The indirect effect of leader humility on employee creativity through a growth mindset for creativity

Wa Yang and Shiyong Xu

Abstract
Drawing on social learning theory, the authors hypothesized that leader humility would have an indirect effect on employee creativity through employees’ belief in the malleability of creativity (a growth creative mindset). They further hypothesized that this indirect effect would be particularly pronounced in research-and-development-related work teams. They tested these hypotheses in a survey study of 476 Chinese employees. The results support both hypotheses: employees’ perception of team leaders’ humility was positively related to employees’ growth creative mindset, which in turn was positively associated with employee creativity. In addition, this indirect effect was stronger in research-and-development-related teams than in other teams. This study provides a new explanation of the link between leader humility and employee creativity through a growth creative mindset. The practical implications are discussed.

Keywords
leader humility, growth creative mindset, employee creativity, social learning theory

Received 8 June 2021; accepted 27 June 2022

Introduction
There is an increasing need today for employees to accomplish their tasks with creativity at work (Mumford et al., 2002; Reiter-Palom & Illies, 2004). Employee creativity—the generation of novel and useful ideas by individual employees—is critical for organizations to achieve long-term growth (Anderson et al., 2014; Shalley & Gilson, 2004; Shalley et al., 2004). Past studies have connected employee creativity positively with leader humility (J. Wang et al., 2016; Y. Wang et al., 2018), a leadership style that favors growth and learning. However, the underlying mechanism of this association has not yet been fully examined.

A precondition for employees to develop their creativity lies in continual growth and learning (Gong et al., 2009; J. Zhou, 2003). Therefore, in the current study, we focus on the teachability aspect of humble leadership, which captures leaders’ willingness to learn at every opportunity (Owens & Hekman, 2012). Drawing on social learning theory (Bandura, 1977, 1986), we propose that humble leaders’ willingness to learn and grow has a positive modeling effect on their followers’ belief in malleable creativity (a growth creative mindset), which in turn relates to their enhanced creative performance. We aim to offer a new explanation for the relationship between leader humility and employee creativity. Further, as growth-mindset effects are domain-specific (Dweck, 2000), we contend that employees who work in research-and-development-related (R & D-related) teams are more likely to take creativity growth as their social learning goal and strive for it.

Employee creativity and leadership
As in past research (Amabile, 1988, 2018; Woodman et al., 1993; J. Zhou & Hoever, 2014), we define employee creativity as the ability to generate ideas, products, services, processes, and procedures that are both novel and useful...
for their organizations. Employee creativity is crucial for idea generation, which precedes and is necessary for idea implementation (Hughes et al., 2018; Shalley et al., 2004). As such, creativity is important for organizations’ sustainable growth in dynamic business environments (Amabile, 1988, 2018; Anderson et al., 2014; Hughes et al., 2018; Shalley et al., 2004; J. Zhou & Hoever, 2014).

Research on employee creativity has shifted its focus from the main effects of individual differences (Barron & Harrington, 1981) or contextual factors (Mumford et al., 2002) to an interactionist perspective (Anderson et al., 2014; Shalley et al., 2004; Woodman et al., 1993; J. Zhou & Hoever, 2014), which regards employee creativity as a result of the joint effect of individual differences and environmental factors. From an interactionist perspective, team leadership has a proximal effect on employee creativity (Amabile et al., 2004; Hughes et al., 2018; Lee et al., 2020; Mainemelis et al., 2015; Mumford et al., 2002; Shalley & Gilson, 2004). When confronted with an environment with “unknown unknowns” (Ansell & Boin, 2017, p. 1079) and challenging but necessary changes (Mueller et al., 2011), effective leaders are ready to accept and adapt to the unknowns and able to nurture employee creativity.

Leader humility and employee creativity

Leader humility refers to leaders’ “tendency to approach interpersonal interactions with a strong motive for learning through others” (Owens et al., 2013, p. 1519). Humble leadership has three major behavioral manifestations: (a) being willing to achieve accurate self-awareness; (b) recognizing and displaying an appreciation of others’ strengths and contributions; and (c) teachability, which refers to showing openness to knowledge and others’ feedback and opinions (Owens & Hekman, 2012; Owens et al., 2013). Leader humility predicts subordinates’ positive attitudes (Ou et al., 2016; Owens et al., 2013) and desirable behaviors, such as work engagement (Owens et al., 2013), helping (Carnevale et al., 2019), a constructive voice (Li et al., 2018), and employee performance (Owens et al., 2013).

There is preliminary evidence for a positive relationship between leader humility and employee creativity, either directly or through perspective-taking (J. Wang et al., 2016) and psychological capital (Y. Wang et al., 2018). In a recent meta-analysis, leader humility was found to have very strong positive effects on employee creativity, surpassing those of transformational leadership and leader–member exchange (Lee et al., 2020). The positive effect of leader humility on employee creativity has been interpreted from a social information processing perspective: humble leaders send out social cues to motivate employees’ perspective-taking, which in turn fosters employee creativity (J. Wang et al., 2016). Specifically, leaders’ humble conduct may signal their predilection to view themselves objectively and accept something greater than themselves. Moreover, humble leaders tend to listen before they talk, creating a positive interaction climate. Therefore, humble leaders can inspire their employees to broaden their perspectives.

