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Research Article

The Influence of Critical Thinking on Employee Creativity: Moderated-Mediation of Intrinsic Motivation and General Self-Efficacy

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ABSTRACT

This study constructs and tests a moderated mediation model by examining the mediating role of intrinsic motivation (IM) and the moderating role of general self-efficacy (GSE) to explore the impact of critical thinking (CT) on employee creativity (EC). The sample includes 467 Chinese employees. Empirical analysis results indicate that critical thinking positively influences employee creativity. Furthermore, intrinsic motivation plays a significant partial mediating role in the relationship between critical thinking and employee creativity. Additionally, general self-efficacy positively moderates the relationships between critical thinking, intrinsic motivation, and employee creativity. Specifically, when employees have higher general self-efficacy, the promoting effect of critical thinking on intrinsic motivation is enhanced, ultimately fostering employee creativity. These findings enrich the literature on critical thinking, intrinsic motivation, general self-efficacy, and creativity, and provide recommendations for the management field on how to enhance employee creativity.

Keywords: Critical Thinking; Employee Creativity; Intrinsic Motivation; General Self-Efficacy.

INTRODUCTION

Currently, China is in a critical period of striving to become an innovative nation, where innovation has become a vital driving force for sustained economic and social development. With the increasingly complex international environment, enterprises need to rely on innovation to break through the "bottleneck" challenges of key core technologies, thereby enhancing their competitiveness. In this context, creative employees are often regarded as the most valuable human resources (Liu et al., 2017). At the same time, creativity has become a key driver of organizational innovation and maintaining competitive advantage. It is

evident that creativity not only helps organizations develop new products and optimize processes but also enhances their ability to tackle complex challenges. However, fostering employee creativity is not an overnight achievement; it is influenced by various factors, including individual cognitive abilities, psychological traits, and work environments.

Employee creativity refers to an individual's ability to generate novel and useful ideas (Harvey & Kou, 2013; Zhou & Hoever, 2014). To further enhance employee creativity, scholars have investigated factors influencing it. A review of existing literature reveals that related research primarily focuses on individual employee factors and leadership empowerment behaviors (Zhou, Oldham, Chuang & Hsu, 2022; Liu, Zhu, Liu & Fu, 2020). In studies focusing on personal characteristics, scholars have mainly explored the impact of employees' emotions, personality, and motivation (Gip et al., 2022; Zhou, Oldham, Chuang & Hsu, 2022; Adeel & Batool, 2023). While these studies have examined the influence of individual characteristics on creativity, further exploration is needed to understand how cognitive abilities activate intrinsic motivation and subsequently enhance creativity.

Critical thinking, as an essential cognitive ability (Jiang, Dong, Wu & Tu, 2024), refers to an individual's purposeful, self-regulated judgment process that enables in-depth analysis, evaluation, and inference based on facts and logic (Facione, 1990). It is considered one of the key factors promoting employee creativity. Critical thinking enables employees to deeply analyze problems, question traditional practices, and explore innovative solutions, thereby providing a cognitive foundation for creativity. Employee creativity is built on the cognitive evaluation and integration of diverse information, and critical thinking plays a crucial role in employees' ability to generate novel and useful ideas. Especially in the current era of information explosion and big data, which demands constant recognition, evaluation, and judgment (Jiang, Dong, Wu & Tu, 2024), cultivating employees with critical thinking is essential for enhancing corporate creativity performance.

A review of the literature on critical thinking reveals that, although it has gradually garnered widespread attention among management scholars (Elder & Paul, 2020), research in the Chinese context remains limited (Jiang, Dong, Wu & Tu, 2024). A few studies have focused on the impact of employees' critical thinking on their own behaviors, such as innovative behavior, job performance, and leadership styles (Jiang & Yang, 2014; Jiang, Dong, Yang & Tu, 2019; Tu, He & Guo, 2015). Thus, the specific mechanisms through which critical thinking influences creativity still require further exploration.

Intrinsic motivation refers to an individual's internal drive to engage in an activity out of interest, curiosity, or a sense of fulfillment, which can encourage employees to more actively participate in creative activities (Deci & Ryan, 1985). However, the impact of critical thinking on intrinsic motivation may be moderated by individual psychological traits, among which general self-efficacy is an important moderating variable. General self-efficacy refers to an individual's belief in their own ability to cope with various challenges and achieve success (Bandura, 1997). Employees with high self-efficacy are more likely to engage in critical thinking, thereby enhancing the promoting effect of intrinsic motivation on creativity (Tierney & Farmer, 2002).

