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Exploring the Path to Enhance Employee Creativity in Chinese MSMEs: The Influence of Individual and Team Learning Orientation, Transformational Leadership, and Creative Self-Efficacy

Chiqing Qian * and Daisy Mui Hung Kee

School of Management, Universiti Sains Malaysia, Gelugor 11800, Malaysia; daisy@usm.my
* Correspondence: kaye.qian@student.usm.my

Abstract: This study examined the relationship between transformational leadership, learning orientation, creative self-efficacy, and employee creativity in manufacturing small and medium-sized enterprises (MSMEs) in China. A survey involving 742 employees was conducted, and hierarchical linear modeling (HLM) was employed to analyze the data. The result showed that transformational leadership has s significantly positive effect on employee creativity. Moreover, both individual and team-level learning orientations are positively related to employee creativity significantly. Creative self-efficacy (CSE) mediates the relationship between transformational leadership, team learning orientation, and individual learning orientation on employee creativity. These findings suggest that transformational leadership, learning orientation, and CSE enhance employee creativity in Chinese MSMEs. We discuss the implications of these findings and offer suggestions for future research.

Keywords: employee creativity; transformational leadership; team learning orientation; individual learning orientation; creative self-efficacy; manufacturing; MSMEs; HLM

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1. Introduction

Employee creativity—the production of novel and useful products, ideas, or procedures by employees [1]—has been an active area in organizational research for several decades. The survival of organizations is rooted in the ability to innovate [2], of which employee creativity is at the root. Research shows that employees are responsible for approximately 80 percent of new ideas for implementation in most organizations [3]. Accordingly, under the current unpredictable economic upheavals, inspiring employee creativity is an inevitable challenge for every organization [4], particularly for China's manufacturing small and medium-sized enterprises (MSMEs).

As the backbone of the economy in China, small and medium-sized enterprises (SMEs) contribute more than half of the total GDP, national tax revenue, technological innovation achievements, and labor force employment [5]. In addition, China is often regarded as a manufacturing powerhouse, which also means that China's economy is heavily reliant upon manufacturing. However, even though MSMEs play a major role in China's economic growth, they have suffered greatly in recent years. Chinese MSMEs are experiencing unprecedented negative pressure due to internal structural difficulties, the advent of the epidemic, and the global economic recession [6–8]. Concurrently, labor-intensive MSMEs are contending with the challenges of industrial automation and digitization [9]. In order to surmount these challenges, the subject of employee creativity has emerged as a prominent and imperative area of exploration [10], owing to its direct potential to improve job performance and foster productivity directly [11,12]. Many researchers also indicated that employee creativity is fundamental in organizational innovation, which can help companies to survive and thrive in a dramatically changing environment [13–16].

Therefore, triggering employee creativity in the workplace holds great significance for restoring production activities and enhancing the overall performance of MSMEs in China.

Driven by the desire to benefit from individual work outcomes and organizational performance, scholars have focused much on the antecedents of employee creativity. Some researchers suggested that factors influencing employee creativity should be explored from both team-related perspectives (such as leadership and team climate) and self-related perspectives (such as individual learning and self-efficacy) [17]. Additionally, it is necessary to explore underlying internal mechanisms that shape creative behavior. Research drawing on social cognitive theory, specifically the self-efficacy concept as the overarching theoretical basis, is beneficial for clarifying the complex relationship between employee creativity and its antecedents [18,19].

As one of the most effective leadership styles in modern organizations, transformational leadership is defined as a style of leadership that inspires and motivates followers to achieve exceptional outcomes for the organization [20]. Nowadays, faced with severe threats to long-term survival, many companies called for the adoption of a transformational leadership style to ensure job performance. Transformational leadership has been studied in relation to job performance [21–24]. However, the generalizability of the relationship between transformational leadership and individual creativity in the workplace remains indeterminate. Moreover, previous research showed that transformational leadership in China's SMEs has a more positive influence on innovation behavior and performance than in larger firms [25], but limited scholarly investigations have been dedicated to the particular emphasis on transformational leadership within the context of SMEs operating in the manufacturing sector. Hence, this study investigated the influence of transformational leader behavior on employee creativity and drew the sample from MSMEs.

Some researchers also believe creativity will flourish when there is a learning orientation in the workplace [26]. It is worth noting that in the context of MSMEs, the position in the current study is not that learning orientation is an all-or-nothing phenomenon. Rather, it varies from individual, team/group, and organizational layers [27]. In studies of learning in organizations, some focused on individual learning [26,28], while others placed emphasis on team learning [27,29] or elevated it to the overall level of the organization [30]. No study has focused on the effects of learning orientation from a cross-level perspective in Chinese MSMEs. Based on the findings of previous studies, this study took a more holistic view considering the influence of learning at different levels within the organization (individual and team). As China is a country with a collectivist culture that emphasizes the establishment of close and harmonious interpersonal relationships [31], it is even more meaningful to examine the antecedents of creativity at the collective level. Additionally, this study concentrates on conducting complementary research on learning issues in a team structure that centers on immediate supervisors, rather than at organizational level. This is because MSMEs have the limitations of uncomplicated operational structures, a small number of staff, and bounded business activities [25]. Moreover, the superior–subordinate relationship in MSMEs tends to be characterized by closer proximity, more frequent and direct communication, and a more informal and flexible structure compared to large companies. With this premise, we perceived learning orientation from individual and team dimensions as prospective antecedents to creativity.

In this study, an important focus is the examination of creative self-efficacy (CSE), which is defined as the belief in one's knowledge and skills to produce creative outcomes" [32]. Despite the abundance of research on creativity, only a limited number of models have successfully pinpointed the pivotal factors that influence its intricate dynamics [10,33]. Consequently, motivated by the previous findings from Gong, Huang, and Farh [26], this study used CSE as a mediating variable to investigate antecedent–effect relationships between transformational leadership, learning orientation, and creativity from a multi-layered perspective. Moreover, there are three reasons for choosing CSE as a mediator for research. First, CSE has consistently been identified as a key driver in unleashing the creative potential of employees, and the empirical evidence on the positive

effect of CSE on innovation is consistent [34]. Second, we respond to calls for more research investigating issues related to CSE in normal or naturalistic work contexts [17,35,36]. Finally, despite the valuable and insightful findings of previous research, understanding the CSE–creativity relationship's boundary conditions remains limited [37]. Further investigation is warranted to explore other possible pathways through which CSEs engage in influencing creativity [38].