In another study, the overall supportive manner of humble leaders is believed to have positive effects on subordinates’ creativity through psychological capital—a four-dimension construct encompassing hope, optimism, resilience, and self-efficacy (Y. Wang et al., 2018). Humble leaders value incremental development and thus help their followers foster an adaptive attitude toward challenges (resilience). By acknowledging their limits and experimentation, humble leaders demonstrate a goal-directed, step-by-step approach in their pursuits (hope). Humble leaders’ expression of appreciation toward their followers also enhances followers’ self-efficacy, which further leads to their positive appraisal of current and future circumstances (optimism).

The growth creative mindset

We argue that the above interpretations overlook a major aspect of humble leadership: teachability. Owens and Hekman (2012, p. 798) regard teachability as “the most central element” of leader humility. It is a key to organizations’ sustainable competitiveness in a knowledge economy (Owens et al., 2013) and in times of ubiquitous change (Owens & Hekman, 2012; Owens et al., 2012). Creative goal attainment requires employees to have a favorable attitude toward learning and growing (Gong et al., 2009; J. Zhou, 2003). Humble leaders exemplify learning and growth and, as role models, inspire their followers to imitate their learning motivation. Drawing on social learning theory (Bandura, 1977, 1986), we contend that leader humility supports the development of a growth creative mindset among employees, which in turn fosters their creativity.

A creative mindset refers to people’s beliefs about the malleability of their creativity (Karwowski, 2014). People with a growth creative mindset believe that creativity is a malleable quality, while those with a fixed creative mindset hold that creativity is an innate and fixed trait. Creative mindsets affect people’s motivations (e.g., creative self-efficacy; Puente-Díaz & Cavazos-Arroyo, 2017; Royston & Reiter-Palmon, 2019) and shape their creativity-relevant behaviors (Hass et al., 2017; Pretz & Nelson, 2017; Y. Zhou et al., 2020).

To elaborate, the construct of the creative mindset originates in the broader literature on implicit theories regarding the self, intelligence, and creativity (Dweck, 2000; Sternberg, 1985). Employees who possess a fixed mindset are inclined to judge their level of creativity. They make premature, sweeping inferences about their lack of creativity from initial setbacks. Such sweeping inferences...
discourage them from persisting in challenging creative tasks and learning from their mistakes. In contrast, in a growth creative mindset, creativity is viewed as a quality that can be developed through effort, the use of effective learning strategies, and deliberate practice. Employees who possess a growth mindset are willing to engage in challenging creative activities (Puente-Díaz & Cavazos-Arroyo, 2017), persist in the face of setbacks, and improve their creativity skills (Y. Zhou et al., 2020).

Furthermore, with a growth creative mindset, making mistakes is viewed as an opportunity for learning, and learning from mistakes is essential for sustainable growth in creative abilities. Because creativity requires explorations in unknown territories (Mueller et al., 2011; Sternberg, 2006), a growth creative mindset is a particularly valuable psychological quality in creative performance. Moreover, people working on creative tasks need to invest and sustain cognitive efforts to break through the mental set (Reiter-Palmon & Illies, 2004; Shalley & Gilson, 2004), challenge the status quo, accept the risk of failure, and overcome resistance (Amabile, 1988; Mueller et al., 2011; Sternberg, 2006). Having a growth creative mindset should be positively associated with creativity.

Experimental studies on the mindsets for intelligence have documented how mindsets affect people’s actions and performance. When given difficult tasks, individuals with a growth mindset tend to persist, choose constructive strategies (e.g., self-encouragement), and show improved performance (Diener & Dweck, 1978, 1980; Intasao & Hao, 2018; Puente-Díaz & Cavazos-Arroyo, 2017). Hong et al. (1999) show that, in the face of failure, university students who were reminded of the growth mindset tended to attribute the failure to a lack of effort, persist with the task, and take remedial measures. The presence of a growth creative mindset has also been shown to correlate positively with creative performance (Hass et al., 2017; Karwowski, 2014; Pretz & Nelson, 2017). Additionally, employees who possess a growth creative mindset tend to work effectively on creativity tasks and have relatively high creative performance (Y. Zhou et al., 2020).

Although creative mindsets have received attention in organizational research (Y. Zhou et al., 2020), most researchers have treated creative mindsets as an intrapersonal quality (Karwowski et al., 2019; O’Connor et al., 2013) and have not examined how they develop in an individual’s social environment. Research evidence has indicated that creative mindsets can be nurtured. In experimental studies, the growth (fixed) mindset can be situationally induced (Karwowski et al., 2019; O’Connor et al., 2013). Researchers have found that culture (Tang et al., 2016) and important others (e.g., parents; Karwowski et al., 2022) can influence a person’s mindset. We posit that leader humility, as a contextual factor in work teams, is associated with a greater prevalence of the growth creative mindset among subordinates.

The modeling effects of humble leaders

Based on social learning theory (Bandura, 1977, 1986), we propose that employees may develop a growth creative mindset by observing and learning from humble leaders in their work teams. The theory contends that people can learn vicariously from role models and the modeling effect is not merely behavioral mimicry (Bandura, 2016). Instead, the vicarious learners go through complex attentional processes, representational processes, translational production processes, and motivational processes. The learners pick up and internalize the model’s behaviors, construct their own pattern of behaviors, and decide whether or not they should perform these behaviors (Bandura, 2016). In the context of the present study, a humble leader may serve as a role model and inspire their followers to adopt a growth creative mindset in their creative goal pursuits.

