I can do it, so can you: The role of leader creative self-efficacy in facilitating follower creativity

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\textbf{A B S T R A C T}

Creativity scholars have long called for more research on the effects of leader characteristics on employee creativity. Answering this call, this study draws on social cognitive theory to examine the effect of leader creative self-efficacy (CSE) on follower creativity. Using a sample of 544 employees nested under 106 supervisors at a large information technology company in the U.S., we obtained support for the indirect effect of leader CSE on follower creativity via leader encouragement of creativity and follower creative process engagement. In addition, follower leader–member exchange (LMX) strengthened the relationship between leader encouragement of creativity and follower creative process engagement. Thus, in the presence of higher LMX, leader CSE is likely to have a stronger positive impact on employee creativity through leader encouragement of creativity and, subsequently, follower creative process engagement. Our findings contribute to a better understanding of the role of leader attributes in employee creativity.

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\section{1. Introduction}

Creativity, the production of novel and applicable ideas about products, practices, services, or procedures, has become increasingly important in today's organizations (Tierney & Farmer, 2011). Creativity scholars have argued that creativity is a “potent competitive weapon” for organizations (Amabile, 1998, p. 87) and have emphasized that cultivating employee creativity is a major objective for leaders in the 21st century (Dess & Picken, 2001). Previous research has long acknowledged the critical role of leaders in fostering employee creativity (Shalley & Gilson, 2004; Tierney, Farmer, & Graen, 1999), highlighting three facets of leader influence on follower creativity: leader personal characteristics, leader behaviors, and leaders' relationships with followers (Tierney, 2008). However, the majority of studies have focused on the last two facets (e.g., Jaussi & Dionne, 2003; Liao, Liu, & Loi, 2010; Madjar, Oldham, & Pratt, 2002; Oldham & Cummings, 1996; Shin & Zhou, 2003) while largely ignoring the first facet – the role of leader attributes in follower creativity (for exceptions, see Gibson, Fiedler, & Barrett, 1993; Tierney, 2008; Tierney et al., 1999; Zhou & George, 2003). Therefore, Tierney (2008) suggested that a valuable extension of the creativity literature would be to investigate the “ways in which work-group supervisors' attributes influence employee creativity” (p. 114).

Utilizing a social cognitive theoretical perspective (Bandura, 1989), our study addresses this research void by examining the effect of leaders' creative self-efficacy (CSE), which is a creativity-focused motivational attribute defined as “a self-belief that one has the ability to produce creative outcomes” (Tierney & Farmer, 2002, p. 1138), on follower creativity. Given that motivation is a critical determinant of creative performance (Amabile, 1983) and a key aspect of leaders' influence on follower creativity (Amabile, 1998), leaders' motivational attributes are likely to be a source of leaders' potential to impact others' creativity (Tierney, 2008; Tierney et al., 1999). Among motivational attributes, CSE stands out in terms of its unique ability to affect leading for creativity. First, as a domain-specific form of efficacy, CSE is shown to predict creativity (Tierney & Farmer, 2002, 2004, 2011). Second, studies on leader efficacy reveal that when leaders are confident in their abilities in a given domain, they are likely to successfully lead followers to accomplish domain-specific goals (Wood & Bandura, 1989a). Hence, we propose that leader CSE as a form of self-efficacy specific to the creativity domain will increase leaders' display of behaviors that promote follower creativity.

To gain an in-depth understanding of the effect of leader CSE on follower creativity, we also unveil the multistep mechanism.
through which this effect transpires and identify a boundary condition under which it is more pronounced. Following prior work on the effects of leader attributes on follower outcomes (Oreg & Berson, 2011), we propose that leader CSE (a leader attribute) will promote leader encouragement of creativity (a leader behavior), which will in turn motivate employees to engage in creative processes (a follower behavior), and, ultimately, improve their creativity (a follower outcome). We also examine to what extent the indirect effect of leader CSE on follower creativity is contingent on the leader–follower relationship quality (leader–member exchange, LMX, Graen & Uhl-Bien, 1995) which may create a favorable context in which the effects of creativity-enhancing factors are magnified (Tierney et al., 1999).

Three primary contributions of this research to the creativity literature unfold. First, our study reveals that leader CSE is a source of a leader's positive influence on follower creativity, and thereby answers the call for more research on how leader attributes influence employee creativity (Tierney, 2008). While the creativity literature has emphasized the importance of leader creativity-promoting behaviors in follower creativity (Amabile, 1998), little is currently known about what attributes make leaders more prone to engaging in such behaviors. Thus, studying the role of leader CSE in employee creativity is important both theoretically and practically. In line with research on the dispositional bases of leadership showing that leader behaviors are influenced by their personal characteristics (Bono & Judge, 2004; Judge, Bono, Ilies, & Gerhardt, 2002), creativity scholars have acknowledged that leaders need to possess certain attributes to effectively lead for creativity (Mumford, Scott, Gaddis, & Strange, 2002; Tierney, 2008). Hence, investigating the effects of leader CSE contributes to a clearer understanding of what makes leaders successful at leading for creativity. Also, from a practical perspective, it can provide insights regarding how to more effectively prepare individuals to fill managerial positions that involve leading for creativity (e.g., designing interventions to boost leaders’ CSE; cf. Mumford, Hunter, Eubanks, Bedell, & Murphy, 2007).

Second, most, if not all, prior studies on CSE have adopted an intra-individual approach and looked at how employees’ CSE affects their own creativity (e.g., Richter, Hirst, Van Knippenberg, & Baer, 2012). Our study unveils yet another unique effect of CSE by demonstrating that CSE of group leaders may exert inter-individual effects on follower creativity above and beyond the effects of followers’ own CSE. Thus, our study coupled with the work by Tierney (2008) and Tierney et al. (1999) suggests a valuable inter-individual approach to studying the impact of leader characteristics (e.g., motivational attributes, personality traits) on follower creativity. This inter-individual approach allows researchers to unveil novel inter-individual antecedents to employee creativity and mechanisms underlying their effects.

Finally, this study further uncovers the multi-faceted nature of leader influence on creativity by simultaneously considering the effects of leaders’ attributes, behaviors, and relationships with followers on follower creativity. Thus, our study provides a more complete and integrative view of how leaders may shape follower creativity (by boosting their CSE, engaging in creativity-promoting behaviors, and improving relationships with followers).

2. Theory and hypotheses

The broader literature on organizational leadership suggests that a key goal of leader influence (assuming it is constructive influence that precludes the use of pressure and threats) is motivating followers to engage in activities leading to the achievement of group and/or organizational goals set by the leader (Ilies, Judge, & Wagner, 2006; Shamir, House, & Arthur, 1993; Yukl, 1989). Similarly, creativity scholars have acknowledged that motivating followers to engage in creative processes and produce creative outcomes is the core component of leading for creativity (Amabile, 1998; Mumford et al., 2002; Tierney, 2008). However, not all leaders are equally inclined or able to motivate their followers to be creative. Creativity scholars have suggested that leaders’ personal motivational states and attributes could be a source of leaders’ willingness and ability to lead others for creativity (Tierney, 2008; Tierney et al., 1999). In this paper, we draw from social cognitive theory and the creativity literature to propose that leader CSE, as a key self-regulatory motivational attribute, prompts leaders to lead for creativity by encouraging followers to engage in creative processes, which ultimately improves follower creative performance. The central components of this multistep mechanism transmitting the effect of leader CSE are leader encouragement of creativity (the extent to which leaders emphasize creativity and support employees to achieve creative outcomes, Zhang & Bartol, 2010) and follower creative process engagement (followers’ engagement in the processes of problem identification, information search and encoding, and idea generation, Zhang & Bartol, 2010). The hypothesized relationships are depicted in Fig. 1.

Social cognitive theory is rooted in the agentic perspective on human motivation and underscores the premise that human action is a product of “the ongoing exercise of self-influence” and self-regulation (Bandura, 1991, p. 248). The key component of human agency is self-efficacy, which captures one’s confidence in “their capabilities to mobilize the motivation, cognitive resources, and courses of action needed to exercise control over events in their lives” (Wood & Bandura, 1989a, p. 364). Self-efficacy allows individuals to be proactive and purposive regulators of their own and even others’ actions (Bandura, 2001). Organizational leaders especially need to regulate not only their own behaviors but also the actions of their followers because directing follower actions toward the achievement of group or organizational goals is the essence of organizational leadership (House & Shamir, 1993; Yukl, 2013). As such, leader’s self-efficacy beliefs are critical for the exercise of leader influence on followers (Kane, Zaccaro, Tremble, & Masuda, 2002).

