Psychological capital and self-reported employee creativity: The moderating role of supervisor support and job characteristics

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Although the positive effect of psychological capital (PsyCap) on employee performance is well documented, the conditions under which PsyCap exerts the most influence on creativity warrant further research. Complementing and extending prior studies, we theorize and examine how two critical contextual factors (supervisor support for creativity [SSC] and job characteristics) effectively activate PsyCap associated with self-reported employee creativity. Drawing on an interactional perspective, we use trait activation theory to examine the moderating effects of SSC and job characteristics on the relationship between PsyCap and self-reported employee creativity. Through rigorous hypotheses testing (N = 356 individuals from multiple industries in Chinese firms), our results demonstrate that both SSC and job characteristics positively moderate the PsyCap–creativity relationship. Additional analyses reveal that PsyCap is most effective at enhancing creativity when both SSC and job characteristics are high. Implications of these findings for theory, future research and practice are discussed.

1 | INTRODUCTION

Employee creativity, defined as the generation of novel and useful ideas, products and processes (Amabile, 1996; Anderson, Potočnik, & Zhou, 2014; Woodman, Sawyer, & Griffin, 1993; Zhou & Hoever, 2014) has become critical to organizational performance and competitiveness (Mumford & Hunter, 2005). Existing research has examined a variety of factors that predict employee creativity in organizations (Shalley, Zhou, & Oldham, 2004; Zhou & Hoever, 2014). Recently, scholars have found that employees’ psychological capital, hereafter referred to as ‘PsyCap’, has a strong potential to enhance employee creativity (Avey, Richmond, & Nixon, 2012; Rego, Sousa, Marques, & Cunha, 2012; Sweetman, Luthans, Avey, & Luthans, 2011). PsyCap refers to an individual’s positive psychological state of development in terms of using his/her motivational and cognitive resources to achieve a high level of performance (e.g., Luthans, Avolio, Avey, & Norman, 2007). This burgeoning line of research regarding the linkage between PsyCap and creativity deepens our understanding of agentic psychological resources predicting employee creativity (Avey et al., 2012). However, this area is far from completely understood (e.g., Luthans, Avey, Clapp-Smith, & Li, 2008). Specifically, few studies have addressed the critical research question that is central in this study: When does PsyCap contribute to creativity? As existing studies and reviews have emphasized the interactional perspective in creativity research (e.g., Shalley et al., 2004; Zhou & Hoever, 2014), for years, creativity research has called for deeper investigations to unpack the various contextual influences on how individuals exhibit their psychological attributes to facilitate creativity. Thus, further studies in this line of research would contribute significantly to an in-depth understanding of how to effectively foster employees with PsyCap to be creative. The goal of the present study is therefore to examine how supervisor support for creativity (SSC) and job characteristics independently...
as well as jointly moderate the relationship between PsyCap and creativity. According to trait activation theory (Tett & Burnett, 2003), personal traits are expressed as responses to trait-relevant situational cues (Tett & Guterman, 2000). Employees seek and are satisfied with working contexts that provide them with opportunities for expressing an array of personality traits (Tett & Burnett, 2003; van Knippenberg & Hirst, 2015). Researchers have consistently suggested that organizations should focus on the essential role of two contextual variables – leaders and tasks – that activate employees’ psychological attributes to predict creative performance (for a review, see Newman, Ucbasaran, Zhu, & Hirst, 2014). We follow this line of research and specifically explore whether SSC and job characteristics amplify the PsyCap-creativity linkage for several reasons. First, although scholars have indicated that SSC can encourage employees to take an active role in acting creatively (Kim, Hon, & Lee, 2010; Madjar, Oldham, & Pratt, 2002), we know less about the indirect influences of SSC as a boundary condition to augment the individual predictor-creativity relationship (Carmeli, Reiter-Palmon, & Ziv, 2010; Tierney, Farmer, & Graen, 1999). Given that existing research has shown that supervisors influence followers’ interpretation of their personal benefits with regard to creative outcomes (e.g., Shin & Zhou, 2003), we propose that SSC augments the association between PsyCap and creativity. Second, despite the research evidence that employee (creative) outcomes vary based on job characteristics (e.g., Bos-Nehles, Renkema, & Janssen, 2017; Spector & Jex, 1991; Wang, Tsai, & Tsai, 2014), the majority of studies focused on one dimension of job characteristics (e.g., autonomy) without considering all the dimensions (e.g., Wang & Cheng, 2010). Indeed, job characteristics, as an overall construct, can trigger greater motivation for creativity among employees (Chang, Jia, Takeuchi, & Cai, 2014; Shalley, Gilson, & Blum, 2009; Tierney & Farmer, 2004) because it fully enables employees to use their resources to pursue various creative ideas (Shalley & Gilson, 2004). Thus, we expect that job characteristics can strengthen the likelihood that employees utilize their PsyCap to generate greater creativity. Finally, and importantly, although previous research has painted a comprehensive picture of employee (creative) performance, including all the characteristics of the workers, the working environment and the job (Steers & Porter, 1991), fewer empirical studies have simultaneously considered the various contextual factors (e.g., Aleksić, Mihelić, Ćeme, & Škerlavaj, 2017). Specifically, research based on leaders’ situational influence (Kerr & Jermier, 1978) has shown that leader behaviours may influence subordinates’ appraisal of their jobs (Smirich & Morgan, 1982). That is, leaders and tasks depend on each other in constituting the contexts within which employees with desirable psychological attributes are highly activated to produce creative results. Thus, we propose a three-way interactive effect of PsyCap, SSC and job characteristics on employee creativity. Figure 1 depicts our research model.

