RESEARCH ARTICLE

Unlocking and closing the gender gap in creative performance: A multilevel model

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Summary

Building upon and extending the interactionist perspective of creativity, social role theory, and role congruity theory, we develop an integrated multilevel model to examine gender differences in creative self-efficacy and determine how the contextual factor of team psychological safety shapes employees' creative self-efficacy and, through this motivational mechanism, influences their creative performance. Using data from a sample of 335 employees from a large food manufacturer collected over three time periods, we theorize and demonstrate the pivotal role of creative self-efficacy in explaining gender differences in creative performance. Our findings indicate that women may have lower creative self-efficacy than men in organizational contexts. However, team psychological safety restores parity between men and women through a cross-level moderated mediation, such that psychological safety has a stronger effect on women's creative self-efficacy than that of men, resulting in increased creative performance for women. These findings offer interesting implications for research on gender differences in creative performance and for human resources by pinpointing methods of bridging the existent differences in the creative self-efficacy of men and women in organizations.

KEYWORDS
creative performance, creative-self efficacy, gender differences, psychological safety

1 | INTRODUCTION

Organizations today face unprecedented pressure to perform creatively. Since creativity is essential for growth, in order to succeed in rapidly changing and uncertain environments, organizations strive to capitalize on their work group's creative potential (Shalley & Zhou, 2008). Defined as the production of novel and useful ideas (Amabile, 1983, 1988), creative performance is critical in enhancing organizational productivity and success. It involves the willingness to take risks by violating established ways of doing things in order to develop solutions that are qualitatively different from previous ones (Shalley, Zhou, & Oldham, 2004). The growing importance of performing creatively in organizations coincides with an increase in their gender diversity (International Labour Organization, 2015), suggesting

a recognized need for closer examination of how gender might impact creative endeavors (Baer & Kaufman, 2008).

Although creativity research has been quite prolific over the last few decades (Shalley et al., 2004), the extant literature examining its relationships with gender reveals an inconsistency. While evidence suggests no gender difference, or a slight female advantage in creative *skills* and *abilities* (Baer & Kaufman, 2008; Kogan, 1974), an examination of creative *performance* reveals a gender gap (e.g., Dul, Ceylan, & Jaspers, 2011). Despite possessing similar creative abilities, men nonetheless tend to attain higher levels of creative performance than women (Chavez-Eakle, Lara, & Cruz-Fuentes, 2006; Dul et al., 2011; Martin-Brufau & Corbalan, 2016). If there are no differences in the creative abilities of men and women, why then would this be the case? In addition, if a masculine advantage in creative performance

exists, what factors might help to eliminate the creative disadvantage for women?

In this study, we attempt to answer these questions by considering social role theory and role congruity theory in conjunction with the motivational mechanism of creative self-efficacy (CSE). Social role theory (Eagly, 1987) suggests that men and women tend to act in accordance with stereotypical and gendered expectations from society. As an extension of social role theory, role congruity theory considers the potential misalignment between gender and task roles and focuses on prejudicial consequences of the perceived incongruity (Eagly & Karau, 2002). This perspective suggests that people of different genders are rewarded or punished, explicitly or implicitly, based on their match with traditional social roles, and gendered expectations that most simply break down as an alignment of agency and action with masculinity, and communion and harmony with femininity (Eagly, 1987; Eagly & Karau, 2002; Eagly, Wood, & Diekman, 2000). Even when men or women hold self-images which are not aligned with these traditional expectations (e.g., a more agentic woman or communal male), societal pressures nonetheless act upon their conscious and subconscious minds, promoting gender-typed behaviors and devaluing non-gender-typed actions (Eagly & Karau, 2002; Eccles & Harold, 1991; White & White, 2006).

Since creativity involves being unique and independent from the group by challenging existing practices and taking risks in proposing new and different work methods, often in an assertive manner (Goncalo & Staw, 2006), it has traditionally been considered a predominantly agentic and male prerogative. Suggesting a change to the way something is currently understood and done, where such a proposal could disrupt work routines and harmony within the team, requires a degree of assertiveness and independence stereotypically ascribed to men but not women (Luksyte, Unsworth, & Avery, 2018; Proudfoot, Kay, & Koval, 2015). Role congruity theory suggests that any perceived incongruity between their gender expectations and task roles can make women question their capabilities (e.g., Bakan, 1966; Eagly, 1987; Eagly & Karau, 2002). In the case of creative performance, this would suggest a decline in women's CSE, defined as an individual's confidence that she is capable of handling problems requiring creative thinking and creative functioning (Tierney & Farmer, 2002). Therefore, role congruity theory suggests that regardless of similar creative ability, women may have lower CSE than men that could in turn lead to differences in their creative performance.

However, the interactionist perspective (Woodman, Sawyer, & Griffin, 1993) suggests that creativity is best predicted by a combination of personal and contextual factors, rather than only personal attributes. With this in mind, it is plausible that certain contexts might suppress or offset the disadvantage experienced by women, and understanding these factors can be useful in maximizing creative outputs. Specifically, if women's CSE is suppressed in organizations due to the perceived risk and the agentic nature of challenging norms and voicing unconventional ideas that are associated with creative performance, then it is plausible that a context that reduces this risk, encouraging free thought through a more communal environment, might instead increase women's CSE. We therefore propose that team

psychological safety—defined as a shared belief held by the team that their work environment is safe for interpersonal risk taking (Anderson & West, 1998; Edmondson, 1999)—may help women to feel comfortable that their creative ideas would be judged fairly rather than based on stereotypical gendered expectations, and this would serve to reduce women's perception of risk and generate the impression that they will have creative credibility. Altogether, we propose that the cross-level interaction of team psychological safety and gender may best predict CSE, which in turn drives creative performance.

Through this investigation, we seek to make several contributions to research on gender and creative performance. First, we examine the inconsistency of men and women having equal creative abilities, yet unequal creative performance (Baer & Kaufman, 2008; Kogan, 1974), by proposing and testing a potential cause of this anomaly, namely, CSE. In this way, our research meaningfully contributes to the understanding of how and why gender and creativity intersect in the workplace. Second, as we identify an underlying cause of the gender gap in creative performance (i.e., CSE), we draw on the interactionist perspective to identify a contextual factor, team psychological safety, which can help to reduce this gap. When organizations do not tap the full creative potential of all employees, they limit their own outputs and create needless competitive disadvantages. Similarly, if women do not have the chance to attain their full creative potential, their own fulfillment and satisfaction could suffer. Our study addresses these issues by primarily focusing on the psychological processes that govern the self-assessment of creative capabilities and potential among men and women. By leveraging a cross-level interactionist perspective that best identifies the joint impact of creativity's predictors, our study contributes to practice by explaining how a relatively controllable factor (i.e., team psychological safety) can level the creative playing field for men and women. Finally, although research on the interactionist perspective of creativity has been prevalent and fruitful, such scholarship has generally examined antecedents such as individual differences, abilities, and motivation. In our study, however, we test and find merit in an extension of this theory to include demographic attributes (such as gender), expanding our understanding of the contingent processes by which creativity emerges.

