How psychological safety influences employee creativity in China: Work engagement as a mediator

Kebin Liu[1], Yuanqin Ge[2]

[1]School of Marxism, Tongren University, People's Republic of China
[2]Chinese Graduate School, Panyapiwat Institute of Management, Thailand, and School of Economics and Management, East China Jiaotong University, People's Republic of China

Although the effect of psychological safety on employee creativity is well documented, the mechanisms that explain that effect remain unclear. This study extends previous research by examining the direct link between psychological safety and employee creativity, and testing the mediating effect of work engagement in this relationship in a Chinese context. We chose 231 participants employed by 4 banking companies located in China to complete a series of self-report questionnaires. Structural equation modeling was used to evaluate the mediation model. The results reveal that psychological safety was a significant antecedent of employee creativity and that work engagement fully mediated the influence of psychological safety on employee creativity. These findings shed light on how psychological safety influences employee creativity. Implications for theory and practice are discussed.

Maximizing employee creativity is considered a top priority for every organization in today's knowledge-based economy (Johnston & Bate, 2013). Researchers have long been interested in identifying factors that might play a role in influencing employee creativity (Oldham & Cummings, 1996). For example, Zhou and George (2003) described five routes through which organizations can activate employee creativity and suggested that leader emotional intelligence plays a critical role in enabling and promoting employee creativity. Liu, Jiang, Shalley, Keem, and Zhou (2016), Shalley, Zhou, and Oldham (2004), and Tehran and Khaledi (2014) are some of the many researchers who have examined employees' personal factors that influence creativity. Liu et al. explored the motivational mechanisms of employee creativity and found that intrinsic motivation, prosocial motivation, and creative self-efficacy each make a unique contribution to employee creativity, and that the three motivational mechanisms simultaneously play mediating roles in the links from contextual and personal antecedents to employee creativity.

Psychological safety has recently been conceptualized and verified as an individual psychological state conducive to employee creativity (Agarwal & Farndale, 2017; Hu, Erdogan, Jiang, Bauer, & Liu, 2018; Tu, Lu, Choi, & Guo, 2019). *Psychological safety* refers to an individual's perception of the consequences of taking interpersonal risks in the workplace (Edmondson, 1999), and to a work climate in which employees can freely express their views and focus on constructive discussion to solve problems without worrying about negative personal consequences (Edmondson, 1999; Kahn, 1990). Yang, Li, Liang, and Zhang (2019) argued that employees who are thriving at work will develop a high level of involvement in creative efforts, which will accordingly lead to creative behavior because of their sense of psychological safety; however, if

CORRESPONDENCE Yuanqin Ge, Chinese Graduate School, Panyapiwat Institute of Management, 85/1 Moo 2 haengwattana, Amphoe, Pak Kret, Nonthaburi, 11120, Thailand. Email: **pimgyq@126.com**

employees feel psychologically unsafe, they are more likely to engage in self-protection, and will not demonstrate creativity at work. Agarwal and Farndale (2017) revealed that psychological safety is useful in facilitating employee creativity implementation. Given the present emphasis in research on the psychological safety–employee creativity link (see, e.g., Agarwal & Farndale, 2017; Yang et al., 2019); knowledge of the mechanisms that explain the relationship between psychological safety and employee creativity is still incomplete. Kark and Carmeli (2009) found that employees' sense of psychological safety was positively related to individual involvement in creative work, and that vitality at work partially mediated this relationship. However, in China, Confucian culture is different from Western culture as hierarchical relationships, family system, and benevolence are emphasized, which all conflict with creativity (Kim, 2009). Whether psychological safety can enhance employee creativity in the Chinese cultural context remains to be seen. In this study we aimed to fill this research gap by exploring the psychological safety–employee creativity link as well as the mediating effect of work engagement in this relationship in a Chinese context.