This paper advances the understanding of the relationship between PsyCap and employee creativity in a contingent model (Newman et al., 2014). By examining the boundary conditions of SSC and job characteristics, we highlight the accentuating role of leaders and tasks separately among the contextual variables in organizations. Thus, our research answers calls to systematically investigate the influence of various contextual variables from different aspects (Choi, 2004; Glynn, 1996). To move a step further in terms of how PsyCap maximizes employee creativity, we examine the simultaneous interaction of SSC and job characteristics with PsyCap’s effect on the highest level of employee creativity. In doing so, we also contribute to the development of an interaction approach in creativity research (Zhou & Hoever, 2014) by enriching the knowledge of how two different types of contextual facilitators (i.e., SSC and job characteristics) interact synergistically to strengthen the benefits of individual psychological factors (i.e., PsyCap) on creativity (e.g., Aleksić et al., 2017; van Knippenberg & Hirst, 2015).

2 | THEORETICAL BACKGROUND

2.1 | PsyCap and creativity

PsyCap represents individuals’ positive psychological state (Luthans, Avey, Avolio, Norman, & Combs, 2006; Luthans, Avolio, et al., 2007). This personal characteristic (Luthans, Avolio, et al., 2007) includes four main aspects: self-efficacy (individuals’ confidence in successfully mobilizing their efforts to generate desired outcomes), hope (individuals’ motivations and pathways to accomplish their tasks), optimism (individuals’ expectancy and positive attribution towards

![FIGURE 1 Research Model](image-url)
positive outcomes) and resilience (individuals' ability to bounce back from risks or failures and to adapt to dynamics and success) (Avey, Luthans, & Youssef, 2010; Luthans, Avolio, et al., 2007; Luthans, Youssef, & Avolio, 2007; Newman et al., 2014). Representing the positive psychological resources, each of the four components of PsyCap in previous studies was independently found to lead to individual desirable outcomes (e.g., Rego, Sousa, Marques, & Cunha, 2014). Recent research indicated that PsyCap, as a whole construct, has a particularly strong effect on desired employee performance and behaviour (Avey, Reichard, Luthans, & Mhatre, 2011; Newman et al., 2014). PsyCap is positively associated with creativity (Huang & Luthans, 2015; Rego et al., 2012; Sweetman et al., 2011). Specifically, self-efficacious people have the ability to exploit resources to achieve certain goals (Luthans et al., 2006), and challenges are likely to stimulate these individuals to produce creative ideas (Rego et al., 2012). In turn, employees with hope attempt alternative methods to pursue creative goals and engage in creative endeavours (Sweetman et al., 2011). When facing difficulties, optimistic people tend to take advantage of opportunities while experiencing positive emotions (Luthans, Avolio, et al., 2007). Finally, adversity is inevitable in creative processes, but resilience ensures individuals' psychological safety in overcoming challenges (Luthans, Luthans, & Luthans, 2004). Consequently, we follow the existing research and suggest that the core construct of PsyCap is positively related to self-reported employee creativity (Rego et al., 2012; Sweetman et al., 2011).

Although the extant literature has demonstrated a positive relationship between PsyCap and employee creativity (Rego et al., 2012; Sweetman et al., 2011), it remains unclear how various job- and management-related factors influence this relationship (Newman et al., 2014). Drawing on trait activation theory (Tett & Burnett, 2003; Tett & Guterman, 2000), we suggest that it is important to explore the role of environmental predictors—SSC and job characteristics—in activating individual attributes (e.g., PsyCap) with regard to enhancing or inhibiting creativity. Trait activation theory suggests that how personal attributes impact employees' performance may be contingent on situational cues (Tett & Burnett, 2003), which is consistent with person–context interactions in creativity research. For example, Hirst, van Knippenberg, and Zhou (2009) found that team learning behaviour activates the relation between individuals' goal orientation and creativity. Additionally, the relevance of a situation to personal attributes may alter the influence of personal characteristics on outcomes (Tett & Burnett, 2003). Specifically, research demonstrates that positive organizational factors (e.g., supportive context) strengthen the relation between individual characteristics and creativity (Shalley et al., 2009; Zhou, Hirst, & Shipton, 2012; Zhou & Hoever, 2014). These moderators are trait-relevant situational cues that are favourable to creativity (Tett & Burnett, 2003). Finally, Tett and Guterman (2000) and Tett and Burnett (2003) call for research regarding the combined effects of various contextual factors on the associations between personal factors and performance. Human resource management departments often employ several practices simultaneously; thus, the integrated effects of these practices may yield different outcomes. Consequently, in the following section, we examine the joint moderating effects of SSC and job characteristics on the association between PsyCap and employees' self-reported levels of creativity.

