 3 = "bachelor", 4 = "master's", 5 = "doctorate"), tenure (in years) and job type classifications (1 = "technical (R&D)", 2 = "marketing/sales", 3 = "administrative", 4 = "financial/accounting", 5 = "managerial", 6 = "other"). At the team level, we controlled for team size (total number of team members), team age (in years) and leader tenure within the team (in years). We also controlled for transformational leadership, as we suggested at the outset that entrepreneurial leadership is more facilitative than transformational leadership to enhance creativity. For those purpose, we used a seven-item measure on a five-point scale from Carless et al. (2000) (e.g. "My leader treats staff as individuals and supports and encourages their development").

Data Aggregation

We tested whether statistically aggregating data from employee responses to team-level constructs would be justified. Specifically, we computed the within-group interrater agreement (r_{wg}) (James et al. 1984) and intra-class correlation (ICC) (Bliese 2000). The ICC(1) values of entrepreneurial leadership, creative team efficacy and transformational leadership were 0.29, 0.26 and 0.17, respectively, while the ICC(2) values were 0.69, 0.65 and 0.53, respectively (all p s

< .001). Moreover, the mean r_{wg} values of entrepreneurial leadership, creative team efficacy, and transformational leadership were all above 0.95. The results indicate that aggregation is justified (LeBreton and Senter 2007).

Validity Analyses

To assess the discriminant validity of the measures in our study, we conducted a confirmatory factor analysis (CFA) for entrepreneurial leadership, creative self-efficacy, team creative efficacy and employee creativity (Anderson and Gerbing 1988). The results are presented in Table 1. The proposed five-factor model demonstrated a better fit to the data ($\chi^2 [191] = 368.85$, $p < .001$, CFI = 0.94, RMSEA = 0.06, IFI = 0.94, TLI = 0.93, RMR = 0.04) than the following alternative models. These results provide support for the distinctiveness of the four study variables for subsequent analyses (Hu and Bentler 1999).

Analytic Strategy

Given the proposed relationships from multilevels, we used hierarchical linear modeling (HLM) and hierarchical regression analysis to test our hypotheses. Specifically, to test hypotheses (H) 1, 3, 4, 6 and 7, we conducted three-step regressions: (1) The independent variable (entrepreneurial leadership) should be significantly related to the dependent variable (employee creativity), which tests H1. (2) The independent variable should be significantly related to the mediating variable (creative self-efficacy), which tests H3. (3) The mediating variable should be related to the dependent variable with the independent variable included in the equation, which tests H4 and H7. Moreover, to examine the relationship between team creative efficacy and employee creativity (H6), we regressed team creative efficacy at level 2 on employee creativity at level 1 in the HLM. At the team level, to test hypotheses 2, 5 and 8, we conducted hierarchical regression analysis because all the variables (entrepreneurial leadership, team creative efficacy and team creativity) are at the team level. Finally, we used the Monte Carlo method (Selig and Preacher 2008) to estimate the confidence intervals (CIs) of indirect effects. The analyses were conducted after we mean-centred all the variables.

Results

Descriptive statistics, reliabilities and correlations are provided in Table 2. As expected, entrepreneurial leadership is significantly correlated with employee creativity ($r = .58$, $p < .01$), team creativity ($r = .64$, $p < .01$), creative self-efficacy ($r = .52$, $p < .01$) and team creative efficacy ($r = .35$, $p < .01$). Furthermore, creative self-efficacy is significantly

Table 1 Results of the CFA models

CFA models	χ^2/df	CFI	RMSEA	IFI	TLI	RMR
5-factor model: Baseline model	368.85/191	0.94	0.06	0.94	0.93	0.04
4-factor model:						
Combine entrepreneurial leadership and team creative efficacy	990.71/246	0.77	0.11	0.77	0.74	0.07
Combine team creative efficacy and creative self-efficacy	920.05/246	0.79	0.11	0.79	0.77	0.09
Combine employee creativity and team creativity	997.34/249	0.77	0.11	0.77	0.75	0.09
3-factor model: Combine entrepreneurial leadership, team creative efficacy, creative self-efficacy	1195.10/249	0.71	0.13	0.71	0.68	0.07
1-factor model: Combine all variables	1579.63/252	0.59	0.15	0.59	0.53	0.07

correlated with employee creativity ($r = .50, p < .01$), and team creative efficacy is correlated with team creativity ($r = .53, p < .01$).