Prior empirical research has theorized about and found support for this positive effect of leader efficacy on their ability to successfully influence their followers (Hannah, Avolio, Luthans, & Harms, 2008). For example, Wood and Bandura (1989b) found that a manager’s efficacious belief could get his or her group to achieve a certain level of productivity and was positively related to group performance. Also, leadership efficacy was found to predict cadets’ performance on tasks that required leadership (Chemers, Watson, & May, 2000), the frequency with which managers enacted acts of influence over their subordinates (Paglis & Green, 2002), and subordinates’ ratings of leader effectiveness in planning, setting direction, assigning tasks, and leading by example (Ng, Ang, & Chan, 2008).

When it comes to leading for creativity, a specific form of leaders’ efficacy beliefs – CSE – becomes more important than general self-efficacy beliefs (Tierney & Farmer, 2002). Social cognitive theory has long stressed the notion that efficacious beliefs are targeted toward specific outcomes of interest (Bandura, 1997, 2001) and that self-efficacy studies should be “tailored to the domain being studied” (Gist, 1987, p. 472). To this end, Tierney and Farmer (2002) introduced the construct of CSE. Prior research has provided rich empirical evidence showing that one’s CSE is positively associated with one’s own creativity in organizations (Carmeli & Schaubroeck, 2007; Gong, Huang, & Farh, 2009; Jaussi, Randel, & Dionne, 2007; Shin & Zhou, 2007; Tierney & Farmer, 2002, 2004, 2011). However, when we turn to the analysis of leader CSE, additional insights into the effects of CSE may emerge. As explained immediately below, leader CSE is likely to serve as a motivational predictor of leading for creativity. Given that leading is an act of
influencing followers (Northouse, 2012; Yukl, 2013), leader CSE will likely affect not only leaders’ own behaviors, but also the nature and strength of their motivational influence over followers. In other words, the effect of leader CSE may transpire across levels of organizational hierarchy – from the leader level down to the follower level – and bear on follower creativity. In this study, we argue that leader CSE will likely increase a leader’s use of behaviors that motivate followers to engage in creative processes and ultimately improve follower creativity. In the remainder of the paper, we will explicate the sequential mechanism through which leader CSE influences follower creativity. Specifically, we propose that the effect of leader CSE on follower creativity will be mediated by a leader’s use of behaviors encouraging creativity and employees’ engagement in creative processes, and will be magnified in a high-quality LMX context.

2.1. Leader CSE and leader encouragement of creativity

Leader encouragement of creativity (also referred to as supervisory encouragement of creativity, Amabile, 1983) refers to leader actions that draw employee attention to the importance of being creative and help employees sustain effort while striving toward creativity goals (Zhang & Bartol, 2010). Given that motivation is a force that ignites and sustains one’s task-related focus and effort (cf. Pinder, 1998), leader encouragement of creativity, in essence, captures the behaviors of a leader that motivate follower creativity. Leader encouragement of creativity manifests itself in an array of leader behaviors. Leaders may encourage creativity by rewarding and recognizing followers who produce creative outcomes (Baer, Oldham, & Cummings, 2003; Zhou & George, 2001), respecting followers’ creative skills (Madjar et al., 2002; Oldham & Cummings, 1996), receiving followers’ new ideas without harsh criticism (Amabile, 1983), being willing to explore even seemingly unpromising followers’ ideas instead of dismissing them immediately (Amabile, 1983), and allowing job flexibility for creative problem-solving (Reiter-Palmon & Ilies, 2004; Volmer, Spurk, & Niessen, 2012). Also, leaders can encourage creativity by being able and willing to learn from failure (i.e., seeing value in their own and followers’ failures, Amabile, 1983) and serve as followers’ role models “persevering through tough problems” (Amabile, 1983, p. 84). Leaders with high CSE appear to be especially apt to engage in these aforementioned behaviors to encourage follower creativity for three primary reasons. First, individuals with high CSE are confident in their ability to achieve creative outcomes and therefore tend to be more motivated to achieve such outcomes (Tierney & Farmer, 2002, 2011). More specifically, drawing on one of the key postulates of social cognitive theory stating that self-efficacy motivates actions (Bandura, 1977, 1986), Tierney and Farmer (2002, p. 1141) argued that CSE should “generate strong creative aspiration levels” toward producing creative outcomes. This expectation that high-CSE individuals would have higher levels of motivation to produce creative outcomes has led creativity researchers to examine the link between employee CSE and their creative performance (Tierney & Farmer, 2002, 2011).

However, when we consider the effects of leader CSE, a different pattern of outcomes is likely to emerge. The nature of leadership is mobilizing followers to achieve goals and produce outcomes emphasized by leaders (Yukl, 2013). In other words, “leaders act through their followers and a leader’s behavior is successful because it is translated into followers’ actions” (Dick, Hirst, Grojean, & Wieseke, 2007, p. 134). By extension, it is reasonable to expect that in the creativity domain, leaders who are motivated to produce creativity (e.g., leaders with high CSE) will likely channel their own aspiration toward producing creative outcomes through mobilizing followers to produce such outcomes. This mobilization of follower effort toward the production of creative outcomes can be achieved by leaders’ creativity-encouraging behaviors, such as expressing appreciation of follower effort directed at the production of creative outcomes, offering rewards and recognition in exchange for high levels of creative performance, setting explicit creativity-related goals, and verbally encouraging followers to be creative.

The second reason why high-CSE leaders are likely to encourage follower creativity is that such leaders tend to be willing to adopt nonconforming and diversified perspectives from their followers (Beghetto, 2006). They get more involved in discussions about new ideas or work methods (Mumford et al., 2002). Therefore, they are likely to be more receptive to creative ideas generated by followers, avoid severe criticisms, and strive to find value even in less promising ideas, which, as shown above, are behaviors that encourage creativity.

Third, individuals with high CSE are more likely to consider failure as an opportunity to learn (as demonstrated in studies linking CSE with mastery goal orientation involving willingness to learn from failure, Beghetto, 2006, 2007). They are more inclined to persevere in the face of failure (Tierney & Farmer, 2002). Thus,
high-CSE leaders are more likely to tolerate their followers’ failures, instill in them confidence that failures can be overcome, and stimulate them to endure when encountering setbacks. Based on the above, we expect a positive relationship between leader CSE and leader encouragement of creativity:

**Hypothesis 1.** Leader CSE is positively related to leader encouragement of creativity.

2.2. Leader encouragement of creativity, follower creative process engagement, and follower creativity

As discussed above, leader encouragement of creativity resulting from leader CSE can have a motivational influence on followers and promote creativity-related behaviors. Drawing on the leadership literature examining leaders’ motivational influence on followers and previous studies on supervisory encouragement of creativity, this section expounds on why leader encouragement of creativity may exert positive influence on follower creative process engagement and, ultimately, follower creativity.

2.2.1. Leader encouragement of creativity and follower creativity

Leadership research has provided rich evidence that followers are motivated to engage in behaviors that are strongly supported and deemed meaningful by their leaders (Nielsen, Randall, Yarker, & Brenner, 2008; Shamir et al., 1993; Yukl, 1989). The creativity literature has also demonstrated that employees are more likely to produce creative outcomes when they are aware that creativity is expected from them and is encouraged by their leaders (Amabile, Conti, Coon, Lazenby, & Herron, 1996). For example, in an experimental study, Shalley (1991) found that creative performance was higher in the condition when creativity goals were assigned compared to the no-creativity-goal condition. This suggests that the explicit emphasis on creativity as a desired end-state draws attention to the necessity of being creative and motivates people to spend extra effort to strive to produce creative outcomes (see also Harrington, 1975). Also, studies on supervisory support for employee creativity have demonstrated that supervisors’ expectations of creativity (Scott & Bruce, 1994; Tierney & Farmer, 2004) and supervisory creativity-supportive behaviors (Tierney & Farmer, 2004) are positively related to subordinates’ creative performance. In line with these prior findings, we expect that leader encouragement of creativity will be positively related to employee creativity.