### 2.2 Moderating role of SSC

As an interpersonal relationship, SSC refers to the extent to which supervisors encourage, care for and provide subordinates with assistance to generate creative outcomes (Madjar et al., 2002) and improve employee creativity (Amabile, 1996). Research has demonstrated that SSC provides encouragement and assistance to employees (Madjar et al., 2002; Tierney & Farmer, 2004) to increase initiative, such as idea generation (Oldham & Cummings, 1996). SSC also establishes the expectation that creativity is highly valued (Ohly, Sonnentag, & Plunkte, 2006) such that subordinates realizing the importance of creativity will engage in creative endeavours (Kim et al., 2010). Additionally, SSC can be beneficial for PsyCap development (Avey, 2014). SSC may contribute to employees' self-efficacy by reinforcing training and encouraging success and can increase employees' hope by setting goals and helping employees to meet goals; it develops optimism through positive expectations from goal setting and provides job resources and opportunities for growth and recovery from mistakes to shape resilience.

Based on the interactive effects of leaders' and employees' personal characteristics on creativity (e.g., Tierney et al., 1999), we suggest that SSC is a moderator that works with PsyCap to foster creativity by motivating employees to direct their PsyCap towards creativity. Specifically, individuals' psychological attributes (e.g., PsyCap) determine how they respond to work environments (Shalley et al., 2009). Thus, high PsyCap employees not only have a perception that utilizing positive psychological resources to attain creative results is favourable but also benefit from supervisors' support to realize creative achievements with fewer risks and greater comfort (Shin, Kim, Lee, & Blan, 2012). Consequently, PsyCap influences achievement, and SSC heightens this positive association as a situational moderator (e.g., Shalley & Gilson, 2004). Specifically, when people with high PsyCap perceive high SSC, they may feel encouraged and be less afraid of failure (Paterson, Luthans, & Jeung, 2014); thus, they may be more open to generating new ideas (To, Fisher, Ashkanasy, & Rowe, 2012). Therefore, subordinates' PsyCap for creative work can be maximized by using SSC to encourage the subordinates' cognitive appraisal of a situation (Glazer, 2006) towards creativity. Conversely, when high PsyCap subordinates perceive low SSC, they may fail to experience an atmosphere of safety (Shalley & Gilson, 2004); hence, they engage less in creativity. Thus, we hypothesize:

**Hypothesis 1.** SSC moderates the relationship between PsyCap and self-reported employee creativity such that the relationship between PsyCap and creativity is stronger when SSC is higher.

### 2.3 Moderating role of job characteristics

Hackman and Oldham (1975) suggested a Job Characteristic Model that reflects psychological influences on creativity (Oldham & Cummings, 1996). It contains five job-relevant dimensions: skill variety (the degree of knowledge and skills that employees need to accomplish tasks), autonomy (the freedom that employees have in choosing the methods, processes and resources to perform their work), identity (the extent to which employees can complete their task), significance
(the importance of the task for others), and feedback (employees receiving information related to their work performance). Job characteristics have motivational potential (Hackman & Oldham, 1975; Shalley & Gilson, 2004) to influence creativity by impacting psychological states (e.g., Oldham & Cummings, 1996). Specifically, according to person–situation interactional theory, individuals seek out situations on the basis of their personal predispositions (Diener, Larsen, & Emmons, 1984), and highly well-designed jobs (e.g., autonomy) are perceived to promote the development of PsyCap (Avey, 2014). Thus, building on past studies (Barrick, Mount, & Li, 2013; Scott & Bruce, 1994; Shalley & Gilson, 2004), we expect that the PsyCap–creativity relationship is contingent on job characteristics.

As an important component of creativity (Amabile, 1996), skill variety effectively increases personal motivation and engagement (Humphrey, Nahrgang, & Morgeson, 2007). The experience of applying skills to problems enables employees to recombine knowledge to generate and implement new ideas (Noefer, Stegmaier, Molter, & Sonntag, 2009). When employees perceive their work as high in task significance, they may build a deep understanding of the impact and value of their job (Grant, 2008). Consequently, they endeavour to produce creative results (Oldham & Cummings, 1996). For example, task significance requires utilizing motivations and cognitions (Humphrey et al., 2007), which signifies to the workplace that employing PsyCap in creative actions is worthwhile. Autonomy is a strong predictor of creativity (Liu, Chen, & Yao, 2011; Zhou, 1998) because it offers freedom from control (Deci, Connell, & Ryan, 1989) and internalizes the enactment of creative behaviour (Gagné & Deci, 2005). Because PsyCap reinforces employees' motivated efforts and perseverance (Luthans, Youssef, & Avolio, 2007), job autonomy allows them to fulfill the process of PsyCap facilitating creativity. By increasing feelings of completion and responsibility, task identity increases the meaningfulness of work (Griffin, Welsh, & Moorhead, 1981), which is associated with creativity (Oldham & Cummings, 1996; Shalley et al., 2004). Employees who perceive high task identity can apply their positive psychological resources towards creative activities (Loher, Noe, Moeller, & Fitzgerald, 1985). Finally, through task feedback, employees can monitor their activities and make changes and improvements (Zhou, 1998) by responding to work situations. In this manner, feedback reinforces employees' utilization of their motivation and positive PsyCap. Thus, we hypothesize:

**Hypothesis 2.** Job characteristics moderate the relationship between PsyCap and self-reported employee creativity such that the relationship between PsyCap and creativity is stronger when job characteristics (autonomy, significance, identity, skill variety and feedback) are higher.