As stated above, whether and how team-related and self-related factors enhance employee creativity has become a critical question [17]. In response to it, this study employed CSE as a mediator to conduct an in-depth examination of the effects of transformational leadership, team learning orientation, and individual learning orientation on employee creativity. Hence, the significance of this study lies not only in its empirical investigation of cross-level antecedents and internal path mechanisms to fill voids in the existing literature on creativity, particularly concerning the team level. Equally important is its integration of the Chinese workplace cultural traits, exploring the means to foster employee creativity within the unique context of MSMEs. The findings hold substantial practical implications for reinvigorating the production of MSMEs and enhancing overall performance amid the prevailing economic challenges.

2. Literature Review

2.1. Effects of Transformational Leadership on Employee Creativity

Transformational leadership is widely acknowledged as a pivotal dependent variable in leadership research, as researchers have diligently probed its ramifications on work-related outcomes, including but not limited to commitment, performance, and the fostering of creativity [39]. Dvir et al. [40] define transformational leaders as exerting influence upon subordinates by expanding and uplifting their aspirations and instilling the confidence of surpassing the prescribed expectations through tacit or explicit agreements of reciprocity.

The essence of transformational leadership encompasses four key dimensions: idealized behaviors, inspirational motivation, intellectual stimulation, and individualized consideration [20], which can influence employees' creative behavior through multiple mechanisms under social cognitive theory [41–43]. First, idealized behavior (or charisma influence) refers to leaders who serve as role models and gain their followers' admiration, trust, and respect for their high moral and ethical standards to inspire followers to strive for excellence and emulate their behavior. Through careful observation and emulation of leaders' creative conduct and deeds, employees may forge convictions and expectations concerning the significance of creativity [26]. Second, inspirational motivation involves a compelling vision and purpose provided by leaders, in which leaders inspire enthusiasm, commitment, and a sense of meaning among their followers to exceed original expectations. From this, a logical deduction can be made that establishing challenging and specific goals that require innovative thinking as inspirational motivation may influence employees' creative behavior.

Moreover, as the ability of leaders to encourage creativity, innovation, and critical thinking among their followers, intellectual stimulation may also encourage employees to challenge the status quo, stimulate curiosity, and may foster a creative environment where individuals feel comfortable expressing their ideas, questioning assumptions, and exploring new possibilities [44,45]. Finally, individualized consideration involves leaders valuing their followers' uniqueness and individual needs through individualized support, coaching, and mentoring to enhance their followers' skills, confidence, and self-efficacy [46]. The notion of self-efficacy, which social cognitive theory highlights as a potent catalyst for creativity, finds resonance within the purview of transformational leadership. This is owing to the capacity of a transformational leader to furnish employees with unwavering support, heartfelt encouragement, and essential resources [47,48].

Scholarly investigations have firmly established the conspicuous intercorrelation among the four dimensions of transformational leadership, thus signifying their unified embodiment as an elevated construct of transformational leadership [49]. In line with prior

studies, we expect that these dimensions synergistically converge to influence employee creativity [50]. Accordingly, we put forth the following hypothesis:

Hypothesis 1. *Transformational leadership has a significant positive direct effect on employee creativity.*

2.2. Effects of Learning Orientation on Employee Creativity

For the past few decades, researchers have dedicated their attention to exploring learning orientation [26,51,52]. Despite its extensive investigation, it is worth noting that learning orientation has been subject to varying definitions and emphasized aspects across different studies. Learning orientation serves as the primary prerequisite for cultivating learning competence, which manifests and interplays across all levels of the organization, encompassing individuals and collectives within the organizational sphere [30]. This aligns with prior investigations [27,53] into the interrelationship among individual, team, and organizational learning, which also substantiates the existence of distinct levels of learning within organizational settings. Nevertheless, Senge [54] proposed that teams, rather than individuals, constituted organizations' fundamental unit of learning. While the investigations into team learning were still in their early stages at the time of Senge's assertion, his statement undeniably served as a catalyst, motivating numerous researchers [55–58] to delve into the exploration of team learning as a prominent focal point within the workplace. While numerous definitions of team learning orientation have been put forth, this study adopted the definition espoused by Bunderson and Sutcliffe [56] as an emergent group climate characterized by team members' shared understanding that continual learning and self-development is an essential team objective. The significance of team learning arises from its capacity to inspire team members to engage in diverse learning behaviors, thereby augmenting team effectiveness and adaptability [58–60].

While the predominant focus is on organizational learning, it is imperative to acknowledge that organizations, by their very nature, do not possess an inherent capacity for learning [17]. Rather, the individuals within teams and organizations hold the potential for learning and knowledge acquisition. As aptly noted by Kohli et al. [61], organizations, in essence, learn through the collective learning efforts of their members, thereby directly influenced by individual learning. Khedhaouria et al. [62] further underscore this notion by explicitly emphasizing the definition of learning orientation as employees' inclination to focus on learning, acquiring new skills, mastering unfamiliar situations, and developing competencies [56,63]. Moreover, this research delved into individual learning within the context of a team, thus substantiating the existence of team learning and the imperative nature of the investigation at the team level. This is consistent with the objective of this study to comprehensively explore learning orientation at the individual and team levels, thereby justifying the adoption of its definition.

It is critical to understand individual and group learning processes [64]. Yang et al. [65] also found that organizations learn from individuals and teams. However, numerous prior studies have predominantly focused on examining creativity and its underlying factors at a singular level, thus necessitating the supplementation of research exploring the cross-level relationship between learning and individual creativity [66]. Consequently, this study divided learning orientation into self-related factors and team-related factors and undertook an in-depth exploration of their correlation with employee creativity in a more holistic view.