We use HLM to examine the multilevel influences on employee creativity (see Table 3), and we use hierarchical regression analysis to examine the team-level influences (see Table 4). Before testing the hypotheses, we run a null model to examine the significance of systematic between-group variance. The results show that the proportion of variance is 20%, and the chi-square test is significant ($\chi^2 [42] = 255.44, p < .001$), supporting the use of HLM.

Entrepreneurial leadership is significantly related to employee creativity, as shown in Table 3 ($\gamma = 0.75, p < .001$), and to team creativity, as shown in Table 4 ($\beta = 0.77, p < .001$). Thus, H1 and H2 are both supported.

H3 predicts that entrepreneurial leadership is positively related to creative self-efficacy. Model 2 in Table 3 shows significance ($\gamma = 0.69, p < .001$), supporting H3. To test the mediational effects of creative self-efficacy in H4, we regress both creative self-efficacy and entrepreneurial leadership in model 3. The results indicate that both creative self-efficacy ($\gamma = 0.19, p < .01$) and entrepreneurial leadership ($\gamma = 0.75,$

Table 2 Means, standard deviations and correlations

	Mean	SD	1	2	3	4	5	6	7	8
Individual-level variables										
1. Gender	1.45	0.50								
2. Age	30.44	5.52	-0.11							
3. Education	3.77	0.68	0.13	0.04						
4. Tenure	7.34	5.68	-0.07	0.83**	-0.05					
5. Job type	1.42	1.12	0.02	0.05	-0.04	0.04				
6. Transformational leadership	3.89	0.44	-0.03	-0.12	0.05	-0.08	0.07			
7. Entrepreneurial leadership	3.65	0.67	-0.09	-0.02	-0.06	-0.01	-0.00	-0.00		
8. Creative self-efficacy	4.08	0.61	0.11	-0.09	-0.01	0.03	-0.10	-0.02	0.52**	
9. Employee creativity	4.07	0.62	-0.02	0.01	-0.08	0.01	-0.07	0.00	0.58**	0.50**
Team-level variables										
1. Team size	7.14	4.38								
2. Team age	3.00	1.53	-0.06							
3. Leader tenure with the team	2.37	1.33	0.41**	0.05						
4. Transformational leadership (agg.)	3.89	0.29	0.00	-0.08	-0.01					
5. Entrepreneurial leadership (agg.)	3.58	0.48	0.20	-0.10	0.23	-0.21				
6. Team creative efficacy (agg.)	3.81	0.38	0.01	-0.07	-0.04	-0.17	0.35*			
7. Team creativity	3.88	0.65	0.22	-0.36*	0.17	-0.18	0.64**	0.53**		

$N = 237$ for individual-level data and $N = 43$ for team-level data

agg. aggregation

* $p < .05$; ** $p < .01$

Table 3 Results of HLM predicting entrepreneurial leadership, team creative efficacy, creative self-efficacy and employee creativity