Our proposal is based on three arguments. First, there is a close psychological connection between leader humility and employees’ growth creative mindset. According to Owens and Hekman (2012, p. 801), the essence of leader humility is to “model how to grow,” and a leader’s beliefs about people’s malleability are part of the roots of humble leadership. Its teachability tenet coheres with the gist of a growth creative mindset, which prioritizes learning and growth. According to social learning theory, employees learn how to grow their creativity from their humble leaders both cognitively and behaviorally—that is, employees may gradually construct their own belief that their creativity can develop through hard work by modeling their leaders’ learning-oriented behaviors in their daily problem-solving activities (see Bandura, 1977).

Second, when immediate supervisors, because of the salience of their leadership role and frequent interactions with subordinates (Mumford et al., 2002), exemplify humility, the subordinates can easily recognize and closely observe their supervisors’ humble behaviors. Moreover, leader humility is associated with followers’ trust and positive perception of their leaders (Owens & Hekman, 2012), which confers legitimacy to the humble supervisors’ role-model status.

Third, as role models, humble leaders may affect how employees interpret and respond to creative activities. Conceptually, people can construct their creative mindset through observational learning (Hass et al., 2017). Research has shown that, in non-work settings, parents (Karwowski et al., 2022) and teachers (Paek & Summers, 2017) play a major role in shaping students’ creative mindset. For example, Haimovitz and Dweck (2017) found in their experiments that students socially constructed a fixed belief about their intelligence when they observed that their parents viewed failures as debilitating instead of enhancing and were concerned about their children’s performance or ability. Likewise, humble leaders may
communicate the value of learning and incremental improvement rather than performance and outcomes (Owens & Hekman, 2012), which in turn draws employees’ attention to the mutability of creativity through effective effort.

In short, according to social learning theory, employees may imitate the personal qualities of their immediate supervisors. Through vicarious learning, employees may infer from the behavioral signatures of humility displayed by a humble leader the belief in the learnability of creative skills (a growth creative mindset). These employees will gradually adopt and internalize the growth creative mindset. Based on the discussion thus far, we have formulated the following three hypotheses:

Hypothesis 1. Leader humility is positively related to employees’ growth creative mindset.
Hypothesis 2. Employees’ growth creative mindset is positively related to employee creativity.
Hypothesis 3. Employees’ growth creative mindset mediates the relationship between leader humility and employee creativity.

Domain-specificity of the growth-creative-mindset mediation effect

Past research has shown that growth-mindset effects are domain-specific. Mindsets for intelligence are more strongly associated with outcomes in the academic achievement domain than those in other domains (Dweck, 2000). Likewise, mindsets for morality are more strongly associated with judgments and inferences in the moral domain than those in other domains (Chiu et al., 1997). Accordingly, mindsets for creativity should be most strongly associated with outcomes in work domains, where creativity is of critical importance.

An implication of this argument is that those team leaders who exemplify humility or the willingness to learn through others are likely to be accepted by their subordinates as role models if the work teams value creativity and learning. Creativity and learning are highly valued in R & D teams. Creativity is an explicit requirement in R & D teams; they are tasked with designing new products or tackling problems with new solutions (Gilson & Shalley, 2004; Unsworth & Clegg, 2010). Producing creative solutions is a clear goal for R & D team members (Gilson & Shalley, 2004; Kim et al., 2010). Thus, learning how to become a creative performer is a salient social learning goal among R & D team members. Additionally, in R & D contexts, team members feel that it is appropriate to polish their creativity skills (Gilson & Shalley, 2004). Therefore, we expect that humble leaders in R & D teams, who are accepted by their subordinates as role models, should be able to inspire their followers to embrace a growth creative mindset. We thus propose the following two hypotheses:

Hypothesis 4. The positive association between leader humility and employees’ growth creative mindset is stronger in R & D work teams than in other work teams.
Hypothesis 5. The indirect effect of leader humility on employee creativity via employees’ growth creative mindset is stronger in R & D work teams than in other work teams.

The hypothesized model is shown in Figure 1.

Method

Sample and procedures

To test our hypotheses, we collected data from companies in a wide range of industries—including technology, manufacturing, consultancy, and finance—in different provinces of China. We first contacted human resources professionals in these companies and explained the purpose and procedure of our survey. With their support, we estimated the size of our samples and prepared the questionnaires.

To minimize common method bias, we collected our data from two sources in two waves. At Time 1, we invited 590 employees to provide ratings on their perception of leader humility and report their own growth creative mindset and demographic variables. A total of 532 employees completed the survey. One month later, at Time 2, 141 supervisors from the same work teams were asked to

![Figure 1. The Hypothesized Model](image-url)
evaluate their subordinates’ creativity, with their names listed on the questionnaire. A total of 131 supervisors provided valid responses.