2.2.1. Team Learning Orientation and Employee Creativity

As a social contextual variable, team climate emerges from the collective interactions of individuals; once established, it cannot be reduced to the simple aggregation of individual perceptions because it includes synergistic effects across people [67]. According to the definition from Bunderson and Sutcliffe [56], team learning orientation can be perceived as a team climate factor characterized by team members collectively embracing a shared understanding of continuous learning and self-development as the fundamental objective

of the team. Similarly, Hirst, Van Knippenberg, and Zhou [29] highlighted the significance of collective learning processes in establishing a social environment that fosters social persuasion and alternative forms of learning. When team members witness their peers actively participating in learning activities and recognize that experimentation and exploratory behaviors are both valued and encouraged within the group, they are more inclined to engage in novel and risk-taking endeavors [68]. Hence, team learning engenders an environment conducive to knowledge sharing, role modeling, and social persuasion. Drawing from social cognitive theory, this social environment has the potential to bolster efficacy beliefs, thereby exerting a positive influence on creativity. In line with this reasoning, we can expect that team learning orientation is conducive to the development of employee creativity:

Hypothesis 2. *Team learning orientation has a significant positive direct effect on employee creativity.*

2.2.2. Individual Learning Orientation and Employee Creativity

This study uses individual learning orientation to relate the self-related factor to employee creativity. There are four justifications behind this choice. First and most importantly, individual learning orientation, as an inherent mindset, can spur individuals to enhance their competence and thus emerges as a vital internal impetus for active mastery [26]. According to social cognitive theory, individuals can attain knowledge and skills through "enactive mastery experience" [41,42]. Empirical evidence further supports that the acquisition of knowledge and skills positively impacts creativity. Second, individual learning orientation has been associated with intrinsic motivation, a crucial catalyst for creativity [26]. Individual learning orientation is a motivational mechanism through which intrinsically motivated employees actively participate in learning endeavors that ultimately yield creative outcomes [69]. Third, learning orientation and knowledge creation are inseparable, and the latter is crucial in driving creativity [70]. While learning orientation encompasses the active pursuit of knowledge, creativity pertains to effectively utilizing and applying acquired knowledge [71]. Finally, some researchers have suggested that learning serves as a vital and indispensable source of creativity and innovation [27,66] while contributing to a firm's sustenance of competitive advantage in both the short and long term [17]. From the earlier discussions, it can be assumed that individual learning orientation has a direct positive impact on employee creativity:

Hypothesis 3. *Individual learning orientation has a significant positive direct effect on employee creativity*.

2.3. CSE as a Mediator

The study of Bandura [42] introduced the concept of self-efficacy in social cognitive theory, highlighting its motivating influence on the innovation process. Bandura posited that strong self-efficacy is essential for enhancing creative productivity, as it impacts an individual's motivation and ability to engage in specific work and pursue particular tasks. In a subsequent investigation, Tierney and Farmer [32] defined creative self-efficacy (CSE) as the degree of an individual's capability to generate innovative outcomes for an organization. When an individual possesses an inherent belief in their capacity to exhibit exceptional creativity, it signifies a heightened level of CSE [72,73]. As highlighted by Lemons [74], creativity does not come from competence itself but from belief in ability, which means belief in one's ability is crucial for creative behavior. Therefore, CSE has become an important psychological attribute for researchers to understand creative performance enhancement [75–77].

Employees with high CSE can generate motivation, identify resources, and implement the necessary actions to address situational demands. They focus on recognizing problems cognitively, brainstorming innovative ideas or solutions, and dedicating most of their efforts to generating ideas and producing prototypes. Therefore, they are well-equipped to complete specific tasks and overcome challenges during the innovation process [26,32,78,79].

Additionally, the study of Choi [80] suggests that transformational leadership has a direct relationship with CSE, creative performance, and employee creativity. Leaders who adopt a transformational leadership style take proactive steps to stimulate creative thinking among their employees and expect the same from them. They can promote the creativity of their employees by encouraging their CSE [40,81]. Therefore, it can be proposed that CSE mediates the relationship between transformational leadership and employee creativity. Based on these findings, we propose the following hypothesis:

Hypothesis 4. *CSE mediates the effect of transformational leadership on employee creativity.*

Employee learning orientation appears to contribute positively to developing and sustaining their CSE [26]. Multiple plausible justifications exist for this reasoning. Firstly, learning orientation, rooted in an incremental conception of ability, recognizes that skills can be enhanced [82], fostering the establishment of efficacy beliefs [42]. Secondly, learning orientation facilitates the accumulation of successful mastery experiences [83]. Employees are more likely to develop a heightened sense of self-efficacy in generating creative outcomes. Thirdly, individual learning orientation is highly advantageous for employees when facing work difficulties and overcoming the emotional impact of failure [84], which aids in preserving CSE. Lastly, employees with a learning-oriented mindset prioritize enhancing their capabilities over external recognition, thereby maintaining efficacy beliefs in the uncertain process of creativity [26,42].

CSE is a mediating mechanism connecting various personal and climate factors to employees' creative outcomes [26,36]. Despite the recognized importance of CSE in driving individual creative efforts, studies that addressed the potential cross-level effects of individual differences and the team environment through the mediating pathway of CSE are limited [85]. Many studies solely examined variables at a singular level, disregarding their broader significance across multiple levels of analysis. Specifically, previous research by Gong, Huang and Farh [26] explored the impact of individual learning orientation on employee creativity through CSE but neglected the role of learning orientation at the team climate level. This represents a research gap that needs to be addressed, as social cognitive theory emphasizes the joint determination of an individual's cognition by personal factors and environmental influences. Our study aims to bridge this gap by examining the mediating role of CSE in the relationship between learning orientation at the team level and creativity:

Hypothesis 5. *CSE mediates the effect of team learning orientation on employee creativity.*

Hypothesis 6. *CSE mediates the effect of individual learning orientation on employee creativity.*

The theoretical relationships between the study variables, derived from the literature reviews and assumptions, are illustrated in Figure 1 of the conceptual framework.