Although existing studies have explored the independent effects of critical thinking, intrinsic motivation, and general self-efficacy on employee creativity, the underlying mechanisms through which employees' critical thinking influences creativity via intrinsic motivation and general self-efficacy still require in-depth investigation. Specifically, does intrinsic motivation mediate the relationship between critical thinking and employee creativity? Does general self-efficacy moderate this mediating process? These questions remain to be further explored.

Given this, this study, based on the perspective of employees' cognitive abilities and grounded in the componential theory of creativity, identifies three key elements influencing employee creativity: task

motivation, domain-relevant skills, and creativity-related processes (Amabile, 1988). As one of the main components of individual motivation, intrinsic motivation, along with general self-efficacy, is also an important internal process affecting employee creativity (Luo, 2018; Chae, Lee, Hwang & Park, 2015). Therefore, this study takes general self-efficacy as a boundary condition and explores the mechanism through which critical thinking influences employee creativity via the pathway of intrinsic motivation. The aim is to provide organizations with more precise talent management strategies to stimulate employees' creative potential and promote corporate innovation and development. In summary, the proposed conceptual model is shown in Figure 1.

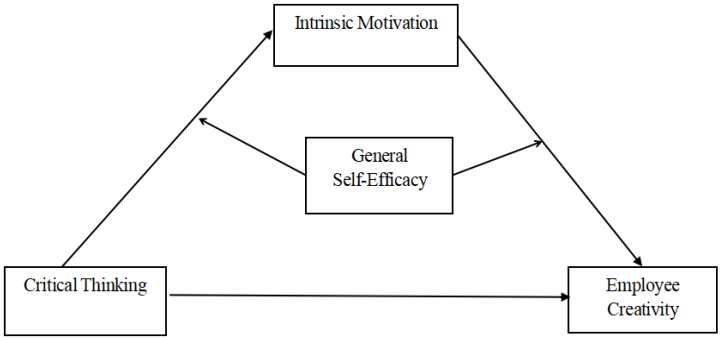

Figure 1 Conceptual Model

LITERATURE REVIEW

Critical Thinking and Employee Creativity

It is well known that creative employees excel at identifying problems (Shalley & Zhou, 2024). Only when employees truly recognize problems can they re-examine relevant information, think about and analyze issues from different perspectives, thereby enhancing creativity (Jiang, Dong, Wu & Tu, 2024). This demonstrates that employees with critical thinking skills can identify the essence of problems, accurately analyze and evaluate relevant viewpoints, gather diverse information related to the issues, consider different perspectives proposed by colleagues or leaders, explore alternative solutions or possibilities, and analyze the relevance and reliability of information and solutions to make accurate judgments (Facione, 1990). This series of cognitive activities helps companies eliminate or filter out less innovative ideas or solutions, ultimately leading to novel and effective decisions, thereby improving the overall creativity level of the organization (Jiang, Dong, Wu & Tu, 2024). Numerous previous studies have confirmed that employees with critical thinking skills do not overly rely on traditional or habitual problem-solving methods. They can break free from conventional thinking patterns, which helps individuals propose novel solutions or decisions to problems, thereby enhancing creativity (Jiang & Yang, 2014; Tu, He & Guo, 2015). Therefore, critical thinking not only helps employees better organize and evaluate existing knowledge but also provides practical logical support for the implementation of creativity. Thus, we propose the following hypothesis:

Hypothesis 1: Critical thinking positively influences employee creativity.