Data from a final sample of 476 employees was included in the analysis (80.7% response rate). The data from the remaining participants was not included because (a) they did not provide complete data, (b) we were unable to match their data with the supervisor ratings, or (c) they did not belong to a work team. The final sample came from 121 teams with an average team size of 3.93 employees. These teams included R & D teams, product design teams, finance teams, management teams, and operation teams. The average age of our participants was 31.69 years ($SD = 7.98$) and 70.8% of them were female. The average organizational tenure was 4.68 years ($SD = 6.53$). The most frequently reported education level was undergraduate (69.1%).

**Measures**

Following the commonly used translation and back-translation procedure, all of the scales were translated from English into Chinese by two bilingual professionals (Brislin, 1970).

**Leader humility.** We measured leader humility with Owens et al.’s (2013) nine-item Expressed Leader Humility Scale. The employees used a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree) to rate the level of their supervisors’ humility. A sample item is “This person is willing to learn from others” (Cronbach’s $\alpha = .95$).

**Employee growth creative mindset.** We used the subscale of the Creative Mindsets Scale (Karwowski, 2014) to measure the growth creative mindset. The subscale consists of five items ranging from 1 = strongly disagree to 7 = strongly agree. A sample item is “Everyone can create something great at some point if he or she is given appropriate conditions” (Cronbach’s $\alpha = .62$).

**Employee creativity.** The supervisors rated their subordinates’ creativity on a 6-point scale developed by Farmer et al. (2003). The scale has four items, including “(This employee) seeks new ideas and ways to solve problems” (Cronbach’s $\alpha = .95$).

**Type of team function.** Following previous research (Amabile & Gryskiewicz, 1987; Unsworth & Clegg, 2010), we coded a work team as a R & D team (1) if its primary function was R & D or product design, and coded other teams as non-R & D teams (0). In our sample, 62 teams were coded R & D teams (about 51.2% of the total number of teams).

**Control variables.** As in past creativity research, we included the following demographic variables as control variables in our analysis: age, gender, company tenure (years in the company), and educational level. To control for potential unobserved heterogeneity at the firm level, we included dummy variables representing the company. Further, we controlled dyad tenure to minimize its potential confounding effects with team leaders on subordinates’ performance.

**Analytic strategy.** Since our study involved a team-level variable (i.e., type of team function), we performed multilevel modeling analysis using Mplus 7.4 (Muthén & Muthén, 2017). Variables at the individual level were included in the within-subjects (Level 1) model and the variable at the team level (i.e., type of team function) was included in the between-subjects (Level 2) model. The intraclass correlation coefficients (also referred to as ICCs) of our mediator and dependent variables indicated the amount of variance in employees across different teams (for growth creative mindset, ICC(1) = .12; for employee creativity, ICC(1) = .31). Asymmetric confidence intervals (CIs) were computed using R to further test the indirect and conditional indirect effects using the Monte Carlo method.

**Results**

We first performed confirmatory factor analyses to establish the discriminant validity of the three latent variables in our model: leader humility, employee growth creative mindset, and employee creativity. The confirmatory factor analysis results provided support for the discriminant validity of our measures (see Table 1). The three-factor solution

| Model                              | $\chi^2$ | df   | $\Delta \chi^2$ | $\chi^2/df$ | CFI  | TLI  | RMSEA |
|------------------------------------|----------|------|-----------------|-------------|------|------|-------|
| Hypothesized three-factor model: LH, EGCM, EC | 652.27   | 132  | 224.21***       | 4.94        | .92  | .91  | .09   |
| Two-factor model: LH + EGCM, EC    | 830.63   | 134  | 45.85           | 6.54        | .88  | .87  | .11   |
| Two-factor model: LH, EGCM + EC    | 876.48   | 134  | 1,157.24***     | 8.72        | .67  | .63  | .17   |
| Single-factor model: LH + EGCM + EC| 1,987.87 | 135  | 1,987.87        | 14.72       | .67  | .63  | .17   |

Note. CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation; LH = leader humility; EGCM = employee growth creative mindset; EC = employee creativity; + means combining factors.

***p < .001.
fitted the data well. It was also significantly better than all other alternative models.

Although our data was collected from two sources in two waves, the employees provided data for some variables at the same time. Thus, it is possible that this data was affected by common method biases. To examine this possibility, we performed Harman’s one-factor test, collapsing the 14 items collected from the employees into one factor. The KMO (Kaiser-Meyer-Olkin) index was .91 and Bartlett’s test of sphericity was significant ($p = .000$). The variance explained by the first unrotated factor was 46.95%. The model fit indices of this one-factor model also indicated a poorer fit with the data compared to our measurement model. Therefore, we believe that common method variance did not significantly impact our data.

Descriptive statistics, standard deviations, and correlations of the measured variables are presented in Table 2.

We conducted multilevel path analyses to test our hypotheses. The results are presented in Table 3. Leader humility positively predicted the growth creative mindset (Model 2, $\gamma = .31$, $SE = .07$, $p = .000$). Hypothesis 1 was supported. The growth creative mindset positively predicted employee creativity (Model 5, $\gamma = .26$, $SE = .05$, $p = .000$), supporting Hypothesis 2. We included both leader humility and employees’ growth creative mindset as predictors in the model, and used the Monte Carlo method to compute the CI for the multilevel mediation, using Tofghi and Thoemmes’ (2014) RMediation package. As shown in Table 4, the indirect effect was positive and significant ($\gamma = .07$, $SE = .02$, CI [.033, .113]), supporting Hypothesis 3.