### 2.4 Three-way interaction effects on creativity

SSC and job characteristics both increase PsyCap and creativity and moderate the associations between PsyCap and work-related outcomes. However, no research has examined their joint influence, especially on the PsyCap–creativity relation. It is necessary to consider their combined influence because existing studies have found that the perceptions that employees receive from contextual factors (e.g., job characteristics) may be affected by the relationships they have (e.g., leader supervision) (Salancik & Pfeffer, 1978). For example, Smircich and Morgan (1982) found that leader behaviours influenced workplace appraisal of their (subordinates') work. Therefore, we propose that employee creativity is a function of multiple factors, including PsyCap, SSC and job characteristics.

More specifically, the combined effects of desired individual and different desired contextual predictors result in enhanced creativity (Zhou & Heover, 2014). For example, if a leader provides support for subordinates' creative thoughts, employees with a high level of PsyCap who prefer growth, challenge and success may perceive that their efforts to be creative are valued and worthy; thus, they may feel confident and encouraged to devote themselves to creativity and be less afraid to take risks. In this situation, when well-designed work is assigned to subordinates, they are also likely to feel more self-determination to accomplish meaningful tasks using creative methods through skill utilization. By contrast, when people with high PsyCap pursue creative goals and adjust to adversities, low SSC (e.g., unsupportive supervisors) and an unchallenging task (e.g., insignificant, fewer skills) with less authority may fail to continuously inspire their psychological response towards creative achievements.

Consequently, we propose a three-way interactive effect on creativity: PsyCap is more likely to facilitate self-reported creativity when a supervisor provides support for creativity and employees are assigned to well-designed jobs. Thus, we hypothesize:

**Hypothesis 3.** PsyCap, SSC and job characteristics interact to affect self-reported employee creativity such that the highest level of creativity is expected when employee PsyCap, SSC and job characteristics are all high.

### 3 METHODS

#### 3.1 Sample and procedures

A total of 356 employees from Eastern China who work for different organizations (logistics companies, a design institute, and a training organization) completed the study questionnaire, which collected demographic information and included items measuring all the independent and dependent variables. All the companies were chosen because they pursue innovation goals. To further ensure the compatibility of the sample with our research ideas, before initiating the data collection, we contacted the managers and HR departments of the organizations for preliminary verification to confirm that employee creativity was welcomed in all these companies. During this consultation, this question was explicitly asked and discussed. Specifically, we asked these organizations, 'Does your company attach importance to employee creativity, and would you like to participate in our employee creativity research project?' As the Chinese government currently aims to increase creativity by launching plans to support organizational innovation (e.g., Liu & Buck, 2007), employee creativity is officially desired by all companies. All of the organizations confirmed that they followed the government's policy and had the ambition to increase the creativity of their workforce; none of these organizations
was excluded from the study. The participants were informed that their responses would be used for research purposes only and kept strictly confidential. The survey was translated through the procedure of back-translation (Brislin, 1986). As in many other studies, the data for the independent and dependent variables came from a single source. Therefore, we separated the independent and dependent variables in our questionnaire to control for common method bias (CMV) (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

We distributed 490 questionnaires and received 379 completed surveys (77% response rate). The final sample included 356 employees who reported the industry in which they were working. The participants' average age was 32.5 years. Table 1 presents the demographic data.

3.2 Measures

3.2.1 PsyCap

To measure PsyCap (containing self-efficacy, hope, optimism and resilience), we used the 12-item instrument ($\chi^2[54] = 85.18$, $p < 0.01$, $CFI = 0.99$, $RMSEA = 0.04$) developed and validated by Luthans, Avolio, et al. (2007). The participants responded using a 6-point scale ranging from 1 = ‘strongly disagree’ to 6 = ‘strongly agree’. Sample items include: ‘I feel confident analysing a long-term problem to find a solution’ (self-efficacy); ‘I can think of many ways to reach my current work goals’ (hope); ‘I can get through difficult times at work because I’ve experienced difficulty before’ (resilience); and ‘I always look on the bright side of things regarding my job’ (optimism). This multi-dimensional scale, which has high internal consistency and reliability, was regarded as a core construct in previous relevant research (e.g., Avey, Luthans, & Jensen, 2009; Rego et al., 2012). Conceptual and empirical evidence thus far has supported an examination of PsyCap as a core construct rather than based on separate motivational/emotional and cognitive dimensions (Luthans, Avolio, et al., 2007; Luthans, Norman, Avolio, & Avey, 2008; Luthans, Youssef, & Avolio, 2007). Specifically, even though these dimensions have distinct properties, factor analyses have indicated that they have more in common than not (Avey et al., 2009; Luthans, Avolio, et al., 2007). Consistent with this line of research, we consider PsyCap as a core construct in this study with the estimated internal consistency of the scale scoring $\alpha = 0.92$.

3.2.2 SSC

Baer and Oldham’s (2006) four-item scale ($\chi^2[2] = 4.79$, $p < 0.01$, $CFI = 0.99$, $RMSEA = 0.06$) was used to measure SSC. We employed a 6-point scale for the item responses (1 = ‘never’ to 6 = ‘always’). A sample item is ‘My supervisor supports experimentation with new methods and ways of doing things’. In the present study, the estimated internal consistency of the scale scores was $\alpha = 0.86$.