2 | THEORY AND HYPOTHESES

2.1 | Social role theory and role congruity theory

Social role theory posits that differences in the expectations people have of men and women originate in their contrasting distributions in traditional social roles, including sex-typical occupational and family behaviors (Eagly, 1987). In the case of men, these expectations are exemplified by that of the independent, risk-taking, and assertive provider. Women, on the other hand, are viewed in accordance with the social roles of caretaking and collaborative harmony (Eagly & Steffen, 1984). The behaviors that typify these traditional gender behaviors align with communal and agentic characteristics (Bakan, 1966; Eagly, 1987). Communal characteristics, which are

ascribed more strongly to women, are described primarily as having a concern with the welfare of other people and maintaining group harmony and as such are associated with attributes such as being kind, sympathetic, nurturing, interpersonally sensitive, and gentle. Agentic characteristics, which are ascribed more strongly to men, are described as being decisive, controlling, and confident and as such are associated with attributes such as being assertive change agents who are dominant, independent, ambitious, and self-reliant.

Therefore, according to social role theory, the communal archetype is an agreeable and helpful individual aligned with collectivistic norms like relational equality, interdependence, prioritizing, maintaining cooperation, and minimizing discord (Hartung, Fouad, Leong, & Hardin, 2010; Robinson & Betz, 2008). Alternatively, an agentic individual is a contentious risk-taker (Byrnes, Miller, & Schafer, 1999), associated more strongly with individualistic norms such as independence, dominance, prioritizing gains, and forward progress with limited concern for group accord, consensus, or conformity to group norms (Eagly & Carli, 1981). As social role theory lays out the content of social roles based on an individual's gender, role congruity theory (Eagly & Karau, 2002) considers the potential consequences for individuals engaging in incompatible task roles. Together, these theories explain how individuals engaging in tasks misaligned with their gendered expectations are likely to encounter disapproval due to perceived gender role violations (e.g., Eagly & Karau, 2002; Judge, Livingston, & Hurst, 2012; Rudman & Glick, 2001).

In support of these theories, implications of gender-specific expectations have been demonstrated in research on (a) the beliefs that people hold about ideal men and women (Spence & Helmreich, 1979; Williams & Best, 1990); (b) the beliefs that men and women hold about their ideal selves (Witt & Wood, 2010; Wood, Christensen, Hebl, & Rothgerber, 1997); (c) attitudes and prescriptive beliefs that people hold about the roles and responsibilities of women and men (Glick & Fiske, 1996; Rudman & Glick, 2001); and (d) the penalties levied on women for succeeding in male gender-typed tasks (Heilman & Okimoto, 2007; Heilman, Wallen, Fuchs, & Tamkins, 2004). These studies indicate that violation of gender-based "should's" and "should not's" make women targets for social rejection, personally directed negativity, and detrimental consequences for career-relevant organizational rewards. Moreover, these gender-related descriptive and prescriptive biases (Heilman, 2001) impact women's mindsets, creating motivation and efficacy for some behaviors while discouraging others (e.g., Badura, Grijalva, Newman, Yan, & Jeon, 2018; Eccles & Harold, 1991; Heilman, 2012).

Though such a stereotypical and dated view of gender-based expectations for men and women may now seem out of place, research has consistently shown that these traditional expectations continue to impact us both consciously and subconsciously (e.g., Ashkanasy, 1994; Haines, Deaux, & Lofaro, 2016; Huguet & Régner, 2009). Even for those who do not behave or identify in ways consistent with traditional gender roles, gendered expectations nonetheless affect their confidence, motivation, and behavior around agentic and communal activities (e.g., Karau & Eagly, 1999; White &

White, 2006). This occurs due to a range of factors including socialization from an early age, social pressures (i.e., real, perceived, and/or potential), and negative feedback received after engaging in non-gender-conforming activities (Badura et al., 2018; Eccles, 1987). Societal interactions exert psychological pressure encouraging conformity to normative behavior (Snyder, 1992; Wood et al., 1997) through the process of "norm sending" (Thibaut & Kelley, 1959), causing individuals to adhere to their gendered expectations (Elsass & Graves, 1997). As Eccles and Harold (1991: p. 16) noted, "Adherence to one's gender role may be so central to an individual that merely knowing, even at a subconscious level, that a particular activity is stereotypically part of the opposite gender's role may be sufficient to prevent further consideration of engaging in that activity." These forces impact even men and women who do not themselves align with traditional gender roles: Subconscious beliefs of stereotypes still manifest even in more gender-egalitarian individuals (Dovidio & Gaertner, 2004). Altogether, gendered expectations motivate gender-aligned behaviors and demotivate unaligned behaviors as individuals monitor their own behavior against societal norms and their public identity (Deaux & Major, 1987; Wood & Eagly, 2012), and the internal pressure to conform to expectations triggers self-regulatory processes and expectancy-confirming behavior (Elsass & Graves, 1997; Geis, 1993). These effects can impact the self-confidence of even women in high-status roles and positions of authority, as their power and prestige do not inhibit the effects of gendered roles when they engage in more agentic and less communal behaviors (Eagly, 2013; Eagly & Karau, 2002; Heilman, 2012).

To sum up, when women engage in behaviors that are typically reserved for men, they are often evaluated harshly and found to be less socially acceptable compared to men who behave in a similar manner or women who behave in more stereotype-consistent ways for their gender (Bartol & Butterfield, 1976; Carli, LaFleur, & Loeber, 1995; Jago & Vroom, 1982). Therefore, men and women consciously and subconsciously seek to align with gender-typical expectations prescribed by society by adapting their social behavior accordingly.