2.2.2. Follower creative process engagement as a mediator

For the effect of leader encouragement of creativity on follower creativity to emerge, followers first need to engage in creativity-related processes (e.g., problem identification, information search and encoding, and generation and evaluation of ideas and solutions) that will determine the quality of the final creative product (Zhang & Bartol, 2010). As stated by Reiter-Palmon and Illies (2004, p. 55), “solving problems creatively requires extensive and effortful cognitive processing.” If this creative process is not fully executed (e.g., a problem is poorly understood, not all information is gathered and analyzed, or too few alternative ideas are generated), the quality of the creative output will suffer (Zhang & Bartol, 2010). Thus, we predict that the positive effect of leader encouragement of creativity on follower creative outcomes will be mediated by follower creative process engagement. This prediction is in line with Tierney’s (2008) leadership–creativity model demonstrating that leaders’ influence on creativity occurs via the “evolving system” of follower cognitions, motivations, and activities. Creative process engagement, conceptualized as the “engagement in creativity-relevant cognitive processes” (Zhang & Bartol, 2010, p. 112), is shown to predict employee creativity (Redmond, Mumford, & Teach, 1993; Zhang & Bartol, 2010), and, as argued immediately below, is likely to flourish when leaders encourage creativity. Therefore, it can be considered part of the evolving system of follower activities (Tierney, 2008) linking leader influence and followers’ creativity.

As noted above, leaders can encourage followers’ creativity by providing rewards and recognition, allowing job flexibility, meeting new ideas with an open mind, avoiding harsh criticisms, tolerating mistakes, and teaching perseverance in the face of failure. All of these activities can facilitate followers’ engagement in creative processes. Specifically, when leaders emphasize that high-quality creative solutions are valued and will be rewarded, it may motivate followers to spend more effort or use more efficient strategies to gather and process relevant information in order to come up with the highest-quality creative solution (cf. Gilliland & Landis, 1992). If leaders provide job flexibility, it may give followers more time for thorough information search and processing (Reiter-Palmon & Illies, 2004) and more control over how to proceed in terms of scheduling and enacting problem-solving activities. When leaders are open to accepting different ideas, withhold criticism, and tolerate followers’ mistakes and failures, followers will likely strive more to come up with creative solutions (Shalley & Perry-Smith, 2001). Thus, it is reasonable to expect that leader encouragement of creativity will lead to follower engagement in creative processes, which will, in turn, facilitate employee creativity (Redmond et al., 1993).

2.2.3. The mediating roles of leader encouragement of creativity and follower creative process engagement

Overall, our theorizing above suggests that leaders high in CSE are likely to improve follower creativity by encouraging followers to be creative, and as a result, followers engage in creative processes eventually leading to follower creativity. This sequence is in line with the findings obtained in the studies examining the effects of leader attributes on follower outcomes (Oreg & Berson, 2011). It is also in line with Tierney’s (2008) leadership–creativity model depicting how the effect of leader attributes and behaviors (CSE and encouragement of creativity in our model) on follower creativity transpires via the evolving system of follower internal states and activities (follower engagement in creative processes in our model). By integrating these arguments, we come to our second hypothesis that suggests the effect of leader CSE on follower creativity will be mediated by leader encouragement of creativity and then follower engagement in creative processes. Thus, we hypothesize:

**Hypothesis 2.** Leader CSE has a positive indirect effect on follower creativity via leader encouragement of creativity and then follower creative process engagement.

2.3. The moderating effect of follower LMX on the relationship between leader encouragement of creativity and follower creative process engagement

Drawing on LMX theory, we propose that depending on the quality of their LMX relationships with leaders, followers may respond differently to leader encouragement of creativity by displaying varied levels of engagement in creative processes. Previous LMX studies suggest that LMX may serve as an immediate relational context that provides fertile soil for leaders’ influence on followers. For example, Sparrowe, Soetjipto, and Krammer (2006) argued that the effect of leader influence tactics on subordinate behaviors varies as a function of LMX quality. These authors demonstrated that LMX quality provides a context that affects how subordinates interpret leader influence attempts and adjust
their behaviors in accordance with their interpretations. Also, Fisk and Friesen (2012) showed that as a critical contextual factor, LMX quality affects follower interpretations of leader actions and changes the nature of the relationship between leaders’ use of emotion regulation strategies and followers’ job satisfaction and citizenship behaviors. A similar finding was obtained by Neubert, Wu, and Roberts (2013). In their study, the influence of ethical leadership on employee extra-role behaviors and organizational commitment via regulatory focus was augmented by LMX. These studies support the idea that LMX provides a relational environment in which the effect of supervisors’ influence on employees’ behaviors and outcomes may vary as a function of LMX quality.

Building on these prior LMX studies, we contend that LMX may magnify the positive relationship between leader encouragement of creativity and follower creative process engagement. First, because employees in higher LMX relationships with leaders have more frequent and immediate communication with their leaders (Sparrowe & Liden, 1997; Wayne, Shore, & Liden, 1997), they have more opportunities to effectively and efficiently detect and interpret the creativity-encouraging behavioral cues of leaders. Second, followers in higher LMX relationships tend to respect and trust their leaders more (Graen & Uhl-Bien, 1995; Sparrowe & Liden, 1997). As a result, they are more likely to yield to leader influence attempts and devote themselves to creative processes when encouraged by their leaders. In addition, previous studies have shown that followers in higher-quality LMX relationships strive to contribute more actively to the social exchange process by producing outcomes that leaders value and desire (Schriesheim, Nieder, Scandura, & Tepper, 1992; Zhou & Schriesheim, 2009). Thus, in the presence of higher LMX, leaders’ encouragement of creativity is more likely to stimulate followers to engage in creative processes and to produce creative outcomes appreciated by their leaders.

In contrast, in the situation of lower-quality LMX, characterized by less frequent and less timely communication between leaders and followers, followers may be more likely to overlook leaders’ behavioral cues of encouraging creativity. It should be noted that followers in lower-quality LMX relationships may still be able to pick up leaders’ behavioral cues of encouraging creativity and realize that their leaders support creativity. However, these followers may respond to leader encouragement of creativity less favorably (i.e., be less inclined to engage in creative processes in response to leader encouragement compared to high LMX followers) due to their lower trust, loyalty, commitment, and respect toward leaders (Uhl-Bien & Maslyn, 2003). Also, employees in lower-quality LMX relationships that are characterized by higher focus on self-interest and lower attention to the interest of their leaders (Uhl-Bien & Maslyn, 2003) may expend more effort on pursuing their personal interests and thus be less prone to reacting to leader encouragement of creativity by engaging in creative processes. The above theorizing suggests that LMX may function as a moderator to accentuate the positive relationship between leader encouragement of creativity and follower engagement in creative processes. Thus, we hypothesize:

Hypothesis 3. Follower LMX moderates the positive relationship between leader encouragement of creativity and follower creative process engagement such that this relationship is stronger in the presence of higher follower LMX.

2.4. An integrative moderated mediation model

Thus far, we have proposed that leaders high in CSE are more likely to encourage creativity among their followers compared to low-CSE leaders (Hypothesis 1). We have also argued that leader CSE is likely to have a positive effect on follower creativity via two sequential mediators: leader encouragement of creativity and follower creative process engagement (Hypothesis 2). In addition, we have hypothesized that LMX strengthens the positive relationship between leader encouragement of creativity and follower creative process engagement (Hypothesis 3). By extension, the theorizing behind Hypotheses 1–3 also suggests a moderated mediation model explaining the indirect effect of leader CSE on follower creativity. That is, due to its positive moderating effect on the relationship between leader encouragement of creativity and follower creative process engagement, LMX also holds the potential to boost the indirect effect of leader CSE on creativity via leader encouragement of creativity and follower creative process engagement. Therefore, we hypothesize:

Hypothesis 4. The positive indirect effect of leader CSE on follower creativity through leader encouragement of creativity and follower creative process engagement is moderated by follower LMX, such that this positive indirect effect is stronger in the presence of higher follower LMX.