3.2.3 Job characteristics

To measure the overall job characteristics construct, we followed previous research (Piccolo & Colquitt, 2006) and employed a revised version of the Job Diagnostic Survey (Hackman & Oldham, 1975) that includes 10 items ($\chi^2[35] = 47.36$, $p < 0.001$, $CFI = 0.99$, $RMSEA = 0.03$) from five dimensions – autonomy, task significance, identity, skill variety and task feedback – to assess employees’ perceptions of their work on a 7-point scale from 1 = ‘very inaccurate’ to 7 = ‘very accurate’ (Idaszak & Drasgow, 1987). Sample items include: ‘The job requires me to use a number of complex or high-level skills’ (skill variability); ‘The job provides me the chance to completely finish the pieces of work I begin’ (identity); ‘This job is one where a lot of other people can be affected by how well the work gets done’ (task significance); ‘The job permits me to decide on my own how to go about doing the work’ (autonomy); and ‘After I finish the job, I know whether I performed well’ (feedback). Hackman and Oldham (1975) operationalized job characteristics as a high-order construct and argued that this measure may provide more convincing explanations in the context of organizational research. Accordingly, using this most commonly used measure, subsequent research has revealed that job characteristics represent a superordinate construct because the five dimensions display high related loadings (e.g., Chen & Kao, 2011; Gillet & Vandenbergh, 2014). Therefore, in the present study, we treat job characteristics as a whole construct with an estimated internal consistency of the scale scoring $\alpha = 0.82$.

3.2.4 Self-reported creativity

Consistent with existing studies in the organizational management research field that used self-reported creativity (e.g., Kaufman, Cole, & Baer, 2009; Shalley et al., 2009), we used four items from Farmer, Tierney, and Kung-McIntyre (2003). This measure was developed in the Chinese context, which reflects the fitness of assessing employee creativity in our present study. The employees assessed their own creativity from 1 = ‘strongly disagree’ to 6 = ‘strongly agree’. A sample item is ‘I try new ideas or methods first’. The self-assessment of employee creativity was chosen in the present study for two main reasons. First, existing studies indicating a significant correlation

| Variables | Value            | Frequency | Percent |
|-----------|------------------|-----------|---------|
| Gender    | Male             | 158       | 44.4    |
|           | Female           | 198       | 55.6    |
| Tenure (years) |               |           |         |
| <1        | 47               | 13.2      |
| 1-3       | 90               | 25.3      |
| 3-5       | 62               | 17.4      |
| 5-7       | 61               | 17.1      |
| 7-15      | 71               | 19.9      |
| >15       | 25               | 7.0       |
| Education | PhD              | 20        | 5.6     |
|           | Masters degree   | 103       | 28.9    |
|           | Bachelors degree | 85        | 23.9    |
|           | Associates degree| 64        | 18.0    |
|           | High school/technical school | 63 | 17.7 |
|           | Middle school    | 21        | 5.9     |
| Job type  | Managerial       | 21        | 5.9     |
|           | Administrative   | 70        | 19.7    |
|           | Technical (e.g., R&D) | 104 | 29.2 |
|           | Sales & marketing| 73        | 20.5    |
|           | Other            | 88        | 24.7    |
| Industry  | Public administration | 27 | 7.6   |
|           | Technology       | 107       | 30.1    |
|           | Transportation   | 66        | 18.5    |
|           | Manufacturing    | 55        | 15.4    |
|           | Education        | 74        | 20.8    |
|           | Information and communication | 27 | 7.6 |
between subjective rating and objective measure of employee creativity (e.g., Tierney et al., 1999) suggest that employee self-rating of creativity is acceptable in creativity research (e.g., Zhou, 2003). Second, scholars suggest that in the majority of studies using large data sets, self-rating of creativity is acceptable (e.g., Ng & Feldman, 2012), which justifies the measures in our study given a sample size of 356.

3.2.5 | Control variables

We controlled for age (in years), gender, education, organization tenure, job type and industry. Furthermore, as suggested by Shalley et al. (2009), we controlled for employees’ intrinsic motivation to test whether it offers an alternative explanation to creativity. We used four items from Guay, Vallerand, and Blanchard (2000) (e.g., ‘I feel good when doing this activity’), ranging from 1 = ‘very inaccurate’ to 7 = ‘very accurate’.

3.3 | Analytic strategy

Before hypotheses testing, we conducted confirmatory factor analysis (CFA) to verify the discriminant validity of the variables in the present study. Next, to test the hypotheses, we used hierarchical multiple regression with creativity as the dependent variable, and the predictor variables were introduced in the following steps: (1) the control variables, (2) the three main effects (PsyCap, SSC and job characteristics), (3) the two-way interactions, and (4) the three-way interactions. The variables were mean-centred to calculate the components of the interaction terms (Aiken, West, & Reno, 1991).