2.2 | Gendered expectations and CSE

The creativity literature has acknowledged and attempted to understand these gendered expectations and their capacity to explain gender differences in creative performance. Proudfoot et al. (2015) provided evidence of overlap in the conceptions of creativity and the content of stereotypes associated with men. Creativity represents divergent thinking, or the generation of solutions by considering perspectives that diverge from the norm (Cropley, 2006), and therefore is a risky endeavor (Eisenman, 2001; Janssen, Van de Vliert, & West, 2004; Shalley et al., 2004). Within organizational groups, voicing unconventional novel ideas can become particularly difficult because creative ideas may challenge the status quo and be seen as interpersonally risky and controversial (Amabile, Barsade, Mueller, & Staw, 2005; Parker & Collins, 2010). Due to its emphasis on divergent

thinking, independence, taking assertive risks, and potentially creating conflict (Cropley, 2006), the creative process is more strongly aligned with the agentic orientation ascribed to men, such as asserting autonomy from others, being dominant and ambitious, and engaging in self-direction, than with the communal orientation assumed of women.

The componential theory of creativity (Amabile, 1983) itself leans heavily on stereotypically masculine and agentic attributes as it proposes that "creativity-relevant" individual differences such as independence and risk-taking are necessary for creativity to emerge. Goncalo and Staw's (2006) research on cultural norms and creativity also provides support for this argument. Since the innate nature of creativity emphasizes uniqueness and standing out from one's group, creativity is akin to the individualistic values ascribed to men, as compared to the collectivistic norms of cohesiveness and conformity typically attributed to women (e.g., Eagly & Carli, 1981). Altogether, research indicates that the dominant conceptualization of the creative process presents a masculinized construal associated with agentic qualities (Luksyte et al., 2018; Proudfoot et al., 2015).

Adjusting to their prescribed gendered expectations of being assertive change agents, confident, and willing to challenge the status quo, men are more likely to perceive creative performance as both plausible and socially acceptable, thereby leading them to develop a stronger belief in their own ability to successfully generate creative ideas. The social roles of women, on the other hand, may signal to them, correctly or not (solely based on these roles and assumptions), that they are ill-suited for creative work or that their creative attempts will not be judged positively by others, suggesting a meaningful effect on self-efficacy beliefs regarding creative endeavors. Social role theory indicates that a woman's own beliefs regarding gendered expectations would be sufficient to drive this lack of confidence (e.g., Eccles & Harold, 1991; White & White, 2006). However, any previous lack of recognition or negative evaluation experienced after performing agentic and/or creative endeavors would also have a profound effect on women's information processing, resulting in cognitive distortions such as reduced confidence (Heilman, 2012). Research consistently shows that such a backlash after agentic performance is an unfortunately common occurrence for women in modern organizations (Rudman & Glick, 2001), affecting their cognition and behavior around gendered expectations regardless of their own inclinations regarding those expectations (Cross & Madson, 1997; Markus & Oyserman, 1989; Wood, Christensen, Hebl, & Rothgerber, 1997). Since self-efficacy beliefs are based on a feedback mechanism where individuals use cues from their environment to develop beliefs about their capabilities (Pajares, 2002), biased evaluations may result in women's loss of confidence in their ability to be creative.

By engaging in stereotypically male gender-typed activities such as performing tasks creatively, women are potentially perceived by themselves and others as violating standards for their gender by manifesting male-stereotypical, agentic attributes. This incongruity perception can result in negative affect and overly critical self-

evaluations (Kemmelmeier & Walton, 2016; Luksyte et al., 2018), making women less confident about their ability to succeed in a creative role (Eagly & Karau, 2002; Heilman et al., 2004). Since gendered expectations suggest that women are not (or should not be) sufficiently independent, assertive, ambitious, or "norm-breaking," women may more negatively self-assess their creative capabilities (Eagly et al., 2000). Additionally, the gendered expectations for women to conform to group norms and maintain group harmony may inhibit them from producing strongly novel or groundbreaking ideas for fear of being perceived as overly deviating from norms. Consequently, this fear could undermine women's confidence in their capability to generate creative ideas.

This effect may become particularly salient in male-oriented domains. When women enter male-oriented domains and perceive or observe that most people expect higher performance from men (Koch, D'Mello, & Sackett, 2015), even if they do not personally endorse this biased belief, women may still have a lower assessment of their ability due to the stereotypical effect of others' expectations (i.e., the Pygmalion effect; Correll, 2001; Eden, 1992). Gendered cultural values, societal expectations around gender roles, and sexist thinking all may contribute to these effects (Helson, 1990) such that women may wrongly perceive their general intellectual ability to be lower than that of men because of the "male hubris-female humility" bias (Furnham, Fong, & Martin, 1999; Karwowski, Lebuda, Wisniewska, & Gralewski, 2013), further affecting their CSE. Altogether, regardless of whether gender beliefs are personally endorsed or internalized as other people's expectations, they foster a reduced positive belief in women regarding their own creative potential.

Hypothesis 1. Compared to men, women have lower levels of creative self-efficacy.

2.3 | Psychological safety and its impact on women

The interactionist theory of creativity suggests that personal characteristics such as gender would not affect antecedents of creativity in a vacuum; rather, contextual elements may amplify or suppress their effects (Woodman et al., 1993). This is an especially useful perspective in which to study gender differences in creativity, as both theory and practice could benefit from understanding how contextual forces might minimize any gap in creative confidence between women and men. With this in mind, we examine psychological safety, defined as a team's shared beliefs and group norms indicating that team members are safe to discuss divergent ideas without fear of damaging consequences for their self-image, status, or career (Anderson & West, 1998; Edmondson, 1999; Kahn, 1990). In this type of work environment, employees should feel encouraged to take chances and break out of routine and safe ways of doing things (Edmondson, 1999, 2003). These types of team contexts are notable for minimizing or eliminating judgment, backlash, and consequences for members, even

when one's ideas or actions would normally be viewed as inappropriate or counter to norms and expectations (e.g., Pearsall & Ellis, 2011).

According to Nembhard and Edmondson (2006), "psychological safety can vary significantly across groups, even within the same strong organizational culture" (p. 946) based on the team's past learning and feedback experiences, which themselves can be driven by team management, tasks, status, and other factors (Edmondson, 1999). Research has established that psychological safety can benefit employee creativity (e.g., Carmeli, Reiter-Palmon, & Ziv, 2010; Kark & Carmeli, 2009), and we build on this research to propose that it might do so through improving team members' CSE. However, we argue that this effect might be stronger for women than for men, potentially representing a way of closing the CSE gap described above.