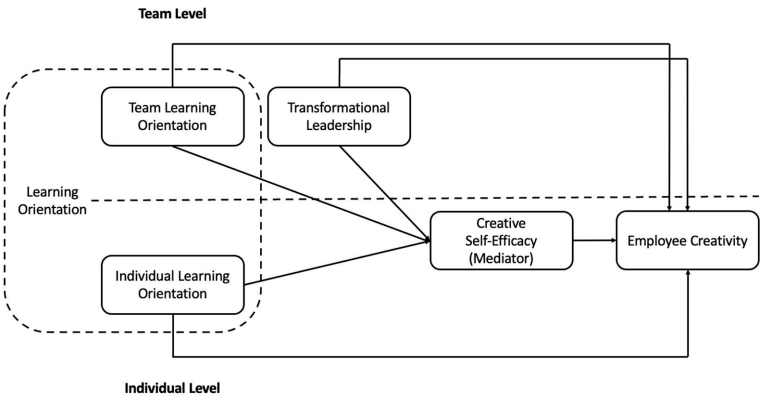

Figure 1. Theoretical framework.

3. Methodology

3.1. Participants and Data Collection

This study examines the relationship between transformational leadership, learning orientation (individual and team level), CSE, and employee creativity from the employee's point of view on MSMEs. Data were collected from employees and supervisors from Chinese MSMEs in China from May 2023 to June 2023. A purposive sampling technique was employed in this study. In order to attain responses for all variables in this study, the self-completed online questionnaire was adopted for data collection.

First, according to the contact lists provided by companies, we privately sent invitation information and online questionnaire links to all employees and their direct managers through WeChat. All the survey instruments were administered in Chinese, the language the respondents speak. After a half month, the researcher then checked and recorded the submitted responses from all the participants. Finally, we did some follow-ups with the respondents at the end of the month to check for the additional submitted responses. A total of 1000 questionnaires were distributed; out of the 1000 questionnaires distributed, 742 were collected and used, giving a response rate (74.2%). Table 1 exhibits the profile of the respondents.

Table 1. Profiles of Respondents (n = 742).

Demographic Variable	Category	Frequency	Percentage
Age	20 and below	6	0.8
	21 to 30	232	31.3
	31 to 40	200	27.0
	41 to 50	206	27.8
	51 to 60	96	12.9
Gender	Male	316	42.6
	Female	426	57.4
	61 and above	2	0.3
Education	Primary school	20	2.7
	Middle school	130	17.5
	High school	159	21.4
	Bachelor's degree	320	43.1
	Master/Ph.D. degree	113	15.2
Job Tenure	Less than 1 year	46	6.2
	1 to 5 years	166	22.4
	6 to 10 years	477	64.3
	11 to 15 years	39	5.3
	16 to 20 years	11	1.5
	More than 20 years	3	0.4
Job Location	Beijing-Tianjin-Hebei region	188	25.3
	Yangtze River Delta region	350	47.2
	Pearl River Delta region	172	23.2
	Others	32	4.3

3.2. Measurement of Variables

3.2.1. Employee Creativity

To measure the employees' subjective experiences of creativity, 3 items from the Oldham and Cummings [1] 's scale were adopted. The measurement was measured with a 5-point Likert scale, ranging from 1 (never) to 5 (always). Hence, employees' creativity from Chinese MSMEs is measured with the scale of frequency, where point 1 represents none of the time supervisors feel creative with their employees' work, whereas point 5 represents all the time supervisors feel creative with their employees' work. A sample item is "This person's work is original and practical." The Cronbach's alpha coefficient for this measure was 0.86.

3.2.2. Transformational Leadership

The researcher adopted the Multifactor Leadership Questionnaire (MLQ) Form 5X-Short [86] to measure transformational leadership in this study. The Multifactor Leadership Questionnaire (MLQ Form 5X) was divided into 20 measurement items across 4 subscales,

namely 'Idealized Influence', 'Inspirational Motivation', 'Intellectual stimulation', and 'Individualised consideration'. The measurement was measured with a 7-point Likert scale, ranging from 1 (very strongly disagree) to 7 (very strongly agree). The items include "I feel proud to be associated with my team leader" and "My team leader sets high standards for my work." The Cronbach's alpha coefficient for this measure was 0.97.

3.2.3. Team Learning Orientation

Sinkula, Baker and Noordewier [52]'s eleven-item scale was adopted to measure team learning orientation. The higher-level learning orientation construct can be subdivided into three primary factors: commitment to learning, open-mindedness, and shared vision. We asked respondents to indicate the degree to which the statements accurately described their team climate (1, "strongly disagree," to 7, "strongly agree"). The scale had the following three subscales and sample items: "The basic values of this organization include learning as a key to improvement" and "There is a commonality of purpose in my organization." The Cronbach's alpha coefficient for this measure was 0.95.

3.2.4. Individual Learning Orientation

Employee learning orientation was measured using three items adopted from Khedhaouria, Montani and Thurik [62]. Sample items included, "In my project group, we prefer tasks that challenge us so we can learn new things" and "In my project group, we often look for opportunities to develop new skills and knowledge." Ratings were made on seven-point Likert-type scales from 1 (very strongly disagree) to 7 (very strongly agree) and were averaged to form a rated index. The Cronbach's alpha coefficient for this measure was 0.87.

3.2.5. CSE

The mediating variable, creativity self-efficacy, was measured using a 3-item measurement developed by Tierney and Farmer [32]. The questionnaire included statements about perceived efficacy in producing ideas, solving problems, and elaborating or improving upon others' ideas in its first version, and subsequently reduced to three items. The self-efficacy scale was measured with a 5-point Likert scale, ranging from 1 (not at all) to 5 (to a great extent). A sample item is "I have confidence in my ability to solve problems creatively." On the other hand, Cronbach's alpha reported for employee CSE was 0.88 [32].