4 | RESULTS

4.1 | Preliminary analyses

We performed CFA on the four factors (separate factors for PsyCap, SSC, job characteristics and creativity) using AMOS 21.0 to establish the factors’ discriminant validity. In Table 2, the baseline model with four factors generally yielded a better fit to the data ($\chi^2(399) = 622.22$, CFI = 0.96, RMSEA = 0.04, TLI = 0.95, IFI = 0.96) than the alternative models, which all had poor fit indexes (Hu & Bentler, 1999). The results lend further assurance of the robustness of our four-factor model. Moreover, we tested another alternative model that proposed that creativity leads to PsyCap. However, this model exhibited a poor data fit ($\chi^2(104) = 477.83$, CFI = 0.87, RMSEA = 0.10, TLI = 0.85, IFI = 0.87), which rules out viable alternative explanations for our hypothesized model of PsyCap generating creativity.

Given that all the data were collected from a single source, we used a single test to conduct an explanatory factor analysis to identify the potential for CMB (Harman, 1976). The result – that one factor accounted for 38.79%, which is below the accepted threshold of 40% – suggests that CMB was unlikely to be a problem in this study.

4.2 | Descriptive statistics

The means, standard deviation, and correlations of all the measures are presented in Table 3. Consistent with our prediction, PsyCap is positively related to self-reported employee creativity ($r = 0.49$, $p < 0.01$). SSC and job characteristics are both significantly and positively related to employee creativity ($r = 0.69$ and $r = 0.51$, respectively, $p < 0.01$).

4.3 | Hypothesis test

Table 4 summarizes the results of the hypotheses tests. Although we did not hypothesize main effects, PsyCap was positively related to creativity ($\beta = 0.18$, $p < 0.05$, $\Delta R^2 = 0.09$) in Step 2. To test Hypotheses 1 and 2, which concerned SSC and job characteristics as moderators, we computed the product terms for the variables in our two-way interactions and entered them separately into the regression in Step 3 (PsyCap $\times$ SSC) and Step 4 (PsyCap $\times$ job characteristics). The results revealed that the interaction terms of SSC ($\beta = 0.24$, $p \leq 0.001$, $\Delta R^2 = 0.06$) and job characteristics ($\beta = 0.17$, $p \leq 0.05$, $\Delta R^2 = 0.01$) are both positive and significant (see Figure 2). Therefore, Hypotheses 1 and 2 are supported.

Hypothesis 3 predicts a three-way interaction among PsyCap, SSC and job characteristics wherein creativity is highest when all three variables are high. We entered PsyCap, SSC and job characteristics into the model in Step 4. Table 3 indicates that the three-way interaction is significant ($\beta = 0.16$, $p < 0.001$, $\Delta R^2 = 0.02$). We also plotted the three-way interaction in Figure 3. Simple slope tests indicated that the positive relationship between PsyCap and creativity was significant when both SSC and job characteristics were high. To further examine the three-way interaction, we used Dawson and Richter’s (2006) method to test whether the difference between each pair of slopes was significantly different from zero. In Table 5, representing high levels for all three explanatory variables, slope 1 is different from the other three slopes ($t = 3.38; p < 0.01$). Thus, Hypothesis 3 is supported.

### TABLE 2 | Comparison of measurement models

| Model | $\chi^2(df)$ | RMSEA | IFI | TLI | CFI | $\Delta \chi^2(df)$ |
|-------|-------------|-------|-----|-----|-----|-------------------|
| Four factors (baseline model): PsyCap, SSC, job characteristics, and creativity | 622.22 (399) | 0.04 | 0.96 | 0.95 | 0.96 | - |
| Three factors: PsyCap and SSC combined | 985.50 (402) | 0.06 | 0.89 | 0.87 | 0.88 | 363.28(3)** |
| Three factors: SSC and job characteristics combined | 730.01 (402) | 0.05 | 0.93 | 0.93 | 0.93 | 107.09(3)** |
| Two factors: PsyCap, SSC and job characteristics combined | 1285.55 (404) | 0.08 | 0.82 | 0.81 | 0.82 | 663.33(5)** |
| One factor: All variables combined | 3292.10 (406) | 0.14 | 0.42 | 0.37 | 0.42 | 2669.88(7)** |

*p < 0.05, **p < 0.01.
Past research has indicated the important role of intrinsic motivation in facilitating employee creativity (e.g., Amabile, 1996), and in the present study, we did find a significant effect in Table 4 (β = 0.41, p ≤ 0.001). To further establish the positive association between PsyCap and employee creativity, we conducted supplemental analyses to test all of our hypotheses without controlling for intrinsic motivation. In