Work engagement refers to an individual's "positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli, Salanova, González-Romá, & Bakker, 2002, p. 74). According to Kahn (1990) and Schneider, Macey, Barbera, and Young (2010), engagement in work is a risky act that makes employees feel vulnerable to negative consequences; hence, they become concerned about safety at work (Basit, 2017). Psychological safety allows employees to overcome anxiety about the negative consequences of work engagement (Edmondson, 1999). May, Gilson, and Harter (2004) specifically addressed the relationship between psychological conditions and employees' engagement at work, and indicated that psychological safety and psychological meaningfulness were positively related to employees' work engagement, whereas psychological availability was not related with work engagement.

As for the association between work engagement and employee creativity, Salanova and Schaufeli (2008) argued that work engagement promotes employee creativity because engagement is a form of intrinsic motivation, and engaged employees apply their full capability to solve problems, connect with coworkers, and develop innovative ideas (De Spiegelaere, Van Gyes, De Witte, Niesen, & Van Hootegem, 2014; Hakanen, Perhoniemi, & Toppinen-Tanner, 2008). Schaufeli, Taris, and Bakker (2006) argued that employees with high levels of engagement experience positive emotions, such as happiness, joy, and enthusiasm in their work; thus, they are more likely to perform creative and innovative work behavior (Agarwal, Datta, Blake-Beard, & Bhargava, 2012). Building on these previous studies and related logic, we believed that psychological safety would indirectly influence employee creativity through the mediator of work engagement. Moreover, we expected that psychological safety would have a direct influence on employee creativity, and predicted that work engagement would partially mediate the relationship between psychological safety and employee creativity. Accordingly, we proposed the following hypotheses:

Hypothesis 1: Psychological safety will be positively related to employee creativity.

Hypothesis 2: Work engagement will mediate the relationship between psychological safety and employee creativity.

Method

Participants and Procedure

We obtained ethical approval for the study from our institutions. Participants were employees of four banking companies in south China with which we have a close cooperative relationship. All participants were unaware of the objectives of the study. They were asked if they would be willing to participate in this study without any incentives. We arranged for the distribution of 330 paper survey forms to employees and their supervisors through the human resource department of each banking company, and 231 forms were returned (response rate = 70%). Of the respondents, 56.71% were women and 43.29% were men, their mean age was 33.57 years (SD = 8.54, range = 24–43), and their average organizational tenure was 10.36 years (SD = 9.87).

Measures

The measures were originally developed in English; thus, back-translation was used to ensure semantic equivalence. Translation was performed by two bilingual teachers in an English–Chinese translation team. Some inconsistencies were found between the items in the two languages and we discussed these with the translators before a final version was achieved. All items were presented as self-report measures and were rated using a 5-point Likert format ranging from 1 = *strongly disagree* to 5 = *strongly agree*. To reduce the influence of homologous error, psychological safety and work engagement were assessed by the employees, and employee creativity was assessed by their immediate supervisor. Table 1 provides the results of descriptive statistics.

Psychological safety. Psychological safety was measured using a short version of Edmondson's (1999) seven-item scale. Four items were discarded owing to low factor loadings in an exploratory factor analysis. These discarded items were "If you make a mistake in this organization, it is often held against you," "People in this organization sometimes reject others for being different," "No one in this organization would deliberately act in a way that undermines my efforts," and "When working with members of this organization, my unique skills and talents are valued and utilized." The remaining three items were adopted to measure individual-level psychological safety in an organization: "Members of this organization are able to bring up problems and tough issues," "It is safe to take a risk in this organization," and "It is easy to ask other members of this organization for help." Cronbach's alpha coefficient in this study was .91.

Work engagement. Work engagement was measured using the Utrecht Work Engagement Scale (Schaufeli, Bakker, & Salanova, 2006), which has three dimensions: vigor (three items; e.g., "At my work, I feel bursting with energy"), dedication (three items; e.g., "I am enthusiastic about my job"), and absorption (three items; e.g., "I get carried away when I am working"). Cronbach's alpha coefficients for the three subscales were .85 (vigor), .90 (dedication), and .86 (absorption).