Psychological safety provides the impression that it is acceptable for team members to think outside the box and voice ideas counter to prevalent norms (Morrison, 2014; Pearsall & Ellis, 2011). Put another way, a psychologically safe team is one in which the act of speaking up with a highly novel idea is not perceived as assertive, nor risk-taking, nor does it require a large degree of independence. Rather, the team agrees that such behavior is welcome and desirable for all team members (irrespective of gender). The creative process of breaking out of routine ways of doing things by challenging existing practices is no longer seen (particularly by women) as a potential threat to group harmony and consensus, but rather as an expectation all members have of each other, superseding traditional gendered expectations. In this manner, a psychologically safe work context modifies the interpretation of what might otherwise be seen as an agentic and risky creative process attributed to men into something perceived as representing desirable collaborative teamwork. Thus, in a psychologically safe team, creativity can be a match for communal gendered expectations rather than agentic ones, removing conscious and subconscious barriers that might otherwise be encountered by women considering creative activity.

Social role theory and role congruity theory suggest that this perceived alignment with traditionally female gendered expectations would have stronger effects on women than men, helping them to feel more confident and capable (Eagly, 1987; Eagly & Steffen, 1984). Men may also benefit from the freedom to speak one's mind offered by psychologically safe environments (Morrison, 2014), but they would not benefit as much as women do from the more communal nature of creative endeavors due to their lack of gendered expectations around communion. Through reframing perceptions of creativity from something assertive and risky to something more communal and cooperative, team psychological safety can give women the impression that they have the freedom to experiment with new ways of doing things, voicing ideas, and practicing creative skills without fear of ridicule or backlash due to gendered expectations while receiving constructive feedback from teammates and leaders (Anderson & West, 1998; Edmondson, 1999). This can boost women's CSE both immediately and over time: first, as they perceive a communal environment in which they are more likely to succeed and be judged favorably and, over time, as they practice their creative skills, learn, and receive positive reinforcement from others (Bandura, 1997; Gist &

Mitchell, 1992). Thus, psychological safety serves as an implicit social cue indicating that creative ideas will be received more favorably, and such cues are critical to self-efficacy formulation (Gist & Mitchell, 1992). Specifically, the encouragement to engage in creative endeavors provided by a psychologically safe work context functions as social validation for women who had viewed creativity as an incongruous task, thereby having a positive effect on their efficacy beliefs and mastery perceptions (Burke & Stets, 1999; Eden, 1992; Tierney & Farmer, 2011) that might not exist so strongly for men who consciously or subconsciously viewedperceive creativity as congruentcompatible with their gendered expectations.

Additional evidence for a stronger effect of psychological safety for women comes from research suggesting that women are more likely to be guided by external cues when they assess their potential for success, whereas men tend to focus more on internal cues (Roberts & Pennebaker, 1995). Thus, if women are more likely than men to judge their success as being dependent upon their environment, then this logically suggests that contextual factors would do more to boost women's rather than men's confidence. The external validation offered to women by a psychologically safe work context would thus be especially beneficial to women as they form perceptions about their own creative capabilities. Men, on the other hand, are less likely to seek external validation of their capabilities or approval of their creative behaviors, so they would be less affected by team psychological safety (Benyamini, Leventhal, & Leventhal, 2000; Nelson & Cooper, 1997; Roberts & Arefi-Afshar, 2007). Altogether, a psychologically safe work context would potentially boost a woman's CSE more prominently than a man's CSE. Stated formally,

Hypothesis 2. The effect of team psychological safety on individual creative self-efficacy is stronger (more positive) for women than it is for men.

Self-efficacy, resulting from an individual's confidence in his/her ability to control situations and handle problems, has been instrumental in determining the effectiveness of human functioning and predicting performance in that domain (Bandura, 1997; Paunonen & Hong, 2010). CSE has frequently been found to predict creative outcomes as a direct effect and as a mediator of more distal antecedents (e.g., Jaussi, Randel, & Dionne, 2007; Liu, Jiang, Shalley, Keem, & Zhou, 2016; Tierney & Farmer, 2002, 2011). Since performing creatively is a time- and effort-intensive activity with a high potential for failure, self-assessment of one's abilities and accomplishments and a strong belief in one's capability have been theorized as providing critical motivation for continued creative behavior (Tierney & Farmer, 2002, 2004). While many factors influence an individual's creative performance, at a minimum, one must feel competent in the skills required to be creative in order to commit oneself to pursuing a creative task, and CSE has consistently been empirically demonstrated to predict an individual's creative performance (e.g., Gong, Huang, & Farh, 2009; Jaussi et al., 2007; Liu et al., 2016; Tierney & Farmer, 2002, 2011).

Altogether, this suggests a conditional indirect effect of gender on creativity through CSE contingent upon team psychological safety, consistent with the interactionist perspective of creativity (Shalley et al., 2004; Woodman et al., 1993; Zhou, 1998). Deriving logic from our first two hypotheses, women as compared to men will benefit more from team psychological safety, experiencing a stronger positive effect on their creative self-confidence. If women were less likely than men to perceive that they are competent at performing creatively in the absence of psychological safety, they would be more likely to reduce their efforts and interests in tasks requiring creative capabilities and therefore would be less likely to engage in creative processes (Vroom, 1964). However, when psychological safety reduces risk and increases the perceived alignment between female gendered roles and creative processes, women's enhanced CSE should provide them with the internal persistence to engage in creative behaviors, which in turn would promote their creative performance. On the other hand, men would benefit less from psychological safety enhancing their CSE due to their preexisting alignment of gender role expectations with creative process perceptions, and thus they would have a smaller increase in their creative performance.

Hypothesis 3. The indirect effect of team psychological safety on creative performance through creative self-efficacy is moderated at the first stage by gender, such that women experience greater CSE gains from psychological safety than men do.

3 | METHODS

3.1 | Sample and data collection

The data used to test our hypotheses were collected from a large food manufacturer located in the northeastern United States. This sample included only teams within departments that were identified by company executives as being ones within which performing creatively was a possibility in the work being conducted. For instance, sales, marketing, training, and R&D departments were included, but accounting departments were not. Preliminary interviews with junior and senior

leadership indicated that the employees worked together in team-based environments, but also that there was substantial variance in team psychological safety and that both agentic and communal cultures existed across these teams. A survey-based design was used with three time-lagged survey waves, spaced approximately 6 weeks apart, administered to 530 employees. Six weeks after employees completed the second survey, we asked their managers to rate them on their creative performance. We received complete data—two waves of employee surveys and manager ratings—from 335 out of the 530 employees who were eligible to participate, clustered within 102 team managers, accounting for a 63.2% response rate. The final sample was 56% male and 85.9% Caucasian. The average team size was 3.28.

In the first survey (Time 1), employees reported their demographics, creative role identity (CRI), and their perceived team psychological safety. In the second survey (Time 2), team members were asked about their CSE. At Time 3, managers rated their creative performance.