To test the moderating effect, we entered the interaction of leader humility and type of team function into the model (see Model 3, Table 3). The interaction was positively associated with employees’ growth creative mindset ($\gamma = .40$, $SE = .15$, $p = .007$). We used the tool provided by Preacher et al. (2006) to plot the interaction. As shown in Figure 2, employee growth creative mindset was associated with a higher level of leader humility in R & D teams (type = 1, $\gamma = .42$, $t = 4.19$, $p = .000$). This association was attenuated among non-R & D teams (type = 0, $\gamma = .19$, $t = 2.03$, $p = .042$). Hypothesis 4 was supported.

To test Hypothesis 5, we constructed CIs based on Monte Carlo simulation using R (Preacher et al., 2010). The results are shown in Table 4. The positive indirect effect of leader humility on employee creativity via growth creative mindset was significant among R & D teams (type = 1, $\gamma = .10$, $SE = .04$, CI [.021, .200]) and not significant among non-R & D teams (type = 0, $\gamma = .03$, $SE = .02$, CI [.−.010, .074]). And the strengths of these two indirect effects were significantly different ($\gamma = .07$, $SE = .03$, CI [.013, .150]). Hypothesis 5 was supported.

**Discussion**

Research has linked leader humility to employee creativity. In the current study, we provided a new explanation for the relationship between leader humility and employee creativity. Drawing on social learning theory and focusing on the teachability aspect of humble leadership (Owens & Hekman, 2012), we found that a growth creative mindset linked leader humility to employee creativity. The gist of humble leadership is to “model how to grow” (Owens & Hekman, 2012, p. 801). Meanwhile, the creative process requires experimenting and learning from mistakes (Gong et al., 2009; J. Zhou, 2003). Humble leaders exemplifying growth may inspire employees to view resilience and effort as the pathways to creativity enhancement and embrace a growth creative mindset. By influencing employees’ creative beliefs, humble leaders foster the incremental development of creativity among their subordinates, which can significantly enhance organizations’ long-term competitiveness.

**Table 2.** Means, Standard Deviations, and Correlations Among Variables (N = 476)

| Variables                              | M   | SD  | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    |
|----------------------------------------|-----|-----|------|------|------|------|------|------|------|------|------|------|
| 1. Gender^a                           | 0.29| 0.46|      |      |      |      |      |      |      |      |      |      |
| 2. Age                                 | 31.69| 7.98| .31**|     |      |      |      |      |      |      |      |      |
| 3. Education^b                         | 3.96| 0.68| −.17**| −.16**|      |      |      |      |      |      |      |      |
| 4. Tenure                              | 4.68| 6.53| .14**| .67**| −.01|      |      |      |      |      |      |      |
| 5. Dyad tenure^c                        | 3.08| 4.45| .04  | .45**| −.10**| .55**|      |      |      |      |      |      |
| 6. Company^d                           | 7.21| 3.41| .11* | .15**| .25**| .14**| −.10*|      |      |      |      |      |
| 7. Type of team function^e             | 0.51| 0.50| −.01| .06  | .04  | .09* | .21**| .27**|      |      |      |      |
| 8. Leader humility                     | 4.15| 0.64| −.07| −.20**| .02  | −.12**| .01  | .05  | −.11*|      |      |      |
| 9. Employee growth creative mindset    | 5.17| 0.83| .17**| .20**| −.09| .19**| −.06| .03  | .18**| .17**|      |      |
| 10. Employee creativity                | 3.28| 0.99| .08  | .06  | .05  | .10* | −.06| .00  | .18**| .29**| .11* |      |

^aGender: 0 = female, 1 = male. ^bEducation level: 1 = middle school and below, 2 = high school/technical school diploma, 3 = associate degree, 4 = undergraduate, 5 = graduate and above. ^cDyad tenure is the number of years the supervisor and the focal employee have worked together. ^dCompany dummy is coded from 1 to 12. ^eType of team function: 1 = R & D relevant, 0 = R & D irrelevant.

*p < .05. **p < .01.
Furthermore, we illustrate how a growth creative mindset—a mutable personal quality (Dweck, 2008; Karwowski et al., 2019)—co-develops with leadership style in organizations, and thereby illuminate how leadership as a contextual factor can foster the development of employee creativity. Employees are embedded in an organizational environment. Their perceptions are susceptible to the influence of contextual factors. By integrating leader humility in the study of employees’ creative beliefs, our research answers the call to extend the understanding of creative mindssets’ nomological network (Karwowski & Brzeski, 2017). As mindsets are relatively easy to assess and change, we recommend that future research should be undertaken to uncover the strategies that will strengthen employees’ growth creative mindset, and its benefits for employees’ creativity development. One strategy is to promote growth-creative-mindset-oriented leadership in the workplace—that is, when facing creative tasks, leaders can frame setbacks as opportunities for developing one’s capability instead of as an indictment of one’s poor performance. Leaders may emphasize effort instead of creative abilities in employees’ appraisals. Another approach is to create a team climate or organizational culture that prioritizes learning. Managers can design an incentive scheme that encourages learning, provides learning resources for employees, and makes them feel safe to ask questions when they do not understand something. With time, these practices will help employees believe that they are able to improve their creativity through effort, and feel that their organization encourages them to do so.