	Model 1 Employee creativity	Model 2 Creative self-efficacy	Model 3 Employee creativity	Model 4 Employee creativity	Model 5 Employee creativity
Level 1					
Intercept	-0.06 (0.05)	-0.06 (0.04)	-0.06 (0.05)	-0.05 (0.05)	-0.05 (0.04)
Gender	0.03 (0.03)	0.10 (0.03)**	0.01 (0.02)	0.03 (0.03)	0.03 (0.03)
Age	-0.01 (0.05)	-0.10 (0.05)	0.01 (0.05)	-0.01 (0.05)	-0.00 (0.04)
Education	-0.05 (0.03)	-0.03 (0.04)	-0.05 (0.03)	-0.06 (0.03)	-0.06 (0.03)*
Tenure	0.01 (0.04)	0.08 (0.04)	0.01 (0.04)	-0.00 (0.04)	-0.00 (0.04)
Job type	-0.03 (0.03)	-0.06 (0.06)	-0.01 (0.04)	-0.03 (0.03)	-0.03 (0.03)
Creative self-efficacy			0.19 (0.06)**		
Level 2					
Team size	0.01 (0.03)	-0.01 (0.03)	0.05 (0.03)	0.04 (0.04)	-0.01 (0.04)
Team age	-0.05 (0.05)	-0.01 (0.03)	0.05 (0.05)	-0.06 (0.04)	-0.03 (0.04)
Leader tenure with the team	-0.02 (0.04)	0.06 (0.03)	0.06 (0.04)	0.06 (0.05)	0.03 (0.04)
Transformational leadership	-0.12 (0.15)	0.08 (0.11)	-0.13 (0.15)	-0.15 (0.22)	-0.02 (0.12)
Entrepreneurial leadership	0.75 (0.12)***	0.69 (0.08)***	0.75 (0.12)***		0.60 (0.12)***
Team creative efficacy				0.84 (0.11)***	0.57 (0.14)***

N = 237 team members (level 1), *N* = 43 teams (level 2). Unstandardized estimates are reported. Values in parentheses are robust standard errors
p* < .05; *p* < .01; ****p* < .001 (two-tailed test)

p < .001) are significantly related to employee creativity, in accordance with H4.

Regarding the cross-level effects, in Table 3, we first regress team efficacy in model 4 to establish the effect of team-level efficacy on individual-level creativity and then simultaneously add entrepreneurial leadership and team creative efficacy to model 5 in order to determine the mediator of team creative efficacy. H6 is supported in model 4, as the team creative efficacy-employee creativity relationship is significant ($\gamma = 0.84, p < .001$). Likewise, the results in model 5 show that both entrepreneurial leadership ($\gamma = 0.60, p < .001$) and team creative efficacy ($\gamma = 0.57, p < .001$) are significantly related to employee creativity, supporting H7.

Table 4 shows the results of the influences at the team level. Model 2 supports H5 that entrepreneurial leadership is positively related to team creative efficacy ($\beta = 0.28, p < .05$). Model 3 shows that both entrepreneurial leadership ($\beta = 0.60, p < .01$) and creative team efficacy ($\beta = 0.60, p < .01$) are significantly related to team creativity, lending support for H8.

Bootstrapped CIs corroborate the significant indirect effects of entrepreneurial leadership on employee creativity through creative self-efficacy ($CI_{95\%} = [0.04, 0.22]$) and through team creative efficacy ($CI_{95\%} = [0.05, 0.18]$); in addition, the indirect effects of entrepreneurial leadership on team creativity through team creative efficacy ($CI_{95\%} = [0.01,$

Table 4 Results of hierarchical regression analysis predicting entrepreneurial leadership, team creative efficacy and team creativity

	Model 1 Team creativity	Model 2 Team creative efficacy	Model 3 Team creativity
Constant	0.28	0.14	0.20
Team size	0.01	0.00	0.01
Team age	-0.13*	-0.01	-0.12*
Leader tenure with the team	0.01	-0.04	0.03
Transformational leadership	-0.20	-0.14	-0.12
Entrepreneurial leadership	0.77***	0.28*	0.60**
Team creative efficacy			0.60**
ΔR^2	0.28	0.11	0.10
ΔF	20.78***	5.01*	8.95**

Level 2 *N* = 43

p* ≤ .05; *p* ≤ .01; ****p* ≤ .001 (two-tailed test)

0.39]) are significant. That is, the entrepreneurial leadership-employee/team creativity associations are partially mediated by creative self-efficacy and team creative efficacy, again supporting H4, H7 and H8.

Discussion

Overview of Findings

Our study explores the relationship of entrepreneurial leadership with team and employee creativity as well as the mechanism of creative efficacy beliefs by adopting a multilevel perspective. As expected, entrepreneurial leadership strongly predicts creativity at both the team and individual levels, which is mediated by creative self- and team efficacies. Additionally, we found a cross-level mediation whereby team creative efficacy mediates the entrepreneurial leadership-employee creativity relation.