Although we hypothesize that the indirect effect of leader CSE on creativity will vary as a function of LMX, it should be noted that based on LMX theory and prior empirical research, it is reasonable to expect that LMX will also exert a positive main effect on follower creativity. This is in line with previous research on creativity, which, as noted by Tierney (2008), has found support for both main (e.g., Atwater & Carmeli, 2009; Khazanchi & Masterson, 2011; Liao et al., 2010) and moderating (e.g., Tierney et al., 1999; Van Dyne, Jehn, & Cummings, 2002) effects of LMX with regard to creativity. More specifically, prior research on LMX and creativity has suggested that high-LMX employees may receive more resources and support needed for creative performance, are more likely to take risks, work in a more comfortable atmosphere of trust and mutual liking, and enjoy greater autonomy and decision latitude (Basu & Green, 1997; Joo, McLean, & Yang, 2013; Tierney et al., 1999). Based on these prior findings and their underlying logic, we will also test for the main effect of LMX on creativity in our model.

3. Methods

3.1. Sample and procedures

We invited 113 supervisors and 1158 team members working in 113 teams of a large information technology company in the U.S. to participate in this study. The invited employees worked in teams that operated in eight areas, including research and development (R&D), risk management compliance, business strategy and planning, business system operation, business process and pricing, customer care, global business development, and sales consulting. These employees performed tasks involving the development of new ideas, approaches, and solutions to attract and retain customers. We briefed the participants about the purpose of this study and explained the procedures for completing online surveys. Additionally, we emphasized that the company would not have access to their responses or any identifiable information. To better protect the confidentiality of participants, we assigned random identification numbers to each participant so that we could later match leaders’ and followers’ responses.

At Time 1, we invited 113 supervisors to provide ratings of their CSE. We received 106 responses, yielding an initial response rate of 93.8%. We also asked 1158 employee participants to provide ratings of LMX and received 742 responses (64.1%). At Time 2, approximately two weeks after Time 1, we asked those 742 employee participants who responded at Time 1 to rate leader encouragement of creativity and their creative process engagement. We received 575 responses (77.5%). At Time 3, approximately two weeks after Time 2, we asked those 106 responding supervisors...
to rate their followers’ creativity. All 106 supervisors completed this final online survey. To further ensure the authenticity of the responses (i.e., to ensure responses came from the invited participants), we double-checked the IP address associated with each online survey response received. The vast majority of the completed surveys (95.8% of employee surveys and 100% of supervisor surveys) were associated with the company-registered IP addresses, suggesting that these responses were submitted by participants from their work site. This gives us further confidence in the authenticity of the data received.

Prior studies on leadership and follower creativity provided evidence that the effects of leader attributes on follower creativity may transpire as early as in a week (e.g., Tierney et al., 1999, where lead-

evidence of leadership effects on follower creativity may help to generate new ideas.” The Cronbach’s alpha was .90.

3.2.3. Follower creative process engagement

Follower creative process engagement was assessed with an 11-item scale developed by Zhang and Bartol (2010). A representative item was: “I spend considerable time sifting through information that helps to generate new ideas.” The Cronbach’s alpha was .93.

3.2.4. Follower LMX

Employees rated their LMX with leaders using the LMX-7 scale developed by Graen and Ulh-Bien (1995). A sample item was: “How would you characterize your working relationship with your manager?” with scale anchors ranging from 1 = “extremely ineffective” to 5 = “extremely effective.” The Cronbach’s alpha was .90.

3.2.5. Follower creativity

Follower creativity was evaluated by leaders with a 13-item scale developed by Zhou and George (2001). A sample item was: “This employee is a good source of creative ideas.” The Cronbach’s alpha was .95.

3.2.6. Control variables

Employees’ and supervisors’ age, gender, organizational tenure, education, as well as the leader–follower dyad tenure were controlled for in accordance with the previous research on creativity (cf., Liu, Chen, & Yao, 2011; Zhang & Bartol, 2010). We also obtained information from the company’s HR department regarding team functional areas. Given that the surveyed teams operated in eight functional areas (R&D, risk management compliance, business strategy and planning, business system operation, business process and pricing, customer service, global business development, and sales consulting), we included seven dummy coded variables to control for each. Finally, in all of the analyses we controlled for employee CSE to examine whether leader CSE has an effect on encouragement of creativity, creative process engagement and creativity above and beyond the effects of employee CSE. Employee CSE was assessed with the three-item CSE scale developed by Tierney and Farmer (2002). The Cronbach’s alpha was .65.

3.3. Analytic strategy

Given the multilevel nature of the data (followers nested within supervisors), all study hypotheses were tested using multilevel modeling that accounts for the non-independence of observations obtained from lower-level units nested within higher-level units (Bliese & Hanges, 2004; Kozlowski & Klein, 2000). In this study, we tested a moderated sequential mediation model with a Level 2 predictor (X), two Level 1 mediators (M1 and M2), Level 1 moderator (W), and a Level 1 outcome (Y) variable (i.e., a 2-1-1-1 model). To avoid the conflation of within-group and between-group effects that may occur in multilevel models with Level 2 predictors and Level 1 mediators, we separated between-group and within-group effects of mediators as recommended by Zhang, Zephyr, and Preacher (2009). To achieve this, we group-mean centered Level 1 mediators (encouragement of creativity and creative process engagement), and included their group means in Level 2 models (Zhang et al., 2009). Then, following Zhang et al.’s (2009) recommendation, we used the effects of Level 2 group means of mediators as estimates of path b (i.e., X → M path in the mediation models) in the computations of unconditional and conditional (i.e., varying across levels of a moderator) indirect effects of CSE on creativity (Hypotheses 2 and 4).

The 95% confidence intervals around the unconditional and conditional indirect effects were constructed using the Monte Carlo...
simulation with 20,000 replications (Bauer, Preacher, & Gil, 2006; MacKinnon, Lockwood, & Williams, 2004; Preacher & Selig, 2012). The Monte Carlo approach to testing multilevel mediation was used in previous studies (e.g., Lanaj, Johnson, & Barnes, 2014; Wang et al., 2013). The Monte Carlo approach involves constructing a sampling distribution of the indirect effect using point estimates of mediation paths and the asymptotic covariance matrix of those estimates (Preacher & Selig, 2012). This method does not assume that the indirect effect is normally distributed (the assumption that is rarely met, MacKinnon et al., 2004) and is recommended as a viable alternative to bootstrapping in complex multilevel models and models with multiple mediators (Preacher & Selig, 2012). In addition to the tests of unconditional and conditional indirect effects, we tested the difference between the conditional indirect effects using the index of moderated mediation (Hayes, 2015). In a test of a moderated sequential mediation model with two mediators (Hypothesis 4), the index of moderated mediation was computed as a product of three coefficients: leader CSE → encouragement of creativity, encouragement of creativity → LMX → creative process engagement, and creative process engagement → creativity (see Appendix A for details regarding how this index was derived). The 95% confidence interval around the index of moderated mediation was constructed using the Monte Carlo approach with 20,000 replications. Monte Carlo confidence intervals (MC CIs) were generated in Rweb (accessed via http://quantpsy.org/, Preacher & Selig, 2010) using Preacher and Selig’s (2012) code modified to account for the specifics of the model (i.e., multiple mediators and moderated paths).