Finally, we have identified the context in which the indirect effect of leader humility on employee creativity is relatively pronounced. Our results indicate that, for those who work in R & D-related teams, vicariously learning a growth creative mindset from their humble leaders is accompanied by greater gains in creative performance. This result is consistent with the domain-specific nature of growth-mindset effects (Dweck, 2000). The R & D context draws employees’ attention to the creative benefits of their humble leaders. Thus, in R & D-related teams, humble leaders may be more capable of motivating their followers’ creative engagement by cultivating their growth creative mindset.

### Table 3. Results of Multilevel Path Analysis (N = 476)

| Variables       | M1   | M2   | M3   | M4   | M5   | M6   |
|-----------------|------|------|------|------|------|------|
| Intercept       | 5.08*** | 3.62*** | 5.06*** | 3.15*** | 3.13*** | 1.87*** |
| Gender          | .23*  | .23*  | .22*  | .02  | −.02  | .01  |
| Age             | .01   | .01*  | .01   | −.01 | −.01  | −.01 |
| Education       | −.03  | −.02  | −.04  | .12  | .12   | .13  |
| Tenure          | .01   | .01   | .01   | .02* | .01   | .01  |
| Dyad tenure     | .01   | .01   | .01   | .03* | .02   | .02* |
| Company         | −.02  | −.03  | −.03* | −.02 | −.01  | −.01 |
| Leader humility | .31***| .19   | .19   | .26***| .22***|
| EGCM            |      |      |      |      |      |      |
| TTF             | .06   |      |      |      |      |      |
| Individual level $R^2$ | .07** | .13** | .12** | .05  | .11***| .13***|
| Team level $R^2$ |      |      |      |      |      |      |

Note. EGCM = employee growth creative mindset; TTF = type of team function.
* $p < .05$. ** $p < .01$. *** $p < .001$.

### Table 4. Results of Indirect and Conditional Indirect Effects (N = 476)

| Effect                                      | Estimate | SE  | 95% CI   |
|---------------------------------------------|----------|-----|----------|
| Indirect effect                             | Leader humility $\rightarrow$ EGCM $\rightarrow$ employee creativity | 0.07** | 0.02 | [0.033, 0.113] |
| Conditional indirect effect                  | Leader humility $\times$ TTF $\rightarrow$ EGCM $\rightarrow$ employee creativity | High (type = 1): 0.10* | 0.04 | [0.021, 0.200] |
|                                              | Low (type = 0): 0.03 | 0.02 | [−0.10, 0.074] |
|                                              | Difference: 0.07* | 0.03 | [0.013, 0.150] |

Note. EGCM = employee growth creative mindset; TTF = type of team function. The 95% CI was obtained on the basis of the Monte Carlo simulation method using R (with 20,000 replications).
* $p < .05$. ** $p < .01$. 

Limitations and future directions

The present study has several limitations. First, social learning is only one of the possible explanations for our results. Team leaders, as major actors in employees’ social context, may also influence employees’ perceptions and subsequent actions through social information processing (Salancik & Pfeffer, 1978)—that is, by admitting their weaknesses, appreciating others’ strengths, and remaining open to new inputs, humble leaders send social cues to their employees. Employees who receive such social information will infer that their leaders subscribe to a mutable view of creativity and align their personal view of creativity with that of their leaders. Alternatively, employees’ beliefs about creativity and leaders’ humility are both expressions of the shared culture of learning and growth in the team (team climate), which shapes the leaders’ leadership style and employees’ view of creativity and creative performance (Tang et al., 2016). Future studies could compare the explanatory power of social learning and the two alternative mechanisms.

Second, we have only focused on the positive effects of humble leadership, leaving its potential negative side for future exploration. Under some circumstances, for example, when leaders are perceived to be incompetent or when the work context has a hierarchical culture (e.g., in military work settings), leaders are likely to face threats to their reputation if they acknowledge their weaknesses or mistakes (Owens & Hekman, 2012). Narcissistic leaders may be effective in these situations because they are more visible and charismatic, and hence tend to evoke positive followership (Nevicka et al., 2011). Some researchers have begun to study the paradoxical combination of humility and narcissism in top-level management (Zhang et al., 2017). Is it possible for team leaders to be both humble and authoritarian? How may such a paradoxical combination of seemingly incompatible leadership styles affect employee creativity? These questions may inspire new insights into the relationship between leadership and creativity.

The third limitation is that we used a cross-sectional design. Although we tried to minimize the common method bias by collecting data from two sources in two waves, it is still not possible to make causal inferences from our results. To elaborate, perceived leader humility and an employee growth creative mindset were both rated by employees at Time 1. This might have created the problem of a “consistency motif” (Podsakoff & Organ, 1986). When answering a series of questions, respondents tend to maintain coherence in their answers. In our case, if employees rated their supervisors’ behavior as humble and held a positive attitude toward it, they might have also endorsed a growth mindset. Likewise, we had supervisors assess their subordinates’ creative performance. The appraisals of employees’ creative performance might have been biased by the leaders’ impressions of their employees based on a series of abstractions (e.g., recall and weighting), causing artifactual covariation (Podsakoff & Organ, 1986). To provide evidence for the causal effect of leader humility on employees’ growth creative mindset and employee creativity, it is necessary to replicate the present study using an experimental or longitudinal design.