3.2.6. Control Variables

In testing the hypotheses, we controlled for age, gender, education level, job tenure, job location, and team size. We controlled for education level and job experience, as education and experience may affect the domain-relevant knowledge or expertise important for creativity [26]. The reason for using the company's location as a control variable is that different regional cultures and norms will affect creative thinking and behavior [87]. Prior research suggests that team size can influence group dynamics [60] and relates to employee creativity in previous studies [85]. Therefore, we controlled for the effect of team size in the sample to be no less than 5.

3.3. Data Analysis Techniques

The data were analyzed using SPSS 26 and HLM 6.08 software. SPSS was used to screen the data and determine descriptive statistics. The study used a hierarchical linear model (HLM) to examine the proposed relationship. HLM is an analytical technique appropriate for data with nested sources of variability—involving units at a lower level or micro units nested within units at a higher level or macro units [88]. Data were standardized and differentiated into two levels: level 1 variables across individuals and level 2 variables across the 110 groups [89]. The two-step approach was employed; firstly, the outer measurement model was tested to examine the measurement model; secondly, the hierarchical linear model was evaluated for the proposed hypotheses.

4. Results

4.1. Assessment of the Measurement Model

Table 2 displays the means, standard deviations, reliability, and correlations of the variables included in our study. Transformational leadership was positively related to employee creativity ($r = 0.677$, $p < 0.01$). Both team learning orientation and individual learning orientation were positively related to employee creativity ($r = 0.704$, $p < 0.01$; $r = 0.661$, $p < 0.01$, respectively). CSE was also positively related to employee creativity ($r = 0.732$, $p < 0.01$).

4.2. Assessment of the Hierarchical Linear Model

Before conducting cross-level analysis in this model, it is essential to examine the appropriateness of aggregating the shared construct of transformational leadership (TL) and team learning orientation (TLO) to the organizational level, given that the data was collected from individual employees. This study utilized r_{wg} as the test index, as proposed by James et al. [90], to evaluate the appropriateness of variable aggregation. The results of the calculation in this research showed that the average r_{wg} of group cohesion for TL is 0.983 ranging from 0.923 to 0.999, and for TLO, 0.971, ranging from 0.892 to 0.999, all above 0.70 criterion [91], which indicated the opinions of raters within the group. Thus, these results supported the aggregation of TL and TLO, respectively, to the organizational level for subsequent cross-level analysis.

4.2.1. Results of Hierarchical Linear Modeling for Directing Effects

According to Raudenbush and Bryk [92]'s recommendation, a multilevel analysis should consist of four sub-models: the null model, random coefficient model, intercepts as outcomes model, and slopes outcomes model. Since our study did not explore the team-level contextual variable group's moderating effects, we did not perform the slopes as outcomes model. Thus, our multilevel analysis included the following models: Model I (null model) was used to evaluate the proportion of group variation to the overall variance in employee creativity level. This helped us determine the dependent variable's intraclass correlation coefficient (ICC) and whether the between-group variation component was suitable for multilevel model analysis. Model II (random coefficient model) was used to examine the direct impacts of employee-level variables on creativity level. Model III (intercepts as outcomes model) was used to investigate the direct impacts of supervisor-level variables on employee creativity. Model III represents the full model of the direct effects, which aimed to identify and analyze the direct impact of all the independent variables on the outcome variables in our study.

- Model I: Null Model

The null model, also referred to as the empty model, serves as the foundation of hierarchical linear model analysis and is the starting point for the analysis. No explanatory variables were included in the null model; instead, it only contained the result variables, and the corresponding formula is shown below:

$$\text{Level 1: } EC_{ij} = \beta_{0j} + r_{ij}; \quad (1)$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j}. \quad (2)$$

According to Table 3, the within-group components (σ^2) and the between-group components (τ_{00}) of employee creativity were 0.559. and 0.745 ($\chi^2 = 1090.763$, $df = 109$, $p = 0.000$), respectively. In terms of creativity, the variation component between groups is significantly different from 0. In other words, there are significant variations in the creativity level of employees under different supervisors.

Table 2. Means, standard deviations, reliability, and correlations.

Variable	M	SD	α	1	2	3	4	5	6	7	8	9	10	11
Age	3.22	1.06	-	1										
Gender	1.57	0.49	-	0.13	1									
Education	3.51	1.03	-	−0.542 **	−0.047	1								
Job tenure	3.72	0.82	-	0.353 **	0.041	−0.396 **	1							
Job location	2.02	0.81	-	−0.224 **	−0.029	0.398 **	−0.331**	1						
Team size	6.75	2.01	-	0.178 **	−0.020	−0.112 **	0.228 **	0.104 **	1					
Transformational leadership	4.57	1.45	0.97	0.390 **	−0.005	−0.436 **	0.361 **	−0.311 **	0.084 *	1				
Team learning orientation	4.62	1.42	0.95	0.398 **	−0.019	−0.452 **	0.361 **	−0.319 **	0.086 *	0.964 **	1			
Individual learning orientation	4.83	1.55	0.87	0.311 **	−0.026	−0.361 **	0.351 **	−0.269 **	0.072 *	0.773 **	0.814 **	1		
Creative self-efficacy	3.46	1.08	0.88	0.332 **	−0.019	−0.383 **	0.341 **	−0.270 **	0.102 **	0.743 **	0.770 **	0.792 **	1	
Employee creativity	3.28	1.14	0.86	0.355 **	−0.049	−0.378 **	0.273 **	−0.278 **	0.127 **	0.677 **	0.704 **	0.661 **	0.732 **	1

Note: ** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level.

Table 3. Results of hierarchical linear modeling for employee creativity.