Theoretical Implications

The primary objective of this study is to examine the potential of entrepreneurial leadership to serve as a distinct leadership style that contributes to individual and team creativity. Antonakis and Autio (2006) note that entrepreneurial leadership and its relationship with workforce creativity is a research area that should be investigated more deeply (Renko et al. 2015; Renko 2017). Entrepreneurial leadership can play a critical role in situations (McGrath and MacMillan 2000; Roebuck 2011) where a creative and innovative workforce is required (Chen 2007). Although previous studies investigate entrepreneurial leadership and its beneficial effects (e.g. Cogliser and Brigham 2004; Gupta et al. 2004; Kuratko 2007; Vecchio 2003), these studies mainly consider the leaders' entrepreneurial role (e.g. Engelen et al. 2015). Entrepreneurial leadership, as a distinctive leadership style, and this style's relationship with desirable workplace outcomes require further research (e.g. Baron 2002; Leitch and Volery 2017; McGrath and MacMillan 2000; Renko et al. 2015; Roebuck 2011). We still have only a limited understanding of how entrepreneurial leadership may stimulate employees' creativity (Ensley et al. 2006; Hmieleski and Ensley 2007; Newman et al. 2017). Following Renko et al.'s (2015) conceptualization of entrepreneurial leadership, we argue that this style enables a firm to be more entrepreneurial by motivating employee creativity (Breugst et al. 2012; Lichtenstein and Plowman 2009; Swiercz and Lydon 2002). Our study empirically extends the understanding of the role of a specific entrepreneurial leadership style in organizational behaviour research at a micro-level (Leitch and Volery 2017; Day 2000; Renko 2017).

Further exploring the issue of distinctiveness of entrepreneurial leadership, our study empirically supports the notion that "creativity and entrepreneurship are inseparable" (Gilad 1984, p. 151). Specifically, we empirically measure a relative and specific contribution of entrepreneurial leadership to the creativity of employees as well as teams (McGrath and MacMillan 2000; Shin 2015; Vecchio 2003). Our findings indicate that entrepreneurial leadership outperforms transformational leadership in predicting employee and team creativity. This provides creditable evidence to support the notion that the compatibility principle can serve as an explanation for this positive influence of entrepreneurial leadership on workplace creativity. That is, entrepreneurial leadership may stimulate employees' feelings of being more compatible with their leader and organizational goals (Koseoglu et al. 2017; Rosing et al. 2011; Van Knippenberg and Hogg 2003). Our study proposes that the specific outcome of entrepreneurial leadership can be further specified and measured in terms of individual and team creativity (c.f. Avolio 2007). Moreover, based on insights into entrepreneurial leadership studies, the theoretical argument could be developed that entrepreneurial leadership should take a more prominent place among existing and more deeply researched leadership styles (e.g. Behrendt et al. 2017; Gottfredson and Aguinis 2017; Leitch and Volery 2017). Since many leadership theories have largely remained stagnant for the past two decades, a growing number of scholars in leadership-performance research have recently questioned the effectiveness of these leadership styles in predicting desirable employee outcomes (e.g. Gottfredson and Aguinis 2017). They have found empirical redundancy and suggest that a new, contemporary leadership style may outperform traditional leadership approaches in predicting specific creative performance (c.f. Banks et al. 2016; Van Knippenberg and Sitkin 2013). While it is beyond the scope of this paper to settle the scholarly debate with regard to potentially differentiating entrepreneurial leadership from other well-researched leadership styles (e.g. transformational leadership), it is important to recognize that our empirical examinations highlight the relevance of an entrepreneurial leadership style in organizations where creativity is critically considered to achieve entrepreneurial goals. That is, our examination regarding the possible influence of entrepreneurial leadership on individual and team creativity adds to the growing recognition of entrepreneurial leadership as a specific leadership style (Breugst et al. 2012; Steffens et al. 2017) that nurtures workforce creativity (Casciaro and Edmondson 2007; Mainemelis et al. 2015; Surie and Ashley 2008; Thornberry 2006).