Forth, we coded the teams broadly into R & D and non-R & D, following a common practice in previous research (Amabile & Gryskiewicz, 1987; Unsworth & Clegg, 2010). Further research is needed to identify the specific aspect of R & D teams that moderates the indirect effects of leader humility on employee creativity. Other moderators may also be considered in future studies. For example, there has been evidence that employees report more leadership support from same-sex supervisors (Hatmaker & Hassan, 2021) because demographic similarity increases attraction, which in turn fosters trust and familiarity (Grissom et al.,

Figure 2. Effects of Leader Humility × Type of Team Function on Employee Growth Creative Mindset

![Figure 2. Effects of Leader Humility × Type of Team Function on Employee Growth Creative Mindset](image-url)
The moderation effect of gender similarity between leaders and their followers on the relationship between leader humility and employee creativity merits further investigation.

Fifth, we only controlled demographic variables in the study. Past studies have indicated a correlation between a growth creative mindset and people’s creative self-efficacy (Royston & Reiter-Palmon, 2019), as well as a learning goal orientation (Puente-Díaz & Cavazos-Arroyo, 2017). In future studies, these other variables should be included as control variables.

Finally, the reliability of our growth-creative-mindset subscale was relatively low (Cronbach’s α = .62), although it was comparable with the reliabilities of the measure reported in previous studies (e.g., Cronbach’s α = .61, Karwowski et al., 2019; Cronbach’s α = .65, Hass et al., 2016). Social desirability might explain the low reliability of the measure (Karwowski et al., 2019). Future studies should take social desirability into consideration in the measurement of the growth creative mindset.

In summary, the present study found that leader humility was positively associated with employee creativity through employees’ growth creative mindset. This indirect effect was particularly pronounced among R & D teams.

Declaration of conflicting interests
The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding
The authors received no financial support for the research, authorship, and/or publication of this article.

References
Amabile, T. M. (1988). A model of creativity and innovation in organizations. In B. M. Staw & L. L. Cummings (Eds.), Research in Organizational Behavior (Vol. 10, pp. 123–167). JAI Press.
Amabile, T. M. (2018). Creativity in context: Update to the social psychology of creativity. Routledge.
Amabile, T. M., & Gryskiewicz, S. S. (1987). Creative human resources in the R&D laboratory: How environment and personality impact innovation. In R. L. Kuhn (Ed.), Handbook for creative and innovative managers (pp. 501–530). McGraw-Hill.
Amabile, T. M., Schatzel, E. A., Moneta, G. B., & Kramer, S. J. (2004). Leader behaviors and the work environment for creativity: Perceived leader support. Leadership Quarterly, 15(1), 5–32. https://doi.org/10.1016/j.leaqua.2003.12.003
Anderson, N., Potočnik, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. Journal of Management, 40(5), 1297–1333. https://doi.org/10.1177/0149206314527128
Ansell, C., & Boin, A. (2017). Taming deep uncertainty: The potential of pragmatist principles for understanding and improving strategic crisis management. Administration & Society, 51(7), 1079–1112. https://doi.org/10.1177/0095399717747655
Bandura, A. (1977). Social learning theory. Prentice-Hall.
Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall.
Bandura, A. (2016). The power of observational learning through social modeling. In R. J. Sternberg, S. T. Fiske, & D. J. Foss (Eds.), Scientists making a difference: One hundred eminent behavioral and brain scientists talk about their most important contributions (pp. 235–239). Cambridge University Press.
Barron, F. A., & Harrington, D. M. (1981). Creativity, intelligence, and personality. Annual Review of Psychology, 32, 439–476. https://doi.org/10.1146/annurev.ps.32.020181.002255
Brislin, R. W. (1970). Back-translation for cross-cultural research. Journal of Cross-Cultural Psychology, 1(3), 185–216. https://doi.org/10.1177/135910457000100301
Carnevale, J. B., Huang, L., & Paterson, T. (2019). LMX-differentiation strengthens the prosocial consequences of leader humility: An identification and social exchange perspective. Journal of Business Research, 96, 287–296. https://doi.org/10.1016/j.jbusres.2018.11.048
Chiu, C.-Y., Dweck, C. S., Tong, J. Y.-Y., & Fu, J. H.-Y. (1997). Implicit theories and conceptions of morality. Journal of Personality and Social Psychology, 73(5), 923–940. https://doi.org/10.1037/0022-3514.73.5.923
Diener, C. I., & Dweck, C. S. (1978). An analysis of learned helplessness: Continuous changes in performance, strategy, and achievement cognitions following failure. Journal of Personality and Social Psychology, 36(5), 451–462. https://doi.org/10.1037/0022-3514.36.5.451
Diener, C. I., & Dweck, C. S. (1980). An analysis of learned helplessness: II. The processing of success. Journal of Personality and Social Psychology, 39(5), 940–952. https://doi.org/10.1037/0022-3514.39.5.940
Dweck, C. S. (2000). Self-theories: Their role in motivation, personality, and development. Psychology Press.
Dweck, C. S. (2008). Can personality be changed? The role of beliefs in personality and change. Current Directions in Psychological Science, 17(6), 391–394. https://doi.org/10.1111/j.1467-8721.2008.00612.x
Farmer, S. M., Tierney, P., & Kung-Mcintyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. Academy of Management Journal, 46(5), 618–630. https://doi.org/10.5465/30040653
Gilson, L. L., & Shalley, C. E. (2004). A little creativity goes a long way: An examination of teams’ engagement in creative processes. Journal of Management, 30(4), 453–470. https://doi.org/10.1016/j.jpm.2003.07.001
Gong, Y., Huang, J.-C., & Farh, J.-L. (2009). Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. Academy of Management Journal, 52(4), 765–778. https://doi.org/10.5465/AMJ.2009.43670890
Grisson, J. A., Nicholson-Crotty, J., & Keiser, L. (2012). Does my boss’s gender matter? Explaining job satisfaction and employee turnover in the public sector. Journal of Public Administration Research and Theory, 22(4), 649–673. https://doi.org/10.1093/jopart/mus004
Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods, 15*(3), 209–233. https://doi.org/10.1037/a0020141