Variable	Employee Creativity											
	Model I			Model II			Model III					
Fixed Effect	γ	**s.e.**	***t***	γ	**s.e.**	***t***	γ	**s.e.**	***t***	γ	**s.e.**	***t***
γ_{00}	3.256	0.087	37.598 ***	3.256	0.087	37.487 ***	3.255	0.056	58.398 ***	3.255	0.056	57.825 ***
Individual-level												
Age				0.047	0.033	1.393	0.043	0.038	1.124	0.043	0.038	1.124
Gender				−0.115	0.064	−1.795	−0.172	0.071	−2.429 *	−0.172	0.071	−2.429 *
Education				−0.012	0.045	−0.259	−0.060	0.050	−1.198	−0.060	0.050	−1.198
Job Tenure				−0.031	0.061	−0.501	−0.036	0.055	−0.650	−0.036	0.055	−0.650
Individual learning orientation				0.271	0.037	7.351 ***						
Team-level												
Job Location							−0.216	0.086	−2.522 *	−0.228	0.087	−2.622 **
Team Size							0.061	0.024	2.510 *	0.056	0.024	2.346 *
Transformational leadership							0.425	0.046	9.325 ***			
Team learning orientation										0.428	0.047	9.069 ***
Random Effect	**v.c.**	χ^2	***p***	**v.c.**	χ^2	***p***	**v.c.**	χ^2	***p***	**v.c.**	χ^2	***p***
τ_{00}	0.745	1090.763	0.000	0.758	1284.162	0.000	0.262	437.566	0.000	0.269	444.215	0.000
σ^2	0.559			0.475			0.553			0.553		
Deviance	1924.394			1840.977			1848.175			1850.126		

Note: γ = Parameter Estimate; s.e. = Standard Error; v.c. = Variance Component; t = T-Ratio; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The intra-class correlation coefficient (ICC, ρ) can be calculated based on the null model. The ICC measures the proportion of the total variance due to between-group differences, which is essential in determining whether hierarchical linear modeling (HLM) is necessary. The formula to calculate ICC is as follows:

$$\text{ICC} = \rho = \frac{\tau_{00}}{\tau_{00} + \sigma^2} \quad (3)$$

The calculated ICC values for employee creativity level were significant, indicating that 57.132% of the total variation in these variables can be attributed to the upper-level variable, namely the direct managers. When the ICC is higher than 0.138, there is a high degree of intraclass correlation, and when the ICC is larger than 0.059, a multilevel analysis must be considered [93]. These results illustrate that the variation between groups could not be ignored. In order to avoid a biased interpretation of the results, it was necessary to use the multilevel model for data analysis.

- Model II: Random Coefficient Model

The random coefficient regression model is a two-layer model that only includes independent variables in the first layer, while the second layer is a zero model. The regression coefficient in the first layer comprises the intercept and the slope item in the second-layer regression model, both of which are set as random effects. The primary purpose of this analysis is to test the existence of the intercept and slope of the first-level regression model, which is used to test the significance of the first layer of an independent variable, namely individual learning orientation (ILO), in this study. The correlation analysis mode is described below:

$$\text{Level 1: } EC_{ij} = \beta_{0j} + \beta_{1j}\,(\text{age}) + \beta_{2j}\,(\text{gender}) + \beta_{3j}\,(\text{education}) + \beta_{4j}\,(\text{tenure}) + \beta_{5j}\,(\text{ILO}) + r_{ij}; \quad (4)$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j},\ \beta_{1j} = \gamma_{10} + u_{1j},\ \beta_{2j} = \gamma_{20} + u_{2j},\ \beta_{3j} = \gamma_{30} + u_{3j},\ \beta_{4j} = \gamma_{40} + u_{4j},\ \beta_{5j} = \gamma_{50} + u_{5j}. \quad (5)$$

In this model, we found support for hypothesis 3, as there was a significant relationship between individual learning orientation and employee creativity (γ = 0.271, s.e. = 0.037, t = 7.351, df = 109, p = 0.000). The result is consistent with the HLM analysis summarized in Table 3.

- Model III: Intercepts as Outcomes Model

To gain a deeper understanding of the main effect of the second-level variable, namely transformational leadership (TL) and team learning orientation (TLO), on employee creativity, an intercept as outcomes model analysis was conducted based on the previous analysis. The analysis model used in this study is described below:4

$$\text{Level 1: } \beta_{0j} + \beta_{1j}\,(\text{age}) + \beta_{2j}\,(\text{gender}) + \beta_{3j}\,(\text{education}) + \beta_{4j}\,(\text{tenure}) + r_{ij}; \quad (6)$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + + \gamma_{01}\,(\text{location}) + \gamma_{02}\,(\text{size}) + \gamma_{03}\,(\text{TL}) + u_{0j},\ \beta_{1j} = \gamma_{10} + u_{1j},\ \beta_{2j} = \gamma_{20} + u_{2j},\ \beta_{3j} = \gamma_{30} + u_{3j},\ \beta_{4j} = \gamma_{40} + u_{4j}; \quad (7)$$

$$\text{Level 1: } \beta_{0j} + \beta_{1j}\,(\text{age}) + \beta_{2j}\,(\text{gender}) + \beta_{3j}\,(\text{education}) + \beta_{4j}\,(\text{tenure}) + r_{ij}; \quad (8)$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + \gamma_{01}\,(\text{location}) + \gamma_{02}\,(\text{size}) + \gamma_{03}\,(\text{TLO}) + u_{0j},\ \beta_{1j} = \gamma_{10} + u_{1j},\ \beta_{2j} = \gamma_{20} + u_{2j},\ \beta_{3j} = \gamma_{30} + u_{3j},\ \beta_{4j} = \gamma_{40} + u_{4j}; \quad (9)$$

The results of the intercepts as outcomes model analysis are also summarized in Table 3. To test Hypothesis 1 and 2, we regressed employee-rated transformational leadership and team learning orientation on employee creativity separately, together with control variables. Hypothesis 1 and 2 that predicted transformational leadership and team learning orientation would be positively related to employee creativity were supported (γ = 0.425,

s.e. = 0.046, t = 9.352, df = 106, p = 0.000; γ = 0.428, s.e. = 0.047, t = 9.069, df = 106, p = 0.000), respectively.