The Mediating Role of Intrinsic Motivation

Critical thinking requires individuals to deeply process information, engage in critical reflection, and continuously seek better solutions, which promotes cognitive engagement in tasks. According to self-determination theory (SDT), autonomy is one of the fundamental psychological needs that stimulate intrinsic motivation (Deci & Ryan, 2013). Critical thinking grants employees greater control over information analysis and decision-making processes, enhancing their sense of autonomy and, in turn, increasing their intrinsic motivation to engage in creative tasks. Additionally, a higher level of cognitive engagement may

enhance intrinsic motivation by stimulating learners' curiosity and sense of challenge (Zhu, Peng, Li & Yuan, 2024). Previous studies have shown a significant relationship between individuals' critical thinking and intrinsic motivation (Luo, 2018). Specifically, when employees possess a high level of critical thinking, they are able to analyze and think about problems more rationally, thereby stimulating their interest in creative tasks and enhancing their intrinsic motivation. It is evident that critical thinking enables employees to act thoughtfully and deliberately, rationally examining issues without being confined to traditional practices. When encountering problems, they are more likely to seek alternative approaches. This cognitive process not only strengthens employees' curiosity and desire for exploration but also allows them to gain a sense of accomplishment while solving problems, further enhancing their intrinsic motivation. Therefore, we propose the following hypothesis:

Hypothesis 2: Critical thinking positively influences intrinsic motivation.

Employee creativity is the unique ability of individuals to generate novel and innovative outcomes (Volery & Tarabashkina, 2021). Intrinsic motivation, on the other hand, is the drive to engage in a task due to personal interest, curiosity, and a sense of accomplishment (Huang, 2021). In a corporate environment, employees with high intrinsic motivation tend to proactively seek innovative solutions, demonstrating greater autonomy and an exploratory spirit rather than merely meeting the minimum job requirements (Ryan & Deci, 2017). This autonomy provides fertile ground for creativity, enabling employees to experiment with new methods, challenge the status quo, and generate original outcomes (Amabile, 2011). The Componential Theory of Creativity posits that intrinsic motivation is a key factor in fostering creativity (Amabile, 1997). Compared to extrinsic incentives, intrinsic motivation more effectively sustains individuals' engagement in creative tasks, prompting employees to exhibit higher levels of creativity in their work. Previous studies have shown that intrinsic motivation is positively and significantly related to individual creativity, indicating that individuals with stronger intrinsic motivation tend to have higher creative abilities (Luo, 2018). Therefore, we propose the following hypothesis:

Hypothesis 3: Intrinsic motivation positively influences employee creativity.

The level of critical thinking can trigger corresponding responses in intrinsic motivation, as the activation of cognitive processes leads to an increased drive for exploration and interest, thereby strengthening intrinsic motivation (Rheinberg & Engeser, 2018). At the same time, driven by intrinsic motivation, employees willingly engage in their work, actively exploring and developing new ideas and concepts, ultimately leading to innovative behaviors (Siyal, Xin, Umrani, Fatima & Pal, 2021). First, intrinsic motivation represents an employee's self-driven and sustained engagement in work out of genuine passion, which fosters the generation of creative ideas while making the process enjoyable. Additionally, strong intrinsic motivation enhances employees' flexibility, enabling them to adapt to more challenging tasks, overcome difficulties, and withstand pressure. This, in turn, stimulates employees' enthusiasm for innovation, encouraging them to actively seek efficient solutions, which further facilitates employee creativity (Huang, 2021). Therefore, we propose the following hypothesis:

Hypothesis 4: Intrinsic motivation mediates the relationship between critical thinking and employee creativity.

The Moderating Role of General Self-Efficacy

Self-efficacy refers to an individual's belief in their own abilities, which influences their behavior, attitude, perseverance, and even thinking patterns (Bandura, 1997). In social cognitive theory, Bandura (2001) posits that self-efficacy not only directly affects individuals' behavior but also regulates motivation through cognitive processes. Specifically, employees with high self-efficacy are more likely to maintain a positive attitude,

embrace complex tasks, and be driven by intrinsic motivation (Karimi, Malek & Farani, 2022). Additionally, in the process by which critical thinking influences intrinsic motivation, general self-efficacy may serve as an enhancer, making employees with strong critical thinking skills more likely to develop intrinsic motivation. Therefore, we propose the following hypothesis:

Hypothesis 5: General self-efficacy positively moderates the relationship between critical thinking and intrinsic motivation.