Employee creativity. Employee creativity was measured using the four-item scale developed by Farmer, Tierney, and Kung-McIntyre (2003). A sample item is "This employee seeks new ideas and ways to solve problems." Cronbach's alpha coefficient for this scale was .87.

Table 1. *Means, Standard Deviations, and Correlations for the Study Variables*

Variable	*M*	*SD*	1	2	3
1. Psychological safety	3.54	0.76	–		
2. Work engagement	4.01	0.55	.35**	–	
3. Employee creativity	3.77	0.84	.15**	.30**	–

Note. ** *p* < .01.

Results

Measurement Model

Confirmatory factor analysis was used to evaluate the measurement model for the study variables according to the indices of chi square/degrees of freedom (χ^2/df), root mean square error of approximation (RMSEA), comparative fit index (CFI), and incremental fit index (IFI). The results show the best fit was a three-factor solution, χ^2/df = 1.94, RMSEA = .07, CFI = .97, IFI = .97. All factor loadings of items were statistically

significant (p < .001) and exceeded .70. Of importance, the three-factor model exhibited a better fit to the data than a single-factor model in which all items were combined into one overall factor, χ^2/df = 5.67, RMSEA = .19, CFI = .55, IFI = .54. These results provide support for adequate discriminant and convergent validity.

Hypothesis Testing

Next, we constructed a structural model to test the influence of psychological safety on employee creativity. Structural equation modeling revealed that the path from psychological safety to work engagement and the path from work engagement to employee creativity were both significant, and the path from psychological safety to employee creativity was nonsignificant (see Figure 1).

Regarding the mediating role of work engagement, we built an alternative model by removing the direct path from psychological safety to employee creativity, and conducted further structural equation modeling (see Figure 1.). As we had hypothesized, the results show that the paths from psychological safety to work engagement and from work engagement to employee creativity remained significant. The bias-corrected 95% confidence interval of [0.28, 0.48] for the indirect effect of psychological safety on employee creativity via work engagement did not contain zero. This finding also supports our hypothesis that work engagement would fully mediate the relationship between psychological safety and employee creativity.
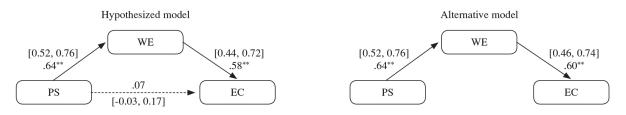

Figure 1. Hypothesized model and alternative model. PS = psychological safety; WE = work engagement; EC = employee creativity. Standardized path coefficients are presented and confidence intervals are shown in square brackets. The dashed line indicates a nonsignificant path. ** *p* < .01.

Discussion

In a knowledge-driven economy, managers of organizations are eager to know how to boost their employees' creativity at work. Recent researchers have been exploring psychological safety as an important predictor of employee creativity (Hu, Erdogan, Jiang, Bauer, & Liu, 2018; Tu, Lu, Choi, & Guo, 2019). However, less attention has been paid by scholars to the theoretical mechanisms explaining that relationship in a Chinese culture context. In this study we have provided evidence concerning such issues, by focusing on the relationships between psychological safety, work engagement, and employee creativity. In particular, we have highlighted the functioning of work engagement as a mediator in the link between psychological safety and employee creativity. Structural equation modeling analysis results reveal that psychological safety was significantly associated with work engagement but not with employee creativity; however, work engagement was significantly related to employee creativity. This suggests that, in the Chinese cultural context, work engagement mediated the effect of psychological safety on employee creativity. In other words, psychological safety enhanced individuals' creativity when employees were engaged in their work.