3.2 | Measures

Unless otherwise noted, we measured all variables at the individual level and used scales ranging from 1 = *strongly disagree/not at all likely* to 7 = *strongly agree/extremely likely*. Descriptive statistics for all constructs are reported in Table 1.

3.2.1 | Gender

Employees' gender was coded as a dummy variable with female = 1 and male = 0.

3.2.2 | Psychological safety

Psychological safety was measured at the team level using the seven items from Edmondson (1999). Sample items include "Members of this team are able to bring up problems and tough issues" and "It is safe to take a risk on this team." The Cronbach's alpha of this scale

TABLE 1 Descriptive statistics and correlations

Variables	M	SD	1	2	3	4	5	6	7
1. Education	5.24	1.50							
2. Tenure	10.20	9.75	−.10						
3. Team size	4.92	2.56	.14*	.07					
4. Creative role identity	5.86	0.77	−.13*	.00	.09				
5. Gender	0.44	0.50	.13*	−.10	−.04	−.01			
6. Psychological safety	5.26	0.59	−.28**	−.04	−.04	.28**	−.07		
7. Creative self-efficacy	6.09	0.57	−.06	.04	.16**	.63**	−.10	.30**	
8. Creative performance	5.19	1.05	−.01	−.10	.04	.10	−.01	.16**	.12*

Notes: N = 335 individuals. For gender: 0 = male, 1 = female.
*p < .05. **p <.01.

was .80. Since psychological safety is a team-level construct, we aggregated individual ratings of psychological safety to the team level by following a direct consensus model (Chan, 1998). The mean r_{wg} of .86 and the values of ICC_1 of .18 and ICC_2 of .48 ($F = 1.383$, $p < .05$) justify this aggregation (Bliese, 2000; Gong et al., 2009; James, Demaree, & Wolf, 1993; Schneider, White, & Paul, 1998).

3.2.3 | CSE

Three items were used to assess employees' CSE (Tierney & Farmer, 2002). Sample items for this scale include "I have confidence in my ability to solve problems creatively" and "I am good at finding creative ways to solve problems." The Cronbach's alpha coefficient for this scale was .73.

3.2.4 | Creative performance

We used the three-item Oldham and Cummings (1996) scale for measuring creative performance. Managers were asked to rate the extent to which each employee produced work that was (1) creative, (2) original and practical, and (3) adaptive and practical for the organization. The Cronbach's alpha coefficient for this scale was .91.

3.2.5 | Control variables

We controlled for employees' education and tenure since both have been found to be significantly related to the main constructs in this study (e.g., Baer & Kaufman, 2008; George & Zhou, 2001; Ng & Feldman, 2010; Shalley et al., 2004). Education was measured as an ordinal variable. In addition, team size was controlled for at the group level because it can have an impact on task conflict and information sharing that can influence creative performance (Mesmer-Magnus & DeChurch, 2009). We also controlled for CRI, or the degree to which one thinks of oneself as a creative employee (Farmer, Tierney, & Kung-McIntyre, 2003), as it could relate to both the independent and dependent variables in this research (Bono & McNamara, 2011), such as CSE and creative performance (Tierney & Farmer, 2011). Further,

CRI may account for a potential alternative explanation for any effects of gender on creativity and CSE. Whereas we focus in this research on the role of gendered expectations in driving these effects, one might alternatively suggest that women could be less likely to engage in creativity due to its lack of salience to their own identity due to their individual gender role orientations (Bem, 1981). We have argued and presented evidence here that gendered expectations would supersede individual gender role identity (e.g., Karau & Eagly, 1999; White & White, 2006), but controlling for CRI allows us to test the robustness of our hypothesized model while accounting for any effects of this type of role identity. We also reran our full model without control variables and found that the main effect of gender on CSE (H1) became nonsignificant. However, main effects must be evaluated in terms of any significant interactions, and the interaction with psychological safety (H2) remained significant, indicating that women have lower CSE than men in low psychologically safe contexts, but not in high psychologically safe contexts. Our third and final hypothesis of the overall indirect effect of gender's moderated effect on creative performance also remained significant.

3.3 | Confirmatory factor analyses

Given that several of our key constructs were similar (e.g., creative performance and CSE) or measured from the same source (e.g., CSE and psychological safety, although the latter was treated at the team level), we conducted multilevel confirmatory factor analysis (MCFA) to assess the discriminant validity of these constructs. Specifically, we analyzed the three key constructs—creative performance, CSE, and psychological safety—for discriminant validity. The results in Table 2 illustrate that the hypothesized three-factor model fit the data well (CFI = .95, RMSEA = .027, SRMR-within = .046, SRMR-between = .139). These values are within established cutoffs (Hu & Bentler, 1999). The SRMR for the between level was somewhat higher than its within-level counterpart, but it was under the SRMR-B cutoff of .14 (Hsu, Kwok, Lin, & Acosta, 2015) and similar to values in other published studies (e.g., Nerstad et al., 2018). Beyond fitting the data well, the three-factor model also fit better than alternative models in which CSE and psychological safety loaded onto the same

TABLE 2 Model fit results of MCFA

Models	χ^2	df	CFI	RMSEA	SRMRw	SRMRb	$\Delta\chi^2$	Δ df	p
Model 1: three-factor model	86.753	70	.952	.027	.046	.139			
Model 2: two-factor model (CSE and PS together)	186.740	128	.927	.037	.090	.268	99.987	58	p < .05
Model 3: two-factor model (CSE and creativity together)	116.807	73	.875	.042	.186	.567	30.054	3	p < .05
Model 4: one-factor model	423.117	130	.063	.080	.157	.301	336.364	60	p < .05

Note: Model 1: CSE, psychological safety (PS), and creative performance load on three latent factors; Model 2: CSE and PS load on one latent factor and creative performance loads on a separate factor; Model 3: CSE and creative performance load on one latent factor and PS loads on a separate factor; Model 4: CSE, PS, and creative performance load on one latent factor.
Abbreviations: CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMRb = between-group portion of standardized root mean square residual; SRMRw = within-group portion of standardized root mean square residual.
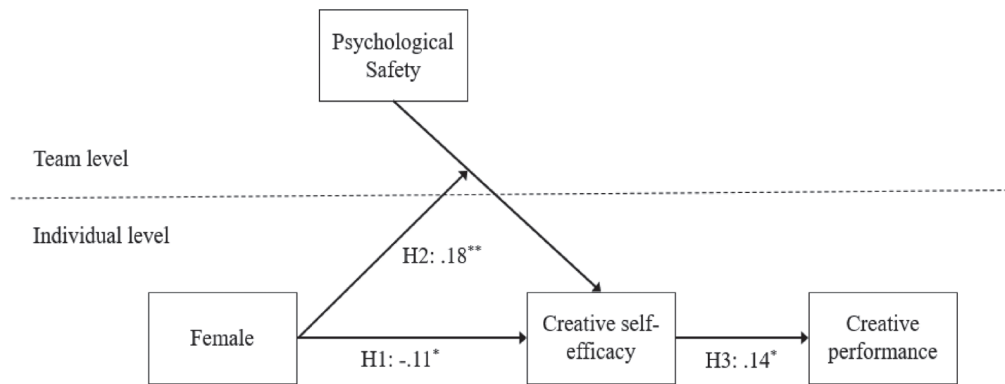
Individual-level n = 335; Team-level n = 102. Standardized coefficients reported.