In the process of employee innovation, general self-efficacy may influence how individuals perceive and respond to creative challenges (Tierney & Farmer, 2002). First, employees with high self-efficacy are more likely to translate intrinsic motivation into creative behaviors. Specifically, when faced with innovation-related tasks, individuals with strong self-efficacy are more likely to believe in their ability to complete the tasks and invest greater effort in creative thinking (Gong et al., 2009). In contrast, employees with low self-efficacy may lack confidence in their abilities. Even if they possess strong intrinsic motivation, their fear of failure or reluctance to take risks may hinder their creative performance. Furthermore, self-efficacy enhances individuals' perseverance, allowing them to maintain their drive for innovation even in the face of difficulties or challenges (Karimi, Malek & Farani, 2022). Therefore, we propose the following hypotheses:

Hypothesis 6: General self-efficacy positively moderates the relationship between intrinsic motivation and employee creativity.

Hypothesis 7: General self-efficacy positively moderates the mediating effect of intrinsic motivation in the relationship between critical thinking and employee creativity.

METHOD

Procedure

We adopted a survey design to test the research hypotheses and theoretical model. Given our resource constraints, this study used a random sampling method to survey 500 employees from three enterprises in China. During the survey, we assured employees that the results would be used solely for academic research purposes and kept strictly confidential. All participants provided informed consent and agreed to participate in the study.

Participants

After matching and data cleaning, the final sample consisted of 467 employees, with a response rate of 93.4%. Among them, 240 were male (51.4%), and 227 were female (48.6%). In terms of age distribution, 48 participants (10.3%) were aged 20–25, 187 (40.0%) were aged 26–31, 154 (33.0%) were aged 32–37, 38 (8.1%) were aged 38–43, and 40 (8.6%) were aged 44 and above. Regarding educational background, 46 participants (9.9%) held a postgraduate degree, 360 (77.1%) had a bachelor's degree, and 61 (13.0%) had an education level below a bachelor's degree. In terms of work experience, 158 employees (33.8%) had 0–5 years of experience, 191 (40.9%) had 6–10 years, and 118 (25.3%) had 11–15 years.

Measures

All measurement items were rated on a 5-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. The scales were translated into Chinese using a back-translation procedure.

Critical Thinking

We measured critical thinking using a four-item scale translated and revised by Tu, He, and Guo (2015). An example item is: “I seek alternative solutions to problems.” The Cronbach’s alpha for this study was 0.878.

Employee Creativity

We measured employee creativity using a nine-item scale developed by Tierney et al. (1999). An example item is: "I demonstrate originality in my work." The Cronbach's alpha for this study was 0.91.

Intrinsic Motivation

We measured intrinsic motivation using a five-item scale developed by Tierney et al. (1999). An example item is: "I enjoy finding solutions to complex problems." The Cronbach's alpha for this study was 0.878.

General Self-Efficacy

We measured general self-efficacy using a ten-item scale translated and revised by Wang et al. (2001). An example item is: "If I try my best, I can always solve problems." The Cronbach's alpha for this study was 0.919.

RESULTS

Exploratory Factor Analysis

Before testing the hypotheses, we conducted an exploratory factor analysis (EFA) using SPSS 26.0. The results showed that the Kaiser-Meyer-Olkin (KMO) value was 0.954, indicating that factor analysis was appropriate. Bartlett's test of sphericity was significant ($p = 0.000, < 0.05$), suggesting good correlations among the variables, making them suitable for factor analysis.

During the EFA process, we employed principal component analysis (PCA) with varimax orthogonal rotation, eliminating factor loadings with absolute values below 0.4. The final model explained 62.143% of the total variance, which exceeded the minimum threshold of 50%, indicating that the extracted factors carried sufficient information.

Additionally, we conducted Harman's single-factor test to assess common method bias (Podsakoff et al., 2003). The results of an unrotated principal component analysis revealed that four factors had eigenvalues greater than 1, and the first common factor accounted for 39.583% of the variance, which was below the critical threshold of 40% (Li et al., 2019). These findings suggest that common method bias was not a serious concern in this study.

CONFIRMATORY FACTOR ANALYSIS

Next, we performed confirmatory factor analysis (CFA) using Mplus 8.3, and the results were as follows:

Table 1 Model Fit Indices

Fitness Indices	CMIN	DF	CMIN/DF	RMSEA	CFI	TLI	SRMR
Threshold Values	-	-	<3	<0.08	>0.9	>0.9	<0.08
Measurement model fitting results	476.916	344	1.386	0.029	0.981	0.980	0.029

As shown in Table 1, the CMIN/DF value is 1.386, which is less than 3, meeting the criteria for a good fit. The TLI and CFI values are 0.980 and 0.981, respectively, both exceeding 0.9, indicating a good fit. The RMSEA and SRMR values are both 0.029, which are below the 0.08 threshold, also meeting the good fit criteria. These results suggest that the model exhibits good fit and can be further analyzed.