These findings are consistent with those obtained in previous research conducted in China, in which it was found that employees with high levels of psychological safety are more engaged in their work (Lyn, 2016); in

turn, employees who are engaged in their work are more likely to seek new and innovative ideas or methods to solve problems, and their creativity increases (Agarwal et al., 2012; De Spiegelaere et al., 2014). The mediating effect of work engagement helps demonstrate the mechanism through which psychological safety enhances employee creativity. It does not matter how employee creativity is promoted, what is important is the encouragement of work engagement that facilitates employee creativity. Moreover, contradictory to the findings reported by Agarwal and Farndale (2017), Hu et al. (2018), and Tu et al. (2019), our study results do not support the direct effect of psychological safety on employee creativity. Chinese employees follow traditional Confucian culture, in which creativity is not encouraged (Kim, 2007, 2009). Given that the feeling of safety is widely theorized to be a basic psychological need (see, e.g., Maslow, 1943), employee creativity cannot be driven simply by psychological safety in a Chinese cultural context. Psychological safety is effective in facilitating Chinese employees' creativity when work engagement is enhanced at the same time.

From a practical perspective, in this study we included work engagement as a mediator of the relationship between psychological safety and employee creativity. Thus, managers of firms in China should understand how psychological safety can facilitate their employees' work engagement, which, in turn, enhances employee creativity. Effective interventions can be provided in organizations to promote employee creativity by devoting effort to creating a work environment in which employees feel psychologically safe, and by taking employees' engagement at work into account when introducing management programs.

There are some limitations that need to be noted in this study. First, the use of a cross-sectional design does not enable explanation of the causal relationships between the variables. Researchers could conduct longitudinal studies to provide more conclusive results. Second, we explored the role of work engagement as a key intervening variable. Chinese have a strong sense of in-group culture, which means they prefer to work in group contexts rather than alone. It has been found that group work may spark individual creativity (Boland, Burrell, & Quazi, 2008); thus, in future research in the Chinese cultural context, group work could be incorporated into research models to explain the relationship between psychological safety and employee creativity.

Acknowledgements

References

Agarwal, P., & Farndale, E. (2017). High-performance work systems and creativity implementation: The role of psychological capital and psychological safety. *Human Resource Management Journal, 27,* 440–458. **https://doi.org/10.1111/1748-8583.12148**

Agarwal, U. A., Datta, S., Blake-Beard, S., & Bhargava, S. (2012). Linking LMX, innovative work behaviour and turnover intentions: The mediating role of work engagement. *Career Development International, 17,* 208–230. **https://doi.org/10.1108/13620431211241063**

Basit, A. A. (2017). Trust in supervisor and job engagement: Mediating effects of psychological safety and felt obligation. *The Journal of Psychology, 151,* 701–721. **https://doi.org/10.1080/00223980.2017.1372350**

Boland, G., Burrell, A., & Quazi, A. (2008). Does group work spark creativity? In D. Spanjaart, S. Denize, & N. Sharma (Eds.), *Australia New Zealand Marketing Academy (ANZMAC) Conference 2008: Making shifting the focus from mainstream to offbeat* (pp. 1–5). University of Western Sydney, NSW, Australia: ANZMAC.

De Spiegelaere, S., Van Gyes, G., De Witte, H., Niesen, W., & Van Hootegem, G. (2014). On the relation of job insecurity, job autonomy, innovative work behaviour and the mediating effect of work engagement. *Creativity and Innovation Management, 23,* 318–330.
https://doi.org/10.1111/caim.12079

Edmondson, A. C. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44,* 350–383.
https://doi.org/10.2307/2666999

Farmer, S. M., Tierney, P., & Kung-McIntyre, K. (2003). Employee creativity in Taiwan: An application of role identity theory. *Academy of Management Journal, 46,* 618–630.
https://doi.org/10.5465/30040653

Hakanen, J. J., Perhoniemi, R., & Toppinen-Tanner, S. (2008). Positive gain spirals at work: From job resources to work engagement, personal initiative and work-unit innovativeness. *Journal of Vocational Behavior, 73,* 78–91.
https://doi.org/10.1016/j.jvb.2008.01.003

Hu, J., Erdogan, B., Jiang, K., Bauer, T. N., & Liu, S. (2018). Leader humility and team creativity: The role of team information sharing, psychological safety, and power distance. *Journal of Applied Psychology, 103,* 313–323.
https://doi.org/10.1037/apl0000277

Johnston, R. E., Jr., & Bate, J. D. (2013). *The power of strategy innovation: A new way of linking creativity and strategic planning to discover great business opportunities.* New York, NY: Amacom.

Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33,* 692–724.
https://doi.org/10.5465/256287

Kark, R., & Carmeli, A. (2009). Alive and creating: The mediating role of vitality and aliveness in the relationship between psychological safety and creative work involvement. *Journal of Organizational Behavior, 30,* 785–804.
https://doi.org/10.1002/job.571

Kim, K. H. (2007). Exploring the interactions between Asian culture (Confucianism) and creativity. *The Journal of Creative Behavior, 41,* 28–33.
https://doi.org/10.1002/j.2162-6057.2007.tb01280.x

Kim, K. H. (2009). Cultural influence on creativity: The relationship between Asian culture (Confucianism) and creativity among Korean educators. *The Journal of Creative Behavior, 43,* 73–93.
https://doi.org/10.1002/j.2162-6057.2009.tb01307.x

Liu, D., Jiang, K., Shalley, C. E., Keem, S., & Zhou, J. (2016). Motivational mechanisms of employee creativity: A meta-analytic examination and theoretical extension of the creativity literature. *Organizational Behavior and Human Decision Processes, 137,* 236–263.
https://doi.org/10.1016/j.obhdp.2016.08.001

Lyn, X. (2016). Effect of organizational justice on work engagement with psychological safety as a mediator: Evidence from China. *Social Behavior and Personality: An international journal, 44,* 1359–1370.
https://doi.org/10.2224/sbp.2016.44.8.1359

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review, 50,* 370–396.
https://doi.org/10.1037/h0054346

May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational & Organizational Psychology, 77,* 11–37.

https://doi.org/10.1348/096317904322915892

Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of Management Journal, 39,* 607–634. https://doi.org/10.5465/256657

Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management, 19,* 116–131. https://doi.org/10.1080/09585190701763982

Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement, 66,* 701–716. https://doi.org/10.1177/0013164405282471

Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *Journal of Happiness Studies, 3,* 71–92. https://doi.org/10.1023/A:1015630930326

Schaufeli, W. B., Taris, T. W., & Bakker, A. B. (2006). Dr. Jekyll or Mr Hyde? On the differences between work engagement and workaholism. In R. J. Burke (Ed.), *Research companion to working time and work addiction* (pp. 193–217). Cheltenham, UK: Elgar.

Schneider, B., Macey, W. H., Barbera, K. M., & Young, S. A. (2010). The role of employee trust in understanding employee engagement. In S. L. Albrecht (Ed.), *Handbook of employee engagement: Perspectives, issues, research and practice* (pp. 159–173). Cheltenham, UK: Elgar.

Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here? *Journal of Management, 30,* 933–958. https://doi.org/10.1016/j.jm.2004.06.007

Tehran, G. M., & Khaledi, F. (2014). An investigation on the effects of personal characteristics on creativity and innovation. *Management Science Letters, 4,* 1495–1498. https://doi.org/10.5267/j.msl.2014.6.014

Tu, Y., Lu, X., Choi, J. N., & Guo, W. (2019). Ethical leadership and team-level creativity: Mediation of psychological safety climate and moderation of supervisor support for creativity. *Journal of Business Ethics, 159,* 551–565. https://doi.org/10.1007/s10551-018-3839-9

Yang, Y., Li, Z., Liang, L., & Zhang, X. (2019). Why and when paradoxical leader behavior impact employee creativity. Thriving at work and psychological safety. *Current Psychology, 39,* 1154–1166. https://doi.org/10.1007/s12144-018-0095-1

Zhou, J., & George, J. M. (2003). Awakening employee creativity: The role of leader emotional intelligence. *The Leadership Quarterly, 14,* 545–568. https://doi.org/10.1016/S1048-9843(03)00051-1