Prior to testing the hypotheses, we conducted two sets of preliminary analyses. First, we performed a confirmatory factor analysis (CFA) to test the measurement model including all of the study variables. Next, we examined the degree of non-independence among the lower-level observations using intraclass correlation coefficients – ICC(1)s (Bliese, 2000). ICC(1)s were obtained for the lower-level variables that were used as mediators and the outcome variable were substantial and statistically significant: .16, p < .001, .05, p < .001, and .20, p < .001, respectively. The corresponding ICC(1)s (.23, .10, and .25) suggested the presence of the ICC(1)s among the lower-level observations using intraclass correlation coefficient (ICC). The results of the CFA conducted at Level 2 were similar to Level 1. Namely, the six-factor structure of the measurement model also held at this employee level. However, we also conducted a CFA at Level 2 (i.e., the leader level) to check whether the six-factor structure of the measurement model also held at this level. The results of the CFA conducted at Level 2 were similar to Level 1. Namely, the six-factor model demonstrated better fit than the hypothesized six-factor model. This is evidenced by the increased values of χ², decreased values of TLI and CFI, the increased values of RMSEA and SRMR, and the lack of overlap between the RMSEA CIs of Models 2–5 with the RMSEA CI of Model 1.²

4.2. Variance decomposition and the assessment of non-independence

Estimates of between-group variance for leader encouragement of creativity, creative process engagement, and employee creativity were obtained by testing three null models without any predictors: a null model with leader encouragement of creativity as an outcome, a null model with creative process engagement as an outcome, and a null model with creativity as an outcome. The amounts of between-group variance in both mediators and the outcome variable were substantial and statistically significant: .16, p < .001, .05, p < .001, and .20, p < .001, respectively. The corresponding ICC(1)s (.23, .10, and .25) suggested the presence of the

² Due to the non-convergence of the multilevel CFA models (which is a common difficulty in conducting a multilevel CFA), Marsh et al., 2009; Mathur & Asparouhov, 2012), in Table 1 we report the results of a CFA conducted at Level 1 (i.e., the employee level). However, we also conducted a CFA at Level 2 (i.e., the leader level) to check whether the six-factor structure of the measurement model also held at this level. The results of the CFA conducted at Level 2 were similar to Level 1. Namely, the six-factor model demonstrated better fit than other alternative models described in Table 1. The fit of the six-factor model (χ² = 1552.88, p < .001, df = 845; RMSEA = .066, 90% CI [.058; .074]; TLI = .95; CFI = .96; SRMR = .080) was superior to the fit of the five-factor model (χ² = 2005.77, p < .001, df = 850; RMSEA = .120, 90% CI [.110; .130]; TLI = .93; CFI = .93; SRMR = .130). The four-factor model (χ² = 2291.86, p < .001, df = 854; RMSEA = .170, 90% CI [.160; .170]; TLI = .90; CFI = .91; SRMR = .130) and the two-factor model (χ² = 2584.86, p < .001, df = 859; RMSEA = .180, 90% CI [.180; .190]; TLI = .89; CFI = .90; SRMR = .130) and the one-factor model (χ² = 2839.81, p < .001, df = 860; RMSEA = .190, 90% CI [.190; .200]; TLI = .87; CFI = .88; SRMR = .140).

Table 1

<table>
<thead>
<tr>
<th>Model #</th>
<th>Description</th>
<th>χ²</th>
<th>df</th>
<th>RMSEA (90% CI)</th>
<th>TLI</th>
<th>CFI</th>
<th>SRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>6 factors: CSE, CSE, LMX, encouragement, creative process engagement, and creativity</td>
<td>1758.03</td>
<td>845</td>
<td>.045 (.042; .048)</td>
<td>.98</td>
<td>.98</td>
<td>.045</td>
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<tr>
<td>Model 2</td>
<td>5 factors: CSE, CSE, LMX, creativity, and encouragement combined with creative process engagement</td>
<td>3292.54</td>
<td>850</td>
<td>.091 (.088; .093)</td>
<td>.95</td>
<td>.96</td>
<td>.087</td>
</tr>
<tr>
<td>Model 3</td>
<td>4 factors: CSE, CSE, LMX, and encouragement combined with creative process engagement and creativity</td>
<td>5008.08</td>
<td>854</td>
<td>.140 (.140; .140)</td>
<td>.92</td>
<td>.93</td>
<td>.098</td>
</tr>
<tr>
<td>Model 4</td>
<td>2 factors: leader-rated variables (combined: CSE and creativity) and subordinate-rated variables (combined: CSE, LMX, encouragement and creative process engagement)</td>
<td>5804.19</td>
<td>859</td>
<td>.140 (.130; .140)</td>
<td>.91</td>
<td>.91</td>
<td>.120</td>
</tr>
<tr>
<td>Model 5</td>
<td>1 factor: all items loading on the same factor</td>
<td>7184.46</td>
<td>860</td>
<td>.160 (.160; .170)</td>
<td>.88</td>
<td>.89</td>
<td>.120</td>
</tr>
</tbody>
</table>

Note. N = 544. Subscripts E and S refer to employee and supervisor, respectively. CSE = creative self-efficacy. LMX = leader-member exchange. Model fit was assessed using the recommended cut-offs: .90 (and .95 as a more stringent criterion) for TLI (Bentler & Bonett, 1980; Hu & Bentler, 1999) and CFI (Hu & Bentler, 1999); .05 as an indicator of good fit and .10 as the upper limit of acceptable fit for RMSEA (Browne & Cudeck, 1993), and .08 as an indicator of good fit for SRMR (Hu & Bentler, 1999).

4.1. Assessment of the measurement model

Model fit in the CFA was assessed using a χ² test and multiple practical fit indices (TLI (NNFI), CFI, RMSEA, and SRMR) that allow for evaluating different aspects of model fit (absolute fit, comparative fit, and parsimony-adjusted fit; Brown, 2006) and are commonly reported in the organizational literature (Brown, 2006; Ployhart & Oswald, 2004). As seen in Table 1, the CFA showed that the expected model with six factors – leader CSE, employee CSE, LMX, encouragement of creativity, creative process engagement, and creativity (Model 1) – demonstrated excellent fit. Standardized factor loadings ranged from .57 to .91 (p < .001 for all loadings). All other alternative models (Models 2–5) – a five-factor model with leader encouragement of creativity and follower creative process engagement combined into the same factor, a four-factor model with encouragement of creativity, creative process engagement and creativity combined into the same factor, a two-factor model with leader-rated variables (supervisor CSE and creativity) combined into one factor and subordinate-rated variables (employee CSE, LMX, encouragement of creativity, and creative process engagement) combined into the second factor, and a one-factor model with all items loading on the same factor – demonstrated poorer fit than the hypothesized six-factor model. This is evidenced by the increased values of χ², decreased values of TLI and CFI, the increased values of RMSEA and SRMR, and the lack of overlap between the RMSEA CIs of Models 2–5 with the RMSEA CI of Model 1.
effects of group membership, which means that observations obtained from individual employees nested within leaders were not independent. Given the substantial amounts of between-group variance in the mediator and outcome variables, multilevel modeling was an appropriate analytical strategy for testing the study hypotheses (Raudenbush & Bryk, 2002).

4.3. Tests of the study hypotheses

Table 2 provides means, standard deviations, and intercorrelations among the study variables. The pattern of correlations is in line with our expectations. Specifically, leader CSE has positive and significant correlations with leader encouragement of creativity, follower creative process engagement, and follower creativity, also leader encouragement of creativity, follower creative process engagement, and follower creativity all have positive correlations with one another. In addition, in line with prior findings (e.g., Tierney & Farmer, 2002), follower CSE is positively related to follower creativity; it is also related to follower creative process engagement as an outcome variable.

Table 2

<table>
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<th>Variable</th>
<th>Mean</th>
<th>SD</th>
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<th>4</th>
<th>5</th>
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<td>.01</td>
<td>.04</td>
<td>.06</td>
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</tbody>
</table>

Note. N = 544. Subscripts E and S refer to employee and supervisor, respectively. CSE = creative self-efficacy. Encouragement = leader encouragement of creativity. Creative process = follower creative process engagement. Gender is coded as 1 = male and 0 = female. Team functional areas are: R&D = research and development. Risk = risk management compliance, Strategy = business strategy and planning, Operation = business system operation, Pricing = business process and pricing, Customer = customer service, Global = global business development, and Sales = sales consulting. Organizational tenure (org. tenure) and dyadic tenure (dyad. tenure) are measured in months.

* p < .05
** p < .01
*** p < .001

Table 3 provides results of the tests of the study hypotheses.
Table 3
Test of the study hypotheses.