We examine creative efficacy beliefs as a mediator of the entrepreneurial leadership-creativity relationship. Applying SCT in leadership-creativity research, our findings concerning the benefits of entrepreneurial leadership for creative self- and team efficacies stress the importance of entrepreneurial leaders

in terms of motivating workplace employees to develop their efficacy beliefs (e.g. Renko et al. 2015). Thus, we respond to the urgent calls for the investigation of intervening mechanisms (e.g. George 2007; Shalley et al. 2004) by showing that entrepreneurial leadership influences creativity through a motivational mechanism (Shin 2015). Emphasizing that creative efficacy beliefs mediate entrepreneurial leadership-creativity relations, our research confirms that entrepreneurial leaders building confidence can generate employee *can-do* motivation and lead to creative outcomes (Liu et al. 2016). Notably, consistent with prior research attributing employee responses to entrepreneurial leadership (Gupta et al. 2004; Renko et al. 2015), our findings highlight the significant role of entrepreneurial leadership in nurturing the development of employee efficacy (Renko 2017; Zhao et al. 2005). Scholars have identified that entrepreneurial leaders should be considered as playing an important role in building their employees' beliefs in their own entrepreneurial skills and abilities with regard to innovation and creativity (Bandura 1986; Cardon et al. 2009; Zhao et al. 2005). However, empirical evidence in this regard is still lacking. Our study extends the efficacy belief in entrepreneurial leadership research by establishing the contribution of entrepreneurial leadership to creativity-specific efficacy beliefs.

We also aim to extend the multilevel perspective on leadership and creativity research (e.g. Agars et al. 2008; Chen 2007; DeChurch et al. 2010; Oke et al. 2009) by simultaneously demonstrating the entrepreneurial leadership-creativity relationship at both the individual and team level. Our explanations with regard to the positive association of entrepreneurial leadership-worker/group creativity highlight the value of identifying entrepreneurial leadership in creativity research, individually and collectively. Furthermore, extending prior studies on how team-level factors lead to individual creativity (e.g. Chen et al. 2013; Hirst et al. 2009; Liu et al. 2011b), our research addresses the paucity of research exploring the multilevel mechanisms by which entrepreneurial leadership promotes employee creativity (Shin 2015).

While the organizational literature suggests that team efficacy may be more important to employee outcomes in a collectivistic culture (e.g. Asian countries) (Schaubroeck et al. 2000), as it is influenced by contextual variables (Shin and Zhou 2007), few studies have empirically examined the team-level mechanisms that transfer the influence of (entrepreneurial) leadership to individual creative outcomes (Shin 2015). Our finding that team creative efficacy exerts a cross-level mediating influence on the relationship between entrepreneurial leadership and employee creativity empirically identifies the top-down effects of team properties on individual creativity (Chen et al. 2013; Hülshager et al. 2009). This strengthens the theoretical argument in SCT (Bandura 1986, 1997) that when a team has a high level of (creative) efficacy, members are highly likely to put their efforts toward

(creative) achievements (Gully et al. 2002), as their strong connection with the team (Kark and Shamir 2013) encourages their personal creative contributions to greater team results (Brewer and Gardner 1996). More importantly, by simultaneously including both self- and team efficacies, our findings make a significant contribution to the debate regarding the similar importance of various types of efficacy in creativity research (e.g. Walumbwa et al. 2004) by showing that both individual creative efficacy and team creative efficacy are key antecedents to employee creativity in collectivistic countries. Future research is needed in other collectivistic countries as well as in countries with other specific cultural characteristics to further study the relationship between entrepreneurial leadership and workforce creativity.