4.2.2. Results of Hierarchical Linear Modeling for Mediating Effects

Mediating effects in this study refer to the intermediate mechanisms through which the relationships between transformational leadership, team learning orientation, individual learning orientation, and employee creativity are explained. By examining mediating effects, we aim to elucidate that CSE plays a crucial role in understanding the underlying processes that link the predictor variables to employee creativity, shedding light on the causal pathways involved. To test the indirect effects of the hypotheses proposed, stepwise testing of regression coefficients was used to test the mediation of CSE [94], which required a significant effect from independent measure (X) to outcome (Y), followed by significant effects of X to M (mediator). Lastly, a significant effect from M to Y is conditional on X.

The study's results supported the indirect effect (Hypotheses 4, 5, and 6) of CSE as a mediator between transformational leadership and learning orientation (individual and team level). Table 4 summarizes the main results with coefficients for the control variables omitted. In Step 1, transformational leadership, team learning orientation, and individual learning orientation emerged as significant predictors of CSE (γ = 0.393, $p < 0.001$; γ = 0.410, $p < 0.001$; γ = 0.417, $p < 0.001$, respectively). In Step 2, transformational leadership, team learning orientation, and individual learning orientation had a significant relationship with employee creativity (γ = 0.425, $p < 0.001$; γ = 0.428, $p < 0.001$; γ = 0.271, $p < 0.001$, respectively). When CSE was added to the equation in Step 3, transformational leadership and learning orientation were still significant at the conventional level (γ = 0.424, $p < 0.001$; γ = 0.428, $p < 0.001$; γ = 0.078, $p < 0.01$, respectively), and CSE was also significant (γ = 0.489, $p < 0.001$). The combined results from steps 1–3 supported Hypotheses 4, 5, and 6, which means the role of CSE as a partial mediator in the influence of the independent variables on employee creativity was evident. In this context, CSE acts as a 'middleman,' transmitting the positive effects of transformational leadership, team learning orientation, and individual learning orientation to employee creativity, providing insights into the mechanisms that drive the observed relationships.

Table 4. Results of the hierarchical linear modeling for mediation analysis.

Variable	Estimate	s.e.	*t*	*p*
Step 1: Employee creativity				
Transformational leadership	0.425	0.046	9.325	0.000
Team learning orientation	0.428	0.047	9.069	0.000
Individual learning orientation	0.271	0.037	7.351	0.000
Step 2: Creative self-efficacy				
Transformational leadership	0.393	0.042	9.341	0.000
Team learning orientation	0.410	0.042	9.840	0.000
Individual learning orientation	0.417	0.036	11.632	0.000
Step 3: Employee creativity				
Transformational leadership	0.424	0.046	9.305	0.000
Team learning orientation	0.428	0.047	9.061	0.000
Individual learning orientation	0.087	0.032	2.704	0.007
Creative Self-Efficacy	0.489	0.045	10.867	0.000

Note: s.e. = Standard Error; t = T-Ratio.

5. Discussion

This study achieved four goals: empirically examined the relationship between transformational leadership and employee creativity in a new corporate setting; investigated the impact of learning orientation on employee creativity using a better hierarchical structure than previous research; assessed CSE as a mediator of the effects of transformational leadership and learning orientation on employee creativity; and explored using a sample

from Chinese MSMEs whose motivation for self-improvement is particularly strong in the post-pandemic era. We now discuss these findings in light of the prior research studies.

5.1. Theoretical Implications

Firstly, this research not only corroborates prior findings that demonstrate a positive correlation between transformational leadership and creativity [26,95–97], but it also extends this relationship to the specific context of Chinese corporations. Within the Chinese context, distinguished by its collectivist culture, transformational leadership manifest in a more valuable manner, diverging from those prevalent in Western background [98]. Moreover, even in recent years, some quantitative studies have investigated transformational leadership in Chinese organizations, but the generalizability of findings remains constrained in scope. Wu [25] underscored the research gap in scholarly inquiries pertaining to leadership within SMEs relative to their counterparts in the realm of high-tech and internationalized enterprises. The present study bridges this knowledge gap, demonstrating a positive correlation between transformational leadership and creativity among MSME employees. Thus, leaders who are perceived as paragons, esteemed for their virtuous principles and high ethical integrity, are predisposed to foster employee creativity by purposefully imbuing their adherents with a profound sense of pride, motivation, and confidence through the provision of intellectual stimulation, and individualized support [97,99].

The next two conclusions complement the finding of Gong, Huang and Farh [26], who only partially found a significant effect of personal learning orientation in their fieldwork. Our study supplements the impact of team-level learning on creativity, which is a more comprehensive multilevel investigation. First, our study contributes to the creativity literature by demonstrating that the team learning orientation has a direct positive relationship with employee creativity. A learning-oriented team can foster a climate that kindles the spirits of cohesion and motivation among team constituents to collaborate in the pursuit of a shared goal. As team members see their peers actively engaged in learning activities and recognize that this behavior is valued and encouraged, they are more likely to embrace audacious forays into uncharted territories and engage in novel and risky endeavors [68]. By doing so, we corroborated the significance of team climate that employees can perceive [100], thus beneficial to elucidating the intricate interplay of mechanisms (e.g., knowledge sharing, role modeling, and social persuasion) that heralded creative endeavors. On the other hand, this study indicates a significant positive correlation between employee creativity and their learning orientation, supporting the arguments of previous researchers that learning orientation is crucial in facilitating innovation capability [101]. Employees with a learning orientation are more likely to be committed to innovation for several reasons, such as learning about new and modern technologies, gaining more accurate insight into the needs of managers and companies, and identifying and seizing job opportunities in today's rich and unpredictable demands. The two conclusions are consistent with the assertion by Hirst, Van Knippenberg and Zhou [29], who emphasized that while focusing on learning to stimulate individual creativity and the individual's propensity to engage in learning, there should also be a combination with an emphasis on team learning. Overall, this study extends learning orientation theory and research to the team and cross-level relationships with creativity.