<table>
<thead>
<tr>
<th>Effects</th>
<th>Outcome: Encouragement of creativity</th>
<th>Outcome: Creative process engagement</th>
<th>Outcome: Creativity</th>
</tr>
</thead>
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<tr>
<td></td>
<td>$\gamma$</td>
<td>SE</td>
<td>$\gamma$</td>
</tr>
<tr>
<td>Level 1 effects</td>
<td></td>
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<tr>
<td>Intercept</td>
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<td>3.97***</td>
</tr>
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<td>0.10</td>
</tr>
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<td>-0.09</td>
</tr>
<tr>
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<td>0.00</td>
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<tr>
<td>Dyad. tenure</td>
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<td>-0.01</td>
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<tr>
<td>Creative process</td>
<td>0.48***</td>
<td>0.05</td>
<td>0.46***</td>
</tr>
</tbody>
</table>

Cross-level effects

| R&D | -0.27 | 0.17 | -0.09 | 0.11 | -0.08 | 0.11 | -0.05 | 0.13 | -0.04 | 0.13 |
| Risk | 0.01 | 0.21 | -0.08 | 0.14 | -0.08 | 0.14 | -0.08 | 0.16 | -0.08 | 0.16 |
| Strategy | -0.22 | 0.20 | 0.00 | 0.14 | 0.01 | 0.14 | 0.20 | 0.16 | 0.20 | 0.16 |
| Operation | 0.47 | 0.24 | 0.03 | 0.17 | 0.03 | 0.17 | -0.34 | 0.19 | -0.34 | 0.19 |
| Pricing | -0.61*** | 0.25 | -0.06 | 0.17 | -0.06 | 0.17 | 0.30 | 0.20 | 0.30 | 0.20 |
| Customer | 0.00 | 0.21 | -0.05 | 0.14 | -0.05 | 0.14 | -0.18 | 0.16 | -0.18 | 0.16 |
| Global | 0.04 | 0.19 | 0.02 | 0.13 | 0.02 | 0.13 | -0.06 | 0.15 | -0.06 | 0.15 |
| Education | -0.03 | 0.10 | 0.05 | 0.07 | 0.05 | 0.07 | -0.13 | 0.08 | -0.13 | 0.08 |
| Gender | -0.03 | 0.12 | -0.10 | 0.08 | -0.10 | 0.08 | 0.07 | 0.09 | 0.07 | 0.09 |
| Age | 0.01 | 0.01 | 0.00 | 0.01 | 0.00 | 0.01 | -0.01 | 0.01 | -0.01 | 0.01 |
| Org. tenure | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CSE | 0.28*** | 0.06 | 0.11*** | 0.05 | 0.11*** | 0.05 | 0.18*** | 0.06 | 0.18*** | 0.06 |
| Encouragement | 0.23*** | 0.07 | 0.23*** | 0.07 | 0.49*** | 0.09 | 0.50*** | 0.09 |
| Encouragement + LMX | 0.15 | 0.07 | 0.28*** | 0.07 |
| Creative process | 0.44*** | 0.11 | 0.43*** | 0.11 |

Note: $N_{level1} = 544, N_{level2} = 106$. Subscripts E and S refer to employee and supervisor, respectively. CSE = creative self-efficacy. Encouragement = leader encouragement of creativity. Creative process = follower creative process engagement. Gender is coded as 1 = male and 0 = female. Team functional areas are: R&D = research and development; Risk = risk management compliance, Strategy = business strategy and planning, Operation = business system operation, Pricing = business process and pricing, Customer = customer service, Global = global business development, and Sales = sales consulting. Organizational tenure (org. tenure) and dyadic tenure (dyad. tenure) are measured in months. The predictors of interest included in the tests of study hypotheses are bold-faced.

$p < .05$.

$p < .01$.

$p < .001$.

Fig. 2. The interactive effect of leader encouragement of creativity and follower LMX on follower creative process engagement.

in Table 3); (3) $Y = X + Mediator_1 + Mediator_2 + Moderator$, and $Y = X + Mediator_1 + Mediator_2 + Moderator + Mediator_3 + Moderator$ (the main effects model and the interactive effect model, respectively; see the last two models with creativity as an outcome in Table 3).

The model at step 1 provided evidence regarding the main effect of leader CSE on encouragement of creativity (Hypothesis 1). The interactive effect model at step 2 provided evidence regarding the moderating effect of LMX on the link between leader encouragement of creativity and follower creative process engagement (Hypothesis 3). Finally, models at all three steps provided evidence regarding the unconditional and conditional indirect effects of leader CSE on follower creativity via leader encouragement of creativity and follower creative process engagement (Hypotheses 2 and 4).

As shown in Table 3, the main effect of leader CSE on encouragement of creativity was positive and significant ($\gamma = 0.28$, $p < .001$). This yields support for Hypothesis 1. To test Hypothesis 2 predicting the unconditional indirect effect of leader CSE on follower creativity via leader encouragement of creativity and follower creative process engagement, we computed an estimate of this indirect effect as a product of three paths – CSE $\rightarrow$ encouragement of creativity ($\gamma = 0.28$, $p < .001$), group mean of leader encouragement of creativity $\rightarrow$ follower creative process engagement ($\gamma = 0.23$, $p < .001$), and group mean follower creative process engagement $\rightarrow$ follower creativity ($\gamma = 0.44$, $p < .001$) – and tested it using a MC CI. An estimate of the unconditional indirect effect of CSE on creativity was positive and significant: 0.03, 95% MC CI [0.01; 0.06], which yields support for Hypothesis 2. It should be noted that the direct effect of leader CSE on creativity remained positive and significant when both mediators were in the model ($\gamma = 0.18$, $p < .001$), which suggests that leader encouragement of creativity and follower creative process engagement partially mediated the effect of leader CSE on follower creativity. In addition, as seen in the models with creative process engagement and creativity as outcomes, the effects of leader CSE on both
creative process engagement and follower creativity were positive and significant when follower CSE was also included in the models. This suggests the incremental validity of leader CSE above and beyond follower CSE in the prediction of follower creativity.

Further, the interactive effect of leader encouragement of creativity and follower LMX on follower creative process engagement predicted in Hypothesis 3 was significant (γ = 0.15, p < .05). To probe this interaction, we conducted a simple slopes test (Aiken & West, 1991). Fig. 2 provides an interaction plot with simple slopes for LMX at one standard deviation below the mean and LMX at one standard deviation above the mean. The first simple slope computed for LMX at one standard deviation below the mean was positive but not significant (0.13, p > .05). The second simple slope computed for LMX at one standard deviation above the mean was positive and significant (0.33, p < .001), suggesting that the moderating effect of LMX becomes noticeable at its higher levels. The results of this analysis suggest that leader encouragement of creativity and follower LMX interact to affect follower creative process engagement, which yields support to Hypothesis 3. Below, in the test of Hypothesis 4, we examine how this moderating effect of LMX alters the magnitude of the indirect effect of leader CSE on follower creativity via leader encouragement of creativity and follower creative process engagement.

To test Hypothesis 4 predicting the moderating effect of follower LMX on the indirect link between leader CSE and follower creativity via leader encouragement of creativity and follower creative process engagement, we computed estimates of the conditional indirect effects of CSE at low (mean – 1SD) and high (mean + 1SD) values of the moderator (Hayes, 2015; Preacher, Rucker, & Hayes, 2007) and tested these conditional indirect effects using MC CIs. An estimate of the conditional indirect effect of CSE on creativity at low LMX was positive yet not significant: 0.02, 95% MC CI [–0.00; 0.04], whereas an estimate at high LMX was positive and significant: 0.04, 95% MC CI [0.01; 0.08]. The index of moderated mediation (Hayes, 2015) was 0.02, 95% MC CI [0.002; 0.04], suggesting that these two conditional indirect effects were different from each other. This set of analyses yields support to Hypothesis 4.

Finally, although we did not hypothesize the main effects of LMX on follower creativity, it should be noted that this effect was positive and significant (see the main effects model with creativity as an outcome), which replicates findings obtained in the previous studies that examined this main effect (Atwater & Carmeli, 2009; Joo et al., 2013; Khazanchi & Masterson, 2011; Liao et al., 2010).

5. Discussion

In the present study, we examined the role of leader CSE in follower creativity. Our findings indicate that leaders with higher CSE are more likely to engage in behaviors encouraging follower creativity, which in turn increases followers’ engagement in creative processes and ultimately has a positive impact on follower creativity. In addition, leader encouragement of creativity is more likely to facilitate followers’ engagement in creative processes in the presence of higher LMX reported by followers. Further, the indirect effect of leader CSE on follower creativity via leader encouragement of creativity and follower creative process engagement is stronger in the presence of higher LMX, suggesting that the indirect effect of leader CSE on follower creativity is more likely to transpire in a favorable context of high-quality LMX. These findings yield meaningful implications for theory and practice.