Managerial Implications

Our findings have practical implications. First, in order to help employees challenge the status quo and help teams collaborate toward creative idea generation and realization, organizations should recognize the value of entrepreneurial leadership in the current business environment by selecting leaders with entrepreneurial characteristics (e.g. identifying and exploiting opportunities). Training (e.g. designing dynamic and acceptable goals) should also be provided to develop leaders' skills in terms of displaying entrepreneurial behaviours and to enable managers to be more consciously aware and develop an entrepreneurial leadership style. At the same time, organizations can instil entrepreneurship to develop managers' entrepreneurial skills. For example, establishing entrepreneurial leadership requirements for managers (e.g. thinking, behaving and working in entrepreneurial ways could be highly encouraged) and providing practical techniques to help them enact entrepreneurial leadership behaviours (e.g. building creative visions and organizing human capital) (Vecchio 2003) may benefit the management of workplace creativity. Moreover, practices should be conducted to help managers use and exploit entrepreneurial leadership (Covin and Slevin 2002), which encourages individuals to think, frame and analyse entrepreneurial opportunities. For example, providing motivation and rewards may be effective in facilitating the development of managers' entrepreneurial leadership capabilities.

Our results also point to the benefits of creative efficacy. Thus, leaders and organizations should display desirable behaviours to nourish employees' and teams' creative capability (e.g. providing expectations and encouragement toward creativity) and help members share strong beliefs concerning their teams' creative capabilities. At the same time, given the importance of creative team efficacy in predicting employee creativity, organizations should develop practices to build creative teams and develop team members' understanding of common goals as well as confidence in goal realization. This may

boost employees' contributions not only as part of a strong unit but also as an independent creative actor.

Limitations and Future Directions for Research

First, our cross-sectional design may generate ambiguity regarding causality. For example, team and employee creativity may enable leaders to act entrepreneurially, accounting for the observed association. Future studies may use a longitudinal empirical research design to more clearly confirm the causal effects. Second, our arguments and results regarding compatible leadership and creativity lead to the conclusion that it is crucial for leaders who want to inspire their subordinates towards creativity to develop an entrepreneurial leadership style in organizations. Hence, we also conclude that it is critical for scholars to further explore the possibilities of other compatible leadership styles in predicting creativity effectively. For example, as Van Knippenberg and Sitkin (2013) indicate, future studies could address the potential role of visionary leadership in mobilizing and motivating workplace creativity. Third, while our theoretical arguments rest upon the distinctiveness of entrepreneurial leadership in organizational behaviour research, we examine only its effectiveness in predicting creativity. Future research may consider other dependent outcomes individually and collectively to further establish the effects of entrepreneurial leadership. Furthermore, our study does not consider the effects of the working environment, which has been suggested as an important boundary condition influencing the effectiveness of entrepreneurial leadership in organizational research (e.g. Ensley et al. 2006; Haynes et al. 2015). For example, as an innovative climate stimulates employees to obtain resources from leaders, such a climate may accentuate the influence of leadership styles on personal attributes and then creativity. Thus, future research could examine whether organizational climate positively moderates the mediated effects of creative self-/team efficacy in the relationship between entrepreneurial leadership and employee/team creativity. Finally, although this study contributes empirical evidence with regard to the widely established relation between leadership styles and efficacy beliefs, future research is encouraged to explore the similarities or varieties in the effects of entrepreneurial leadership on creative self- and team efficacies. For example, as we mentioned in the theoretical section, entrepreneurial leadership may foster creative self-efficacy via role modelling while developing creative team efficacy by stimulating team interactions. It would thus be an interesting avenue for future research to study whether creative goal setting or promoting positive reactions to uncertainties may simultaneously mediate the effects of entrepreneurial leadership on self- and team efficacies. Such an investigation of the relevant mechanisms would enrich current

knowledge on how creative efficacy beliefs at different levels could be managed by entrepreneurial leadership (Chen and Bliese 2002).

Conclusion

This study empirically extends the understanding of entrepreneurial leadership as a specific leadership style. Based on the compatibility principle, we examine relations between entrepreneurial leadership and individual and team creativity in organizations as well as individual and team creative efficacy beliefs. The results highlight that entrepreneurial leadership plays a critical role in facilitating employee and team creativity in terms of displaying creativity-favouring behaviours that specifically fit workplace creative endeavours. Moreover, drawing on SCT, this study adds to the growing body of evidence that is used to argue that creative efficacy beliefs serve as an underlying mechanism that exerts within-level and cross-level influences in the entrepreneurial leadership-creativity relation. These findings will be useful to practitioners in developing entrepreneurial leadership styles and managing workplace creativity in changing environments.

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