### Table 3: Means, standard deviations, and correlations

| Variables           | Mean | S.D. | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
|---------------------|------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1. Gender           | 1.56 | 0.50 |     |     |     |     |     |     |     |     |     |     |     |
| 2. Age              | 32.4 | 7.06 | 0.02|     |     |     |     |     |     |     |     |     |     |
| 3. Tenure           | 3.26 | 1.52 | 0.01| 0.58**|     |     |     |     |     |     |     |     |     |
| 4. Intrinsic motivation | 4.74 | 1.03 | -0.08| -0.01| -0.01|     |     |     |     |     |     |     |     |
| 5. Education        | 3.31 | 1.36 | -0.03| -0.31**| -0.20**| 0.01|     |     |     |     |     |     |     |
| 6. Job type         | 3.38 | 1.22 | -0.01| -0.15**| -0.26**| -0.05| 0.28**|     |     |     |     |     |     |
| 7. Industry         | 3.35 | 1.47 | -0.01| 0.01 | 0.00 | -0.01| 0.03 | 0.00 |     |     |     |     |     |
| 8. PsyCap           | 4.40 | 0.74 | -0.10| 0.06 | 0.02 | 0.69**| -0.02| 0.06 | 0.03 | (0.92)|     |     |     |
| 9. SSC              | 4.43 | 0.75 | -0.04| 0.01 | 0.00 | 0.69**| -0.01| 0.08 | 0.04 | 0.61**| 0.69**|     |     |
| 10. Job characteristics | 4.06 | 0.84 | -0.03| 0.03 | 0.03 | 0.51**| 0.00 | 0.00 | 0.09 | 0.49**| 0.51**| 0.51**| (0.81)|

Cronbach’s alphas in brackets on the diagonal.

*p < 0.05, **p < 0.01.

### Table 4: Results of the regression analysis

| Variables           | β    | R²  | ΔR² | F    | ΔF   |
|---------------------|------|-----|-----|------|------|
| Step 1              |      |     |     |      |      |
| Gender              | 0.02 |     |     |      |      |
| Age                 | 0.00 |     |     |      |      |
| Job type            | 0.03 |     |     |      |      |
| Education           | -0.01|     |     |      |      |
| Tenure              | 0.02 |     |     |      |      |
| Intrinsic motivation | 0.41***|     |     |      |      |
| Industry            | 0.05*| 0.27| 0.27***| 18.26***| 18.26 |
| Step 2              |      |     |     |      |      |
| PsyCap              | 0.18*|     |     |      |      |
| SSC                 | 0.16***|     |     |      |      |
| Job characteristics | 0.18*| 0.36| 0.09***| 18.97***| 15.37 |
| Step 3              |      |     |     |      |      |
| PsyCap × SSC        | 0.24***| 0.41| 0.06***| 22.04***| 34.35 |
| Step 4              |      |     |     |      |      |
| PsyCap × Job character | 0.17*| 0.42| 0.01**| 20.76**| 4.31 |
| Step 5              |      |     |     |      |      |
| SSC × Job characteristics | -0.10*| 0.43| 0.01* | 19.92*| 6.11 |
| Step 6              |      |     |     |      |      |
| PsyCap × SSC × Job characteristics | 0.16***| 0.45| 0.02**| 19.83***| 11.06 |

N = 356.

Regression coefficients represent unstandardized parameters.

Dependent variable: creativity

*p ≤ 0.05, **p ≤ 0.01, ***p ≤ 0.001.

### 4.4 Supplemental analyses

Past research has indicated the important role of intrinsic motivation in facilitating employee creativity (e.g., Amabile, 1996), and in the present study, we did find a significant effect in Table 4 (β = 0.41, p ≤ 0.001). To further establish the positive association between PsyCap and employee creativity, we conducted supplemental analyses to test all of our hypotheses without controlling for intrinsic motivation. In
addition, given that industry – a control variable – showed significant effects in the statistical analyses above (see Table 4, β= 0.05, p ≤ 0.05), we performed analyses without controlling for industry to further test all the hypotheses. The two rounds of analyses yielded results similar to the findings above. (The results are available from the first author upon request.) That is, Hypotheses 1, 2 and 3 are all supported. Taken together, the empirical evidence further supports the suggestions that PsyCap is positively related to self-reported employee creativity and that SSC and job characteristics, individually and jointly, moderate this relation positively.

5 | DISCUSSION

The purpose of this study is to investigate the conditions under which PsyCap is related to higher self-reported creativity by testing the moderating role of SSC and job characteristics. Building on the interactional perspective in the creativity literature, the results indicate that the positive effect of PsyCap on creative performance could be amplified by SSC and job characteristics. Additionally, we found that PsyCap has the strongest positive impact on creativity when both SSC and job characteristics are high.

5.1 | Theoretical implications

By exploring boundary conditions in which PsyCap may contribute to self-reported employee creativity, our research extends the prior literature on the benefits of PsyCap with regard to creativity in organizations. The results reveal that there is a positive association between PsyCap and employee creativity, which is consistent with prior research (e.g., Rego et al., 2012; Sweetman et al., 2011). Specifically, PsyCap provides employees with positive resources enabling them to direct their efforts towards addressing problems and challenges creatively (e.g., Huang & Luthans, 2015). This extends PsyCap into the organizational management domain to shed light on how we can understand employee creativity from the perspective of individuals’ psychological strength (Klijn & Tomic, 2010). Moreover, our findings show that PsyCap contributes to creativity over and above intrinsic motivation. While it is beyond the scope of the present study to compare the different roles of PsyCap and intrinsic motivation in predicting creativity, it is important to recognize that our empirical examinations provide an explanation highlighting the significant relevance of PsyCap for employee creativity. That is, to nurture creativity, employees with high PsyCap should be highly valued in organizations. Given that PsyCap contains four dimensions, which are measured with items of a motivational and/or emotional and/or cognitive nature, future research could specifically investigate the motivational and/or emotional and/or cognitive aspects of each dimension on creative outcomes to further establish the role of PsyCap in triggering creativity. Moreover, in addition to our study, which concentrates on employee creativity, future research could also consider how creativity at the level of groups and at the organizational level is influenced by PsyCap, with SSC and job characteristics as moderators.