5.1. Theoretical implications

Our study extends creativity research in several ways. First, it adds to the body of research examining the role of leaders in stimulating follower creativity by testing the effect of a leader motivational attribute – leader CSE – on follower creativity. The existing literature on the role of leaders in creativity has mostly focused on exploring how leader behaviors (e.g., Zhang & Bartol, 2010) and relationships with followers (e.g., Liao et al., 2010) may affect follower creativity. Recognizing the importance of these prior studies, yet acknowledging that the sole focus on leader behaviors and leader–follower relationships may not be sufficient to fully account for the role of leaders in follower creativity, Tierney (2008) called for more refined research on the influence of leaders’ personal attributes on follower creativity.

As shown by leadership researchers, leader behaviors are influenced by their personal attributes (Bono & Judge, 2004; Judge et al., 2002). Given that not all leaders are equally prone to engaging in behaviors that help improve employee creativity, studying the effects of leader attributes on follower creativity helps to pinpoint the original source on the part of leaders that may trigger leader creativity-encouraging behaviors and, ultimately, have a positive impact on employee creativity. Interestingly, despite the theoretical and practical importance of examining the effects of leader attributes on employee creativity, these effects remain understudied (for exceptions, see Tierney et al., 1999 who studied the role of leader intrinsic motivation in employee creativity; see also Gibson et al., 1993; Tierney, 2008; Zhou & George, 2003). Directly addressing this research gap, this study builds on social cognitive theory (Bandura, 1997, 2001) and prior CSE studies (e.g., Tierney & Farmer, 2002) to not only examine leader behaviors (i.e., leader encouragement of creativity) and relationship with followers (i.e., LMX) but also demonstrate that leaders’ CSE is a leader motivational attribute that has a positive effect on follower creativity above and beyond the effect of a follower’s own CSE. Thus, this study contributes to the creativity literature by not only expanding the nomological network of leader antecedents of follower creativity, but also delineating a more complete and nuanced picture of the distinct roles that different leader factors (personal attributes, behaviors, and relationships with followers) play in follower creativity.

Second, we developed and tested a moderated sequential mediation model that unpacks the complex process by which leader CSE influences follower creativity. To more clearly understand the relationships between leader attributes and employee creativity, researchers need to flesh out the mediating processes underlying these relationships and, more specifically, the “ways in which work-group supervisors’ attributes influence employee creativity” (Tierney, 2008, p. 114). As pointed out by Hong (2012, p. 214), “such efforts (in mediation analysis) are fundamentally important to knowledge building.” The creativity literature displays two major streams of research on leadership and creativity. One stream has focused on uncovering a repertoire of leader behaviors beneficial or detrimental to follower creativity (e.g., transformational leadership in Gong et al., 2009; empowering leadership in Zhang & Bartol, 2010). The other stream has looked at structural, relational, or job factors that can lead to leader behaviors related to employee creativity (e.g., Liu, Liao, & Lai, 2012). However, little work has examined leader personal attributes that would trigger such behaviors and processes underlying the links from leader personal attributes to follower creativity. Integrating and extending these two streams of research on leadership and creativity, we propose and obtained empirical support for a multistep path model to shed light on the association between leader CSE and follower creativity. The model unveils which behaviors leaders high in CSE engage in and which resultant follower behaviors may directly
facilitate follower creativity. Overall, our theorizing and empirical results provide useful insights into the underlying process whereby leader attribute (i.e., CSE) may affect follower creativity through impacting leader and then follower behaviors.

Third, this research highlights the utility of an inter-individual approach to studying the relationship between motivational force and employee creativity. Past motivational studies on creativity have examined the intra-individual effects of one’s intrinsic motivation (e.g., Zhang & Bartol, 2010) and CSE (Tierney & Farmer, 2011) on one’s own creativity, and have considered intrinsic motivation and CSE to be among the proximal antecedents of creativity. Our theorizing and findings illustrate that our understanding of how motivation influences employee creativity remains incomplete without an explicit consideration of the unique mechanisms and dynamics whereby leader motivational attributes (such as CSE examined in this study) influence follower creativity across levels of organizational hierarchy. Following this inter-individual approach, future studies can continue to uncover the potential impact the motivations of leaders, coworkers, friends, and family members have on employee creativity. Such studies are able to offer a novel set of motivational predictors and relevant pivotal processes to the question of how motivation affects employee creativity.

Fourth, our study extends the leadership and creativity literature by demonstrating a boundary condition of the effect of leader CSE on follower creativity – follower LMX. Our findings indicate that when followers perceive a high-quality LMX relationship with their leaders, leaders’ CSE is more likely to spark followers’ creative performance through leader encouragement of creativity and follower creative process engagement. This finding suggests that the role of LMX in employee creativity is more complicated than previously considered. Namely, LMX has not only a direct effect on follower creativity (as found in previous research, e.g., Atwater & Carmeli, 2009; Joo et al., 2013; Khazanchi & Masterson, 2011; Liao et al., 2010, and supported by the results of this study), but also may serve as a contextual factor facilitating the enactment of leader creativity-related influence. By looking at the moderating effect of LMX, we also answer the call by creativity researchers to “further examine LMX in terms of its ability to serve as a motivating, enabling, and interpretive force for employee creativity” (Tierney, 2008, p. 114). This implies going beyond studying the main effects of LMX to investigate its potential moderating influences on the processes leading to employee creativity.

Further, the moderating effect of LMX we found might be of interest not only to creativity scholars but also to leadership researchers. Coupled with similar findings obtained in other LMX studies (e.g., Fisk & Friesen, 2012; Sparrowe et al., 2006), our findings suggest that LMX may serve as a boundary condition for leader domain-specific influence. In other words, if a leader strives to shape follower behaviors or attitudes in a certain domain (be it creativity, safety behaviors, or citizenship behaviors), these leader influence attempts are likely to be more successful if they occur in the trusting and secure context of high-quality LMX.

5.2. Practical implications

The results of this study offer several practical implications. Our finding that leader CSE has a positive indirect effect on follower creativity above and beyond the effect of follower CSE suggests that organizations in need of employee creativity (e.g., firms with a strong emphasis on R&D) should develop leadership programs aimed at fostering leaders’ confidence in producing creativity. Previous leadership and creativity scholarship generally recommends initiating training programs focused on leader behaviors supportive of employee creativity (e.g., Zhang & Bartol, 2010). However, given the demonstrated positive intra-personal (Tierney & Farmer, 2002, 2004) and inter-personal (unveiled in this study) influences of CSE on creativity, it may be more effective and efficient for organizations to concentrate their valuable resources on improving leader CSE, which will be beneficial to both leader and follower creativity.

Given that self-efficacy is trainable and the improvements in efficacy that result from self-efficacy training programs may lead to desirable organizational outcomes (Luthans, Youssef, & Avolio, 2007; McNatt & Judge, 2008), organizations concerned with improving employee creativity may want to develop interventions targeting CSE as a domain specific form of self-efficacy. Further, according to social cognitive theory (Bandura, 1997) and creativity studies (e.g., Gong et al., 2009), top organizational leaders can proactively and publicly recognize and reward the creative outputs of lower-level managers. Such efforts may lead lower-level managers to accumulate enactive mastery experience regarding creativity, thereby improving their CSE. Our research should also encourage organizations to consider job candidates’ CSE in the recruitment process in order to identify managers who are better positioned to foster employee creativity.

The uncovered moderating effect of LMX on the indirect relationship between leader CSE and follower creativity leads us to advocate that organizations launch intervention programs (e.g., one-on-one mentorship/coaching and social events, which can help connect employees with managers) to strengthen relationships between leaders and followers. These intervention programs should be designed and implemented in a way that would increase the frequency of social interactions and facilitate quality conversations, mutual understanding, and affective connections between managers and employees (Mayfield & Mayfield, 1998).