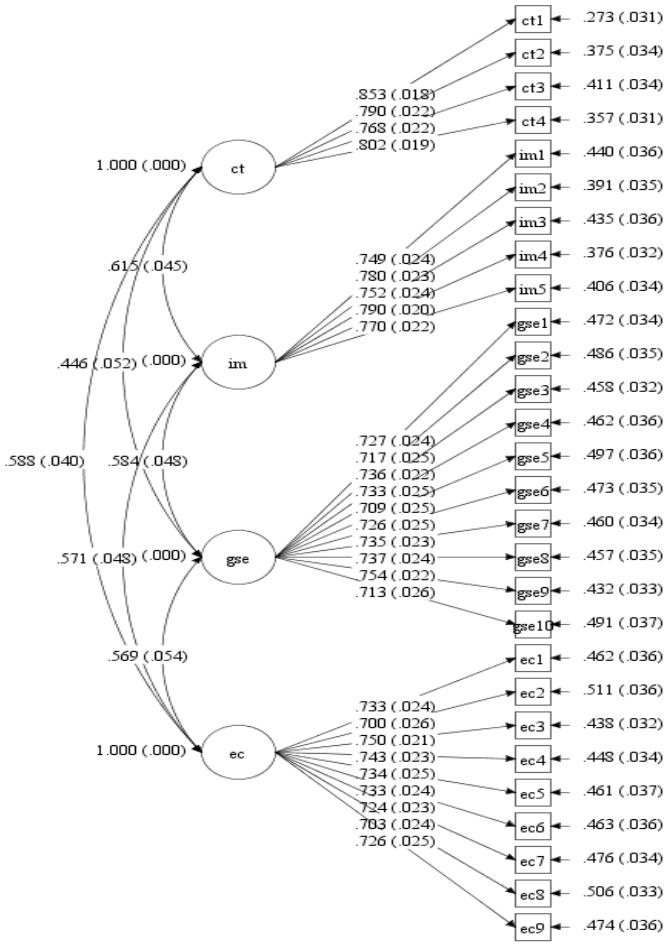

Figure 2 Confirmatory Factor Analysis Diagram

Additionally, we followed the recommendations of Hair et al. (2014) and Fornell & Larcker (1981) on how to determine the validity and reliability of the scales. To analyze reliability and validity, we examined composite reliability (CR) and average variance extracted (AVE). The results indicate that all AVE values are greater than 0.5, and all CR values exceed 0.7, demonstrating good convergent validity of the structural model. The CR values (ranging from 0.878 to 0.919) and AVE values (ranging from 0.529 to 0.646) are both above their respective threshold levels, confirming that all measurements are reliable (for more details, see Table 2).

Table 2 Convergent Validity

Path			Estimate	S.E.	C.R.	P	Std.Estimate	AVE	CR
CT	<---	CT1	1				0.853		
CT	<---	CT2	0.833	0.036	23.399	***	0.79	0.646	0.879
CT	<---	CT3	0.811	0.035	22.931	***	0.768		
CT	<---	CT4	0.929	0.034	27.446	***	0.802		
IM	<---	IM1	1			***	0.749		
IM	<---	IM2	1.044	0.057	18.403	***	0.78		
IM	<---	IM3	1.02	0.061	16.818	***	0.752	0.59	0.878
IM	<---	IM4	1.1	0.062	17.611	***	0.79		
IM	<---	IM5	1.067	0.055	19.275	***	0.77		
GSE	<---	GSE1	1			***	0.727	0.531	0.919