The results of the two-way interactions, whereby SSC positively moderates the PsyCap–creativity relationship, contribute to extending our understanding of how support for creativity by supervisors may strengthen individuals’ positive psychological characteristics in relation to their creative outcomes (Carmeli et al., 2010; Tierney et al., 1999; Zhou & Hoever, 2014). Our findings also demonstrate that job characteristics significantly moderate the PsyCap–creativity relation. This corresponds with prior arguments suggesting that task characteristics are an important moderator in creativity research because they provide stimulation and information opportunities (Shalley et al., 2004; Shalley et al., 2009). We enrich the earlier research by revealing that overall job characteristics, rather than a single dimension, strengthen the association between high PsyCap and creativity. These results highlight the need for future research to consider a wider range of relevant leadership behaviours and the negative aspects of task characteristics that theoretically influence the relationship between PsyCap and creativity. For example, more investigation is needed regarding how empowering leadership may leverage PsyCap to benefit creativity. Empowering leadership provides employees with considerable latitude (Zhang & Bartol, 2010) to take risks in creative activities (Zhang & Zhou, 2014), which increases employees’ motivational resources (e.g., self-efficacy) (Srivastava, Bartol, & Locke, 2006). Thus, empowering leadership may strengthen the impact of PsyCap on creativity.

As expected, we found PsyCap to be most effective in generating creative results when both SSC and job characteristics are high. In fact, PsyCap, SSC and job characteristics constitute three significant areas in creativity research that, notably, have not been integrated until now as a means of explaining self-reported employee creativity. Our findings regarding this three-way interaction also contribute to a growing body of studies regarding the complex interactions of creativity predictors (Zhou & Hoever, 2014); these studies suggest that combinations of personal, environmental and task characteristics are better suited for employee creativity. That is, the presence of one condition amplifies the effects of other conditions on promoting creativity (van Knippenberg & Hirst, 2015; Zhang & Zhou, 2014). Moreover, our results provide empirical evidence to explain the moderating effects of various contextual variables in creativity.
research (Choi, 2004). In light of our results, future research should emphasize the potential combinations of other situational and positional predictors for promoting or inhibiting workplace creativity.

5.2 | Practical implications

Our findings provide important practical implications to help organizations effectively manage employee creativity. Specifically, it is beneficial to select candidates using a PsyCap test, which may immediately promote creativity in organizations. At the same time, organizations should involve employees with high PsyCap in building creative teams, which may foster creative collective initiatives and achievements. Our findings also support the perspective that supervisors should support their subordinates’ creative activities and that HR departments have a strategic role in designing jobs that generate additive effects for employees with PsyCap to increase creativity. For instance, supervisors must be trained to encourage employees and provide a supportive environment that motivates their employees to engage in creative activities. Furthermore, jobs should be well designed to enable employees to feel more excited and interested in attaining higher levels of creativity (e.g., providing more autonomy in the work process and encouraging learning various skills and abilities). Together, these HR practices can create a company profile that is difficult for competitors to imitate (Henard & McFadyen, 2008) and hence can contribute to a sustainable strategic competitive advantage.

5.3 | Limitations

This study has limitations. First, as a cross-sectional study, our research encounters the problem of hypothesized causality. For example, supervisor support may influence employee creative performance, which further reinforces PsyCap. Future longitudinal research is encouraged to obtain more reliable results (Newman et al., 2014). Second, most of our data, including our creativity measure, are self-reported; therefore, future research should apply other measures of creativity to increase the objectivity of the results. For example, using the Brick test (Guilford, 1967), the candle in a box test (Duncker, 1945), and, as has been the case more recently, such objective creativity indicators as patents and awards (Zhou & Shalley, 2003), may constitute convincing ways of assessing individual creativity (Park, Chun, & Lee, 2016). Future research could also focus on a more objective assessment of creativity in the workplace, such as by observing and/or testing people’s specific creative behaviour at work, to further develop insights into the on-site manifestations of employee creativity in organizations. Relatedly, although we separated all the variables and explicitly stressed that there were no right or wrong answers in our questionnaire, we cannot absolutely preclude the possibility of subject prospection. Therefore, in order to provide our findings with more internal validity, future research is needed, preferably using double-blind trials.

Third, considering the multi-dimensionality of the PsyCap construct, future studies are encouraged to examine the motivational and/or emotional and/or cognitive aspects of the four dimensions and their links to creativity to gather further empirical evidence of their significant influences. Finally, because we relied on a sample in China, the external validity of our findings is limited. Although our sampling technique provided a rich data set that included a wide variety of organizations to test our hypotheses, we do not know the extent to which it may have biased the results. Additionally, although we confirmed Luthans et al.’s (2008) conclusions regarding PsyCap in China, our theoretical hypotheses of moderating effects have not been examined in prior studies. Thus, cross-validation replication by future studies is required to establish the generalizability of our findings. For example, researchers are encouraged to conduct research in other Eastern, Western, Northern and Southern countries to further establish the influence of PsyCap, SSC and job characteristics on employee creativity.

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