FIGURE 1 Results of hypothesized cross-level moderated mediation model

factor ($\Delta\chi^2$ = 99.99, p < .05), in which CSE and creative performance loaded onto the same factor ($\Delta\chi^2$ = 30.05, p < .05), and in which all three variables loaded onto the same factor ($\Delta\chi^2$ = 336.36, p < .05). Altogether, this supported the discriminant validity of our key constructs and allowed further testing of the model.

3.4 | Analytic strategy

Since employees in our study were clustered into teams reporting to managers, in order to accurately account for this clustering (Aguinis, Gottfredson, & Culpepper, 2013) and test our hypotheses, we used hierarchical linear path modeling in Mplus with multilevel variance decomposition to partition between- and within-cluster variance (Preacher, Zhang, & Zyphur, 2016). Multilevel modeling was necessary to appropriately account for psychological safety as a purely team-level construct, and variance decomposition was essential to avoid conflating effects of various levels for our proposed cross-level interaction (Preacher et al., 2016). All hypotheses were tested in one simultaneous model in order to minimize error and most appropriately and conservatively test the full process described in Hypothesis 3.

4 | RESULTS

Descriptive statistics and correlations among the variables are shown in Table 1. Results of our hypotheses testing are illustrated in Figure 1 and Table 3.

Hypothesis 1 predicted a negative relationship between gender and CSE with women having lower levels of CSE compared to men. As expected, a significant main effect of gender on CSE was found (b = −.13, p < .05), indicating that women on average had lower CSE than men. We also conducted an analysis of covariance (ANCOVA) with the same set of control variables. The results of the ANCOVA (F = 4.20, p < .05) showed significant differences of CSE between men and women, aligning with the results of the regression. Next, we

tested the cross-level moderation effects of gender on the relationship between psychological safety and CSE, such that the individual-level gender of an individual interacted with the team-level variable of psychological safety, resulting in an individual-level effect on CSE (Preacher et al., 2016[1]). Results showed a significant positive moderating effect, suggesting that in teams with high levels of psychological safety, women tended to benefit more in terms of CSE than men (b = .16, p < .01). We further plotted this interaction (illustrated in Figure 2) and conducted a simple slope test. The simple slope analysis demonstrated that psychological safety tended to have significant positive effects on CSE for female employees (b = .62, p < .05) but had a more limited impact on the CSE of male employees (b = .18, p > .05). Hence, we concluded that Hypothesis 2 was supported. Finally, we examined how the indirect effects of psychological safety on creative performance through CSE differed by gender. Consistent with our expectations, the indirect cross-level effect of psychological safety on creative performance through CSE was significantly larger for women than it was for men: Psychological safety indirectly affected the creative performance of women through CSE (b = 2.91, p < .01), but the same indirect effect was nonsignificant for men (b = .85, p > .05). Therefore, Hypothesis 3 was supported.

5 | DISCUSSION

This research attempts to resolve the strange inconsistency of equal creative abilities, yet unequal creative performance, among men and women by exploring CSE as an underlying mechanism that might explain the creative performance gender gap. Extending the interactionist perspective of creativity (Woodman et al., 1993)

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[1]Technically, two effects are possible when an individual-level variable interacts with a group-level variable: an individual-level effect (as we hypothesized and modeled here) and a group-level effect in which the group-level variable (psychological safety, in this case) interacts with the pure group-level component of the individual-level variable (gender, in this case). Our hypothesis was significant to the true cross-level interaction manifesting at the individual level. A separate test of the group-level interaction revealed that it was not significant (b = .35, p > .05).

TABLE 3 Results of hypothesized cross-level moderated mediation model

Fixed effects	Criterion			
	Creative self-efficacy		Creative performance	
	Gamma coefficients	SE	Gamma coefficients	SE
Individual-level effects				
Education	.04	.08	−.06	.09
Tenure	.08	.05	−.27**	.08
Creative role identity	.60**	.04	−.04	.07
Employee gender (female)	−.11*	.05	.02	.07
Interaction: female * psychological safety	.18**	.05	.02	.06
Creative self-efficacy			.14*	.06
Group-level effects				
Education	.10	.40	.44	.59
Tenure	−.16	.26	.52	1.02
Team size	.55†	.30	−.01	3.24
Creative role identity	.36†	.22	.58	2.01
Employee gender (female)	.13	.22	.07	.82
Psychological safety	.39	.34	.21	2.35
Creative self-efficacy			−.34	5.89

Note: N for Level 1 variables is 335, and N for Level 2 variables is 102.
Standardized coefficients reported.
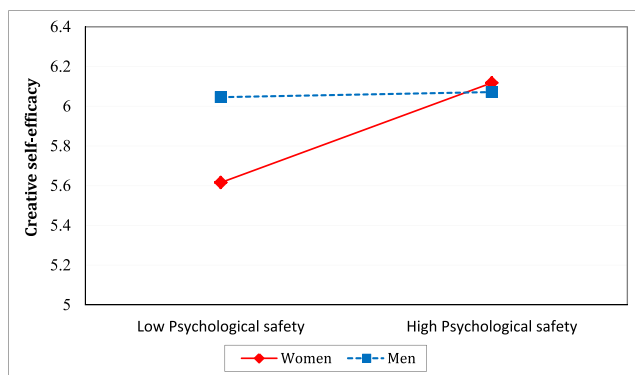For gender: 0 = male, 1 = female.
*p < .05. ** p < .01. **p < .01.