GSE	<---	GSE2	0.991	0.047	21.003	***	0.717		
GSE	<---	GSE3	1.017	0.049	20.753	***	0.736		
GSE	<---	GSE4	0.969	0.052	18.7	***	0.733		
GSE	<---	GSE5	0.985	0.048	20.437		0.709		
GSE	<---	GSE6	0.998	0.05	19.787	***	0.726		
GSE	<---	GSE7	0.999	0.05	19.795	***	0.735		
GSE	<---	GSE8	1.027	0.045	22.58	***	0.737		
GSE	<---	GSE9	1.04	0.045	23.128	***	0.754		
GSE	<---	GSE10	0.97	0.046	20.978	***	0.713		
EC	<---	EC1	1				0.733		
EC	<---	EC2	0.942	0.052	18.15	***	0.7		
EC	<---	EC3	1.073	0.057	18.706	***	0.75		
EC	<---	EC4	1.009	0.045	22.676	***	0.743		
EC	<---	EC5	1.03	0.055	18.704	***	0.734	0.529	0.91
EC	<---	EC6	1.036	0.061	17.051		0.733		
EC	<---	EC7	0.966	0.056	17.271	***	0.724		
EC	<---	EC8	0.921	0.047	19.499	***	0.703		
EC	<---	EC9	1.009	0.058	17.485	***	0.726		

Note: CT=Critical Thinking, IM= Intrinsic Motivation, GSE=General Self-Efficacy, EC= Employee Creativity.

Table 3 presents the results of the discriminant validity assessment. The findings indicate that the square roots of the AVE (Average Variance Extracted) for each factor are greater than the correlations between the factors, demonstrating good discriminant validity. Therefore, we can conclude that the measures used in this study are reliable, valid, and distinct (Sarstedt et al., 2014).

Table 3 Discriminant Validity

	IM	CT	GSE	EC
IM	0.804			
CT	0.615**	0.768		
GSE	0.584**	0.446**	0.729	
EC	0.571**	0.588**	0.569**	0.727

Note: The diagonal values represent the square roots of the AVE

Correlation Analysis

Furthermore, SPSS 26.0 statistical software was used to calculate the Pearson correlation matrix coefficients. The means, standard deviations, and correlation coefficients of employees' critical thinking, creativity, intrinsic motivation, and general self-efficacy are presented in Table 4. The study reveals that the four variables are significantly correlated with each other.

Table 4 Means, Standard Deviations, and Correlations of Studied Variables

Variable	M	SD	Critical Thinking	Employee Creativity	Intrinsic Motivation	General Self-Efficacy
Critical Thinking	3.294	1.128	1			
Employee Creativity	3.457	0.954	0.529**	1		
Intrinsic Motivation	3.687	1.048	0.543**	0.512**	1	
General Self-Efficacy	3.489	0.970	0.400**	0.521**	0.524**	1

Variable	M	SD	Critical Thinking	Employee Creativity	Intrinsic Motivation	General Self-Efficacy

Note. N=467. * *p<0.05* ** *p<0.01*

HYPOTHESIS TESTING

Mediation and Moderation Effects

This study conducted path analysis using Mplus 8.3. The results indicate that critical thinking significantly and positively affects employee creativity (B = 0.132, p < 0.001), supporting H1. Critical thinking has a significant positive impact on intrinsic motivation (B = 0.369, p < 0.001), supporting H2. Intrinsic motivation significantly and positively influences employee creativity (B = 0.300, p < 0.001), supporting H3. For detailed data, see Table 5.

Table 5 Path Analysis and Moderating Effect

	EC				IM			
Predictors	B	S.E.	t	95% CI	B	S.E.	t	95% CI
CT	0.132	0.043	3.087**	[0.048,0.216]	0.369	0.047	7.864**	[0.281,0.463]
IM	0.300	0.044	6.792**	[0.219,0.392]				
GSE	0.247	0.062	3.987**	[0.125,0.362]	0.341	0.066	5.141**	[0.211,0.473]
IM*GSE	0.261	0.042	6.234**	[0.186,0.348]				
CT*GSE					0.148	0.049	3.042**	[0.053,0.24]

To test the mediating effect of intrinsic motivation, this study employed the Bootstrap sampling method with 1,000 iterations in Mplus 8.3. The results indicate that the total mediating effect of intrinsic motivation is 0.243, with a Bootstrap confidence interval of [0.159, 0.327], which does not include zero, confirming the significance of the total effect. In the mediation pathway "Critical Thinking → Intrinsic Motivation → Employee Creativity," the indirect effect is 0.11, with a Bootstrap confidence interval of [0.074, 0.16], which does not include zero, indicating that the indirect effect of intrinsic motivation is significant. Meanwhile, the direct effect is 0.132, with a Bootstrap confidence interval of [0.048, 0.216], which also does not include zero, confirming the significance of the direct effect. Overall, these findings suggest that intrinsic motivation plays a significant partial mediating role in the relationship between critical thinking and employee creativity, supporting H4. For detailed results, see Table 6.