5.3. Limitations and directions for future research

This study, despite carrying theoretical and methodological strengths, has several limitations that point to meaningful future research avenues. First, the finding that leader encouragement of creativity and then follower engagement in creative processes only partially mediated the effect of leader CSE on follower creativity exposes the need for investigating additional potential mediators. For example, it is possible that leader CSE contributes to the formation of a favorable climate for creativity (Gong, Kim, Zhu, & Lee, 2013; Hunter, Bedell, & Mumphord, 2007), which will in turn make followers devote to creative processes and improve their creative performance. We recommend that future research tests this and other mediating mechanisms that could potentially account for the relationship between leader CSE and follower creativity. We also recommend that future studies employ qualitative research methods (e.g., observations of and interviews with leaders and followers) to shed additional light on what leaders with high CSE typically do to foster employee creativity and how their interactions with employees factor in.

Second, in this study drawing on social cognitive theory (Bandura, 1986, 1997) and creativity research (e.g., Tierney et al., 1999; Tierney & Farmer, 2002, 2011), we looked at the role of leader CSE in follower creativity. Previous studies, however, suggest that additional personal characteristics (e.g., openness to experience and conscientiousness; George & Zhou, 2001) may be also related to creativity. These characteristics have been primarily studied from an intra-individual perspective focused on followers (i.e., how employees’ personal attributes affect their own creativity). Given our findings supporting the effect of leader CSE on employee creativity, a valuable extension of this research will be to take our inter-individual approach and test the unique effects of other leaders’ attributes such as openness to experience, conscientiousness (George & Zhou, 2001), risk-taking propensity, and leader affective dispositions and states (Tierney, 2008) on follower creativity. We also suggest that future studies establish the relative
importance of leaders’ personal attributes in predicting employee creativity (Johnson & LeBreton, 2004; Krasikova, LeBreton, & Tonidandel, 2011; Tonidandel & LeBreton, 2011). This will allow researchers to pinpoint leader characteristics that are most influential with respect to employee creativity.

Third, the relationship between leader CSE and leader encouragement of creativity may be contingent on contextual factors. When job conditions (e.g., creativity-focused jobs) and workplace characteristics (e.g., creative climate) emphasize creativity, leaders will be more likely to channel their CSE toward encouraging follower creativity. In contrast, if organizational context does not allow for or require creativity (e.g., when strong bureaucratic norms are present, Cummings, 1965), leader CSE should have weaker impact on their behaviors encouraging follower creativity. Future studies could delve more deeply into the ways different contextual factors accentuate or attenuate the impact of leader CSE on leader encouragement of creativity.

Fourth, although leader ratings of employee creativity have been widely used in the previous research (e.g., Gong et al., 2009; Tierney & Farmer, 2004), obtaining creativity ratings from multiple sources and assessing creativity using objective measures (Liao et al., 2010; Zhou & Shalley, 2003) would better capture the criterion of creativity and help obtain answers to interesting research questions regarding the convergence and divergence of various creativity measures. Future studies might consider using invention disclosure reports filed by employees, patent applications and awarded patents, research paper presentations at professional meetings, creativity awards, and award nominations (cf. Dewett, 2007; Oldham & Cummings, 1996) in addition to or in lieu of supervisor ratings of creativity.

Another limitation of our study is that leader CSE and employee creativity were rated by supervisors and therefore may share some common source variance. Although these two variables were measured at two different time points and combining them into the same factor worsened the fit of the measurement model (see Table 1, Model 4 with two factors: leader-rated variables and subordinate-rated variables), which somewhat alleviates concerns regarding potential common method bias, this does not completely resolve the same-source problem. Future studies should ask a different source (e.g., coworkers) to rate employee creativity.

Finally, an alternative explanation for our findings is that leaders higher in CSE attract and/or select employees who are more creative (Schneider, 1987). One way to address this issue is to conduct a longitudinal study (Ployhart & Vandenberg, 2010) in which a sample of newly formed leader-subordinate dyads is tracked over time. By comparing employee creativity measured in the very beginning of their relational tenure with a leader to their creativity measured sometime later in their relational tenure, researchers will be able to determine the extent to which leaders high in CSE attract creative subordinates vs. the extent to which they develop such subordinates. We call for future longitudinal research to scrutinize this similarity-attraction possibility that may account for the effect of leader CSE on employee creativity.

6. Conclusion

Extending research on leadership and creativity, the present study highlights the salient role of leader CSE in facilitating employee creativity. Specifically, drawing from social cognitive theory, creativity research, and LMX theory, this research examines the mechanism whereby leader CSE contributes to follower creativity and a boundary condition under which this effect of leader CSE is more pronounced. The findings reveal a nuanced multi-step process underlying follower creativity. That is, leader CSE spurs leaders to encourage follower creativity, which makes followers more likely to engage in creative process and, as a result, improve their creative performance, with this indirect effect being stronger in the presence of higher follower LMX. Our hope is that this study will spark continued interest in exploring the influence of leaders’ personal attributes on important follower outcomes including but not limited to employee creativity (e.g., employee voice behavior, and counterproductive behavior, among others).

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Appendix A

Hayes (2015) provided guidelines for computing an index of moderated mediation for moderated sequential multiple mediator models in which the path between the predictor and the first mediator (i.e., \( X \rightarrow \text{Mediator}_1 \)) is moderated. The model tested in this study is different in the sense that its second path (i.e., \( \text{Mediator}_1 \rightarrow \text{Mediator}_2 \)) is moderated. Therefore, we derived the index of moderated mediation for our model following the steps taken in Hayes (2015).

As shown in Table 3, we tested our hypotheses in three steps: (1) CSE \( \rightarrow \) encouragement of creativity (\( X \rightarrow \text{Mediator}_1 \)), (2) CSE \( + \) encouragement of creativity \( + \) LMX \( + \) encouragement of creativity \( + \) LMX \( \rightarrow \) creative process engagement (\( X + \text{Mediator}_1 + \text{Mediator}_2 \rightarrow \text{Mediator}_1 \)), and (3) CSE \( + \) encouragement of creativity \( + \) LMX \( + \) encouragement of creativity \( + \) LMX \( + \) creative process engagement \( \rightarrow \) creativity (\( X + \text{Mediator}_1 + \text{Mediator}_2 \rightarrow \text{Mediator}_2 \rightarrow Y \)). These steps can be depicted using the following regression equations respectively:

\[
M_1 = \beta_1 + \beta_2 X + e_{M1}.
\]

\[
M_2 = \beta_3 + \beta_4 X + \beta_5 M_1 + \beta_6 W + \beta_7 M_1 + \beta_8 M_2 + e_{M2}.
\]

\[
Y = \lambda_1 + \lambda_2 X + \lambda_3 M_1 + \lambda_4 W + \lambda_5 M_2 + e_Y,
\]

where \( \lambda \) = intercept, \( X \) = predictor (leader CSE), \( M_1 \) = mediator1 (encouragement of creativity), \( M_2 \) = mediator2 (creative process engagement), \( W \) = moderator (LMX), \( Y \) = outcome (creativity), \( e \) = error term, using Hayes’ (2015) notations.

Applying Hayes’ (2015) Eq. (11) to this set of equations, the indirect effect of \( X \) on \( Y \) via \( M_1 \) and \( M_2 \) will be the product of (1) the effect of \( X \) on \( M_1 \) (i.e., path \( a_1 \) from our Eq. (1)), (2) the effect of \( M_1 \) on \( Y \) (i.e., path \( a_2 \) from our Eq. (3)), and (3) the conditional effect of \( M_1 \) on \( M_2 \). This conditional indirect effect of \( M_1 \) on \( M_2 \) is obtained as \((a_2 + a_3 W)\) using coefficients from our Eq. (2) (see Hayes (2015) for details regarding how this effect was computed; see also Edwards and Lambert’s (2007) computations of conditional indirect effects in the second stage moderation models). Thus, the indirect effect of \( X \) on \( Y \) via \( M_1 \) and \( M_2 \) is:

\[
\omega_{MM} = a_1 b_2(a_1 + a_2 W) = a_1 b_2 a_1 + a_1 b_2 a_2 W.
\]

This equation demonstrates that the conditional indirect effect of \( X \) on \( Y \) via \( M_1 \) and \( M_2 \) (i.e., \( \omega_{MM} \)) is a linear function of \( W \) with intercept \( a_1 b_2 a_1 \) and slope \( a_1 b_2 a_2 \). According to Hayes (2015), the slope of this line – \( a_1 b_2 a_2 \) – is the index of moderated mediation. We computed this index in our test of Hypothesis 4.