FIGURE 2 Plotted cross-level interactive effects of gender and psychological safety on creative self-efficacy [Colour figure can be viewed at wileyonlinelibrary.com]

and work on social role and role congruity theory (Eagly, 1987; Eagly & Karau, 2002), the proposed multilevel model examines how the context of team psychological safety works to distinctly shape the CSE and creative outputs of men and women. Results demonstrate support for the idea that women may have lower CSE in general than men. However, this CSE disadvantage is offset for women in a psychologically safe team, and this effect transmits through CSE to predict creative performance (i.e., a first-stage moderated indirect effect of gender and psychological safety).

5.1 | Theoretical implications

Despite the growing relevance of creativity in modern organizations, our understanding of the inequalities that potentially exist in the creative opportunities and achievement of men and women is limited. Specifically, in light of evidence of equivalent creative *abilities* between the genders (e.g., Baer & Kaufman, 2008), there is a dearth of research that explains the gender disparity in creative *performance* and provides recommendations to eliminate this gender gap. To this effect, our study provides new evidence that although gender role stereotypes may have become weaker and workplace gender equality has significantly improved with time, meaningful gender differences still exist in the workplace. Our research takes one step toward explaining these gender differences in creative performance by suggesting that the observed gender gap may be at least partially attributed to women's lower level of confidence in their ability to perform creatively. Our study suggests that despite evolving stereotypes and working conditions, women may continue to face stereotypical gender biases and heuristics based on perceived social roles (Haines et al., 2016) that potentially dampens their creative confidence and hence their creative performance.

Since understanding gender differences in organizations and pinpointing ways to alleviate these gaps is instrumental for maintaining justice for women at work, the finding that CSE serves as a potential explanatory mechanism for the peculiar association between gender and creative performance has several important implications. Both

theoretically and practically, the identification of CSE as at least one reason for gender disparities in creative performance offers the opportunity to negate or offset such differences, as CSE has state-like aspects (Tierney & Farmer, 2002) and can be malleable. As indicated by our results, CSE-related interventions may serve to negate any disadvantages women may have in performing creatively. Past research has demonstrated that factors such as organizational leadership and employee development efforts can affect CSE (e.g., Gong et al., 2009; Tierney & Farmer, 2011), and it is plausible that such efforts might be especially beneficial for boosting women's CSE and hence their creative performance. Our study introduces once such factor (i.e., team psychological safety) that can foster CSE.

Our research indicates that the interactionist perspective of creativity (Woodman et al., 1993) is a vital tool for identifying measures to bridge the gender gap in CSE. It is likely that past examinations of gender as a main effect alone may have led scholars to overlook the distinctions and intricacies that can be detected only by taking into account organizational and team contexts (Kemmelmeier & Walton, 2016; Walton & Kemmelmeier, 2012); however, the use of the interactionist perspective in our study eliminates any such shortcoming. By employing the interactionist perspective of creativity, we indeed see a "leveling" of the playing field that is suggested by the slopes presented in Figure 2. Although women overall had lower CSE than men, women's CSE equaled that of men in teams with high psychological safety. Therefore, as more women now participate in stereotypically masculine roles and behaviors (such as leadership, creativity, negotiations, and voice), our findings provide useful insights for organizations that concern themselves with eliminating the structural biases against women. Specifically, our research indicates that providing a psychologically safe work environment might possibly be the key to boosting women's confidence in their capability to achieve success in stereotype inconsistent tasks without the fear of violating gender norms.

These results also may provide insights into the role of psychological safety in alleviating status differences arising due to gender. Women continue to be perceived as lower in status than men in organizations (Derks, Van Laar, & Ellemers, 2016; Ridgeway, 2014), and lower self-efficacy beliefs are likely to follow if a woman believes her relative status is low (Berger, Rosenholtz, & Zelditch, 1980; Bradley, 1980). As individuals of higher status (e.g., men) already feel more important in a group and confident of their competence, they may be minimally affected by contextual support mechanisms like psychological safety. Put differently, men may believe in their ability to be creative regardless of the group context (Kahn, 1990; Nembhard & Edmondson, 2006). This idea is supported by the pattern of our interaction results: The simple slope of psychological safety on CSE was nonsignificant for men. For women, however, team psychological safety likely reduces the anxiety and fear associated with creative processes by elevating their respect and status in the team. This may help women overcome barriers to self-efficacy construction and promote the growth of a "can-do" attitude (Liao, Liu, & Loi, 2010; Ng & Lucianetti, 2016).

Our study also extends the application of the interactionist perspective beyond its early conceptualization. Following Woodman

et al., (1993) initial theorization, research to date has focused on factors such as personality (e.g., George & Zhou, 2001; Oldham & Cummings, 1996), intrinsic motivation (e.g., Wang, Kim, & Lee, 2016; Zhou, Hirst, & Shipton, 2012), and cognitive style (e.g., Baer, Oldham, & Cummings, 2003; Tierney, Farmer, & Graen, 1999) as the "personal" antecedents of creativity. However, our results point to the theoretical significance and predictive power of gender in determining creative performance. Put differently, gender (as well as other such demographic attributes) may provide a contingency factor to all of our theories around what predicts creativity and thus warrants inclusion as a "personal" determinant of creativity in the interactionist perspective of creativity. Moreover, as our results illustrate an interaction of gender and team psychological safety such that psychological safety has a significantly stronger impact on women, as compared to men, our research also suggests that contexts might conceivably interact with other demographic attributes to meaningfully predict creative performance. For instance, the degree to which ethnic or religious minorities feel comfortable speaking up and standing out with creative ideas at work might be contingent on the overall ethnic diversity of the organization (Lopes & Thomas, 2006).

Beyond gendered expectations and status differences, another gender-centric force that might affect women and their creative confidence could be their own gender role identities, or the degree to which men and women personally identify with traditional gendered roles (e.g., Bem, 1981; Johnson, Murphy, Zewdie, & Reichard, 2008). Although we focused here on the role of gendered expectations in suppressing women's CSE, one might alternatively argue that these individual role identities could drive the degree to which men and women feel that creativity is appropriate for them, such that individuals with more feminine gender role identities would find creativity more incongruous with their identity. Individual gender role identities are not synonymous with gender, but they do tend to be meaningfully correlated, such that women hold more feminine identities and men more masculine identities (Badura et al., 2018). This identity incongruence could in turn affect both CSE and creative performance, providing an alternative explanation for our findings. A review of the literature suggests that gendered expectations should be the most salient driver of CSE effects due to the tendency for expectations to overpower gender identity in cognition and behavior (e.g., Eccles & Harold, 1991; White & White, 2006). Our results support this approach, especially in regard to the robustness of our hypothesized effects while controlling for CRI that would be expected to align with gender role identity. However, it is also noteworthy that CRI did not significantly correlate with gender in our sample, a curious but not unprecedented finding (e.g., Erkutlu & Chafra, 2015; Song, Yu, Zhang, & Jiang, 2015). In a post hoc analysis, though, we found that gender did significantly impact CRI once departmental membership was taken into account, as different departments involved different degrees of creativity in their job roles (Karwowski & Lebuda, 2017).[2] Altogether, this provides additional evidence of the continuing salience of gendered expectations in today's organizations, persistent

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[2]We thank an anonymous reviewer for inspiring this investigation.

despite role identities. Although organizations have certainly progressed over the last few decades in their acceptance and promotion of women, it is clear that the predictions of social role theory and role congruity theory around gendered expectations remain salient and powerful (Haines et al., 2016).