Pretz, J. E., & Nelson, D. (2017). Creativity is influenced by domain, creative self-efficacy, mindset, self-efficacy, and self-esteem. In M. Karwowski & J. C. Kaufman (Eds.), *The creative self* (pp. 155–170). Academic Press. https://doi.org/10.1016/B978-0-12-809790-8.00009-1

Puente-Díaz, R., & Cavazos-Arroyo, J. (2017). The influence of creative mindsets on achievement goals, enjoyment, creative self-efficacy and performance among business students. *Thinking Skills and Creativity, 24*, 1–11. https://doi.org/10.1016/j.tsc.2017.02.007

Reiter-Palmon, R., & Illies, J. J. (2004). Leadership and creativity: Understanding leadership from a creative problem-solving perspective. *Leadership Quarterly, 15*(1), 55–77. https://doi.org/10.1016/j.leaqua.2003.12.005

Royston, R., & Reiter-Palmon, R. (2019). Creative self-efficacy as a mediator between creative mindsets and creative problem-solving. *Journal of Creative Behavior, 53*(4), 472–481. https://doi.org/10.1002/jcob.226

Salancik, G. R., & Pfeffer, J. (1978). A social information processing approach to job attitudes and task design. *Administrative Science Quarterly, 23*(2), 224–253. https://doi.org/10.2307/2392563

Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *Leadership Quarterly, 15*(1), 33–53. https://doi.org/10.1016/j.leaqua.2003.12.004

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management, 30*(6), 933–958. https://doi.org/10.1177/014920630460070

Tang, M., Werner, C., & Karwowski, M. (2016). Differences in creative mindset between Germany and Poland: The mediating effect of individualism and collectivism. *Thinking Skills and Creativity, 21*, 31–40. https://doi.org/10.1016/j.tsc.2016.05.004

Tofghi, D., & Thoemmes, F. (2014). Single-level and multilevel mediation analysis. *Journal of Early Adolescence, 34*(1), 93–119. https://doi.org/10.1177/0272431613511331

Unsworth, K. L., & Clegg, C. W. (2010). Why do employees undertake creative action? *Journal of Occupational and Organizational Psychology, 83*(1), 77–99. https://doi.org/10.1348/096317908X398377

Wang, J., Zhang, Z., & Jia, M. (2016). Understanding how leader humility enhances employee creativity: the roles of perspective taking and cognitive reappraisal. *Journal of Applied Behavioral Science, 53*(1), 5–31. https://doi.org/10.1177/002186316678907

Wang, Y., Liu, J., & Zhu, Y. (2018). How does humble leadership promote follower creativity? The roles of psychological capital and growth need strength. *Leadership & Organization Development Journal, 39*(4), 507–521. https://doi.org/10.1108/LODI-03-2017-0069

Woodman, R., Sawyer, J., & Griffin, R. (1993). Toward a theory of organizational creativity. *Academy of Management Review, 18*(2), 293–321. https://doi.org/10.5465/AMR.1993.399715

Zhang, H., Ou, A. Y., Tsui, A. S., & Wang, H. (2017). CEO humility, narcissism and firm innovation: A paradox perspective on CEO traits. *Leadership Quarterly, 28*(5), 585–604. https://doi.org/10.1016/j.leaqua.2017.01.003

Zhou, J. (2003). When the presence of creative coworkers is mediated by growth need strength: A review and redirection. *Academy of Management Review, 28*(5), 585–604. https://doi.org/10.1016/j.leaqua.2003.12.004

Zhou, J., & Hoever, I. J. (2014). Research on workplace creativity: A review and redirection. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 333–359. https://doi.org/10.1146/annurev-orgpsych-031413-091226

Zhou, Y., Yang, W., & Bai, X. (2020, March 26). Creative mindsets: Scale validation in the Chinese setting and generalization to the real workplace. *Frontiers in Psychology, 11*, Article 463. https://doi.org/10.3389/fpsyg.2020.00463