Table 6 Mediating Effect

	Effectsize	BootSE	Boot Cl lower limit	Boot Cl upper limit	Relative effect size
Total effect	0.243	0.044	0.159	0.327	
Direct effect	0.132	0.043	0.048	0.216	54.32%
Indirect effect	0.11	0.022	0.074	0.16	45.27%

As shown in Figure 3 (left), the interaction term between critical thinking and general self-efficacy significantly and positively influences intrinsic motivation (B=0.148, p<0.001), indicating that general self-efficacy significantly moderates the direct effect of critical thinking on intrinsic motivation, supporting H5. As shown in Figure 3 (right), the interaction term between intrinsic motivation and general self-efficacy significantly and positively influences employee creativity (B=0.261, p<0.001), indicating that general self-efficacy significantly moderates the direct effect of intrinsic motivation on employee creativity, supporting H6. To better illustrate the moderating effect of general self-efficacy, this study conducted a simple slope

analysis and plotted the moderation effect diagrams for both pathways, as shown in Figure 3.

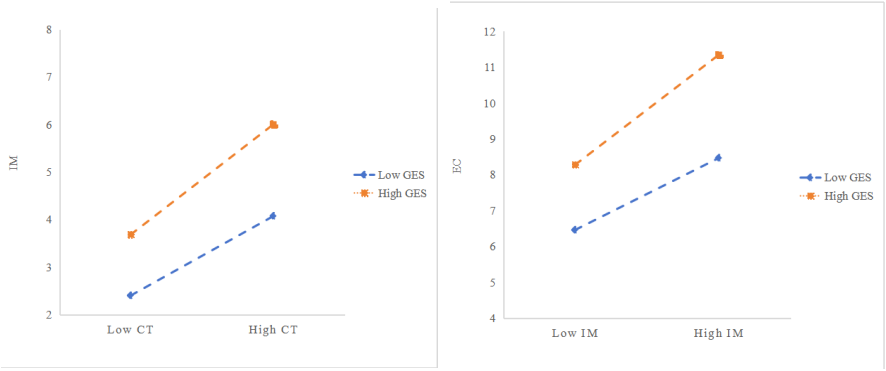

Figure 3 The Moderating Effect Diagram

Moderated Mediation Effect Test

When general self-efficacy (GSE) is high, the indirect effect of critical thinking (CT) on employee creativity (EC) through intrinsic motivation (IM) is significant, with a 95% confidence interval of [0.208, 0.389], which does not include zero. However, when general self-efficacy (GSE) is low, the indirect effect of critical thinking (CT) on employee creativity (EC) through intrinsic motivation (IM) is not significant, with a 95% confidence interval of [-0.018, 0.05], which includes zero. Further analysis of the difference between the indirect effect when GSE is low and the mediation effect when GSE is high shows that the difference is significant, with a 95% confidence interval of [0.191, 0.39], which does not include zero. This indicates that general self-efficacy (GSE) positively moderates the mediating effect of intrinsic motivation (IM) in the relationship between critical thinking (CT) and employee creativity (EC), confirming the moderated mediation effect. H7 is supported. Detailed data are presented in Table 7.

Table 7 Moderated Mediation Effect Test Results

Conditional effect of GSE	Effect	Boot SE	95% CI
Low (M - 1SD)	0.008	0.016	[-0.018, 0.05]
Medium (M)	0.281	0.048	[0.191, 0.39]
High (M + 1SD)	0.290	0.045	[0.208, 0.389]

CONCLUSION

This study explores the mechanism by which critical thinking influences employee creativity, with a particular focus on the mediating role of intrinsic motivation and the moderating role of general self-efficacy. Using general self-efficacy as a boundary condition, this study examines the mediating mechanism and boundary conditions between critical thinking and employee creativity through the pathway of intrinsic motivation. The following conclusions are drawn:

First, critical thinking positively influences employee creativity. Critical thinking enables employees to approach problems from different perspectives, challenge conventional behaviors, and identify details or possibilities that others may overlook. This, in turn, helps individuals seek solutions from more concealed perspectives, sparking new creative ideas (Xu & Yang, 2024).