Indeed, social role theory may have implications for what is perhaps the most respected perspective on creativity's origins: the componential model of creativity (Amabile, 1983). If one of the major determinants of creativity is one's level of "creativity-relevant skills" (e.g., risk tolerance, independence, and assertiveness), then it is reasonable to conclude that those who are more comfortable with agentic expression will exhibit more creativity. Social role theory suggests that women compared to men will be less confident in such expression, a prediction supported by our results. Altogether then, gendered expectations and the componential model indicate the salience of the disadvantage that women face when considering their CSE and creative performance. Although there is no intuitive reason to suspect that domain-relevant knowledge and intrinsic motivation, the other aspects of Amabile's (1983) theory of creativity antecedents, might differ by gender, gendered stereotypes of men as competent and women as warm (Eagly et al., 2000; Fiske, Cuddy, & Glick, 2007) might impact others' perceptions of women's knowledge. For how many of the three main antecedents of individual creativity, then, do women hold a disadvantage, real or perceived by others? To what degree can psychological safety or other contextual factors offset this?

Our findings around psychological safety may also have ramifications for studies linking leadership with creativity. Psychological safety is frequently found to mediate positive effects of various forms of leadership on creativity (e.g., Gong et al., 2009; Walumbwa & Schaubroeck, 2009), but these relationships may warrant reexamination with employee gender in mind. Based on our results, it is plausible that leadership's effects on creativity might be less powerful for men and thus of limited benefit in organizations or industries with more male employees. That is, just as psychological safety was ineffective in this research at increasing men's CSE beyond their initially high levels, leadership might also contend with ceiling effects unique between the genders. Altogether, more attention to how leadership may affect creativity for men and women may be warranted.

5.2 | Practical implications

A short set of qualitative interviews at our research site showcased the practical importance of these phenomena and corroborated our findings. Whereas men often talked more confidently about generating creative ideas in the organization, several women provided answers indicating some skepticism that their ideas would be acknowledged or even perceived as creative. Women were also more likely than men to indicate that they had insufficient resources or support from the organization to adequately engage in creative processes. Consequently, in times of a shift so dramatic that women nearly outnumber men for the first time in U.S. labor history

(Mulligan, 2010), the need to understand the creative processes and pursuits of women in the workplace has become more significant than ever. In this modern volatile, uncertain, complex, and ambiguous (VUCA) world (Bennett & Lemoine, 2014), creative skills are increasingly viewed as essential for organizational and employee success. Our results demonstrate that women may be at a disadvantage in this arena, not due to any lack of competence, but rather because of having a lower sense of CSE compared to men that may be caused by persistent gender role biases. This is an unfortunate situation for both women and the organizations that employ them, as considerable creative potential may be left untapped if this disparity in self-confidence is not rectified. If women lack confidence in their creative capabilities as compared to men, they may be less likely to be placed in creative roles. In addition, women's lower levels of creative performance could serve to further reduce their self-confidence in coming up with new ideas, voicing their opinion, and taking initiative. This vicious circle would add to the many challenges women already experience due to persistent gender role biases in the workplace, including their competitiveness for roles that require creative confidence. Fortunately, CSE is malleable, and our results provide one workable solution to increase females' CSE to the same levels as that of their male counterparts. For organizations and teams focused on creative performance, and especially those with a gender-diverse workforce, psychological safety is revealed as essential to unlocking the full creative potential of all of their employees. Signals for psychological safety serve as an important contextual factor that enable women to look beyond the prescriptive gender biases and make them more likely to display creative behaviors at work. Encouraging participation in information sharing and decision-making processes, as well as voicing different opinions and new ideas, can help to develop psychologically safe organizations, and our research reveals that this practice can have helpful effects for employees' CSE and creative performance.

5.3 | Limitations and future research directions

No research is without some limitations. First, as discussed earlier, replication focusing on the heterogeneity of employees, industrial sectors, and cultural settings would be beneficial to maximize confidence in the generalizability of these results. Our sample was somewhat limited in terms of racial and ethnic diversity, as 86% of our respondents were Caucasian. We nonetheless tested the stability of our results by including race/ethnicity as an additional control, as well as by removing controls such as CRI, in order to determine how these changes might affect the results (Bernerth & Aguinis, 2016). These models revealed no meaningful changes to the coefficients, with the overall conditional indirect effect remaining significant. Regardless, a replication of our results with more racially/ethnically diverse samples would be useful. Although our study benefited from a temporally lagged, multisource design that limited the potential impact of common method biases (Richardson, Simmering, & Sturman, 2009) and provided high external validity, we encourage future studies to employ mixed methods approaches to replicate our results under a variety of conditions.

As suggested by our theoretical implications, we propose that a greater focus on the role of gender in the creativity literature is warranted. In extant research on creative performance, gender is most often relegated to the role of a control variable. We encourage scholars to examine the influence of demographic variables such as gender on not only the final creative output but also the different stages of the creative process, as such a nuanced understanding would enable identification of targeted measures to effectively bridge the gender gap in creative performance. Moreover, theory and practice would benefit from the study of organizational contextual factors beyond psychological safety, such as leader or organizational support for creativity, examining whether they have similar accentuating effects in improving women's CSE and creative performance.

6 | CONCLUSION

By identifying CSE as a key factor in driving individual's creative performance, we conceptualize and test its role in mediating the multi-level interactive effects of team psychological safety and individual gender on employees' creative performance. Our findings not only support the conjecture made by scholars and practitioners that gender differences exist in creative performance but also provide evidence of the underlying mechanism of CSE that results in this differential variation in creative outcomes. Specifically, these differences may be offset or suppressed by the impact of team psychological safety that can serve to build women's CSE more than it does men's. Our research provides a comprehensive and in-depth understanding of the nuanced and contingent impact of an individual's gender on creative performance, and we hope this opens fruitful new avenues for future creative performance and gender research.

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