Second, critical thinking positively influences employee creativity through intrinsic motivation. When employees possess critical thinking skills, they can analyze and understand problems more comprehensively and deeply, which stimulates their interest and engagement in tasks. This enhances their intrinsic motivation, making them more likely to invest effort and creativity in their work, challenge norms, and explore new

methods, thereby fostering creativity (Luo, 2018).

Third, general self-efficacy not only moderates the direct effect of critical thinking on intrinsic motivation but also moderates the direct effect of intrinsic motivation on employee creativity. Additionally, it moderates the indirect effect of critical thinking on employee creativity through intrinsic motivation. This indicates that general self-efficacy not only strengthens the stimulating effect of critical thinking on intrinsic motivation but also enhances the positive impact of intrinsic motivation on creativity. Ultimately, it amplifies the effect of critical thinking on creativity through intrinsic motivation. Specifically, employees with high general self-efficacy are more confident in facing challenges, can better activate critical thinking, and transform intrinsic motivation into creativity (Karimi, Malek & Farani, 2022). Conversely, employees with low general self-efficacy may be negatively affected and unable to fully leverage these factors.

Implications

For theoretical implications, we confirm that employees' critical thinking has a positive impact on their creativity. This finding not only effectively advances the development of critical thinking theory in the field of management psychology (Shi, 2023) but also further enriches the understanding of creativity theory in the context of employees (Jiang & Yang, 2015; Jiang, Dong, Wu & Tu, 2024). Next, we introduce intrinsic motivation as a mediating variable to explain the internal influence process of critical thinking on creativity. This provides new evidence that employees' intrinsic motivation serves as an essential mediating factor in the relationship between personal characteristics and creativity (Yesuf, Getahun & Debas, 2023), further enriching the literature on intrinsic motivation theory in the management field (Karimi, Malek & Farani, 2022). Third, we validate the moderating role of employees' general self-efficacy in the relationships among their critical thinking, intrinsic motivation, and creativity. This expands the understanding of the boundary conditions of these relationships and contributes to the literature on general self-efficacy theory (Rego, Sousa, Marques & Cunha, 2012). Finally, the moderated mediation model we constructed comprehensively reveals the interactions among critical thinking, intrinsic motivation, general self-efficacy, and creativity, providing a systematic perspective for understanding the psychological processes of creativity in organizational settings.

In practice, critical thinking has long been regarded as an essential component of management platforms. Given this, we propose practical recommendations on how to effectively foster employee creativity. First, organizations should prioritize the development of employees'critical thinking skills. This can be achieved through training programs and career development plans that help employees improve their problem-solving abilities, ultimately enhancing creative output. Second, managers should focus on stimulating employees' intrinsic motivation by creating a work environment that promotes autonomy, provides meaning, and fosters growth. When employees are highly engaged and motivated, they are more likely to participate actively in creative activities. Additionally, organizations should implement measures to enhance employees' general self-efficacy, such as mentorship programs, to boost their confidence and ultimately improve creative performance. Finally, human resource policies should be designed to establish effective incentive mechanisms that recognize and reward employees' creative contributions. Ensuring that employees feel valued will sustain their drive to explore and innovate. By focusing on intrinsic motivation and self-efficacy, organizations can cultivate a workforce that is not only skilled but also confident and highly creative.

LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

Although this study has achieved certain results, there are still some limitations that provide directions for future research.

First, this study primarily adopts a cross-sectional research design, which makes it difficult to fully reveal

causal relationships between variables. Future research could employ a longitudinal design to explore the dynamic relationships among critical thinking, intrinsic motivation, general self-efficacy, and employee creativity in greater depth.

Second, the sample is mainly drawn from three companies in China, which may limit its generalizability and representativeness. Future research could consider using samples from different organizational environments in various cultural contexts to test the generalizability of the proposed theoretical model, thereby enhancing the universality and applicability of the findings.

Third, this study primarily relies on self-reported data, which may introduce social desirability bias. Future research could adopt multi-source data collection methods, such as supervisor evaluations, peer feedback, and behavioral observations, to improve the objectivity and reliability of the findings.

Finally, future research could further integrate additional mediating and moderating variables, such as leadership style, organizational culture, job satisfaction, and team collaboration, to gain a more comprehensive understanding of how critical thinking influences employee creativity through multiple pathways.

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