Finally, this study extends the research on employee creativity by introducing a useful mediator, namely CSE, to explain how transformational leadership and learning orientation separately enhance employee creativity. Practically, our study reinforced the indispensable role of leadership in bridging the individual creativity gap through CSE's shaping and refining, which is also consistent with previous research [26]. Moreover, this paper contributes to the increasing body of empirical evidence demonstrating that CSE acts as a fundamental mechanism capable of exerting team and individual-level impact on learning creativity. Our research is an answer to the calls by scholars to explore the factors that mediate the relationship between creativity and its antecedents in the context

of MSMEs [102–104]. The findings aid managers of MSMEs in adapting their strategies by leveraging CSE to nurture employee creativity and innovation.

In rapidly expanding economies such as China, organizations seek leaders who possess visionary skills and are committed to cultivating employee creativity. This research investigates whether transformational leadership and learning orientation can foster CSE and subsequently enhance employee creativity, which is essential for achieving sustainable competitive advantage in today's business world. By exploring the relationship between transformational leadership and employee creativity in MSMEs in China, this study contributes to the existing literature on SMEs' leadership. Furthermore, to the best of our knowledge, this is the first time to establish and investigate team learning orientation in the Chinese MSME context, which also complements previous literature on individual learning orientation.

5.2. Practical Implications

This study takes a cross-level approach to promote employee creativity, draws a theoretical conclusion, and now seeks to put management recommendations based on these theoretical underpinnings. In today's highly competitive MSMEs, creative employees are crucial for sustainable competitiveness [73,105,106]. Company leaders must understand the association between leadership style and employee creativity. The present study provides evidence that transformational leadership has a positive and significant correlation with employee creativity, which indicates that transformational leadership supports creative work environments and fosters employee creativity. Therefore, MSME leaders should adopt a transformational leadership style to enhance the creative skills of their employees. They can act as creative role models to promote employee creativity by setting an example for their followers [107]. In terms of individualized consideration, we recommend focusing on the different characteristics and needs of individuals in the workplace [108]. While encouraging employees to challenge themselves and discover their potential, leaders can also articulate a compelling developmental blueprint for employee development, fully demonstrate their charisma and good character so that their subordinates identify with their leadership style, create emotional connections, and commit to common goals. Additionally, they can provide their employees with training in creativity-related skills, which can enhance follower observational and technical skills leading to mastery in product manufacturing.

Since creative activities are usually carried out by teams [66], and SMEs are no exception, comprehending the inner logic of employee creativity at the team level holds profound practical implications for managers. This study suggests that team learning orientation is important. Managers of MSMEs should harness the rich tapestry of cognitive resource diversity in team learning to inspire employees as catalysts for creative advancement [109]. They must foster a deeper culture of collaborative learning in the workplace, refining individual learning competencies and driving innovation in employees. In today's era of team-centric organizations, it is imperative to establish environments that encourage learning, enabling employees to proactively acquire and share knowledge with their peers, which may determine an organization's success [110–112]. In doing so, employee creativity can be enhanced through the acquisition of better knowledge and profound insights, which can elevate organizational performance consequently [113].

Moreover, the study indicated that learning-oriented individuals could enhance their creativity. As universally acknowledged, while the team climate of learning holds significance, the learning behavior ultimately rests upon each singular entity. In Chinese MSMEs, based on the significant relationship between individual learning orientation and employee creativity, employees should make an effort to pursue lifelong learning to enhance their competence, gain experience, and pursue higher education, thereby improving their self-competence characteristics. Similarly, for the MSMEs leaders, this study suggests that when recruiting and hiring potential employees, managers should consider their potential for learning orientation to increase creativity level and creative performance over time.

Finally, an explanation for the mediating role of CSE could be attributed to one's intrinsic aspiration to be creative, which is in line with the emphasis on employees' efficacy belief in creativity in our findings. CSE has emerged as a key self-regulating mechanism for motivating and sustaining efforts in exerting and improving creativity [85]. Especially in the post-pandemic period when organizational operations are slowly recovering (e.g., teamwork) and workers' physical and mental health is affected (e.g., unemployment stress) [114,115], it is crucial for managers in the manufacturing industry to gain a better understanding of the possible connections among transformational leadership, learning orientation, CSE, and employee creativity. Consequently, we recommend that MSMEs put additional efforts into training their followers and instilling confidence in them to enhance their creative skills by adopting transformational leadership practices. Additionally, manufacturing companies can help their employees raise the awareness of continuous personal learning to successfully carry out innovative tasks for developing the creative skills necessary through boosting their confidence and engagement in creative actions.

The significance of the manufacturing industry and SMEs in China's economic growth cannot be overstated. Therefore, it is important for company leaders and researchers to recognize the potential for MSMEs in China to produce creative results and to create an environment conducive to creativity in such companies.

5.3. Limitations and Future Research

This study has several limitations. First, the survey relied on the self-reported factors of the participants, despite efforts made to remove and regulate general biases, increasing the likelihood of common method variance, which cannot be eliminated. Second, given that the study's findings only apply to the manufacturing sector, researchers must also collect data from other industrial sectors in China to generalize their findings beyond MSMEs. Lastly, the study utilized a cross-sectional research design, only measuring variables at a specific point in time, making it difficult to ascertain the causal relationships between the variables under scrutiny. Future studies need to adopt experimental and longitudinal research designs to establish causality between transformational leadership, learning orientation, CSE, and employee creativity, as well as to derive trustworthy conclusions.

6. Conclusions

In summary, this study aims to examine how transformational leadership and learning orientation affect employee creativity in Chinese MSMEs through the mediating role of CSE, with a focus on individual–contextual interactions. By doing so, it contributes to the existing literature on employee creativity. Despite the substantial investments organizations have made in refining employee aptitudes, inquiries into the intricate mechanisms through which antecedent variables across diverse strata affect employee creativity remain unanswered. Therefore, the revelations from this academic investigation are expected to stimulate the intellectual pursuit of corporate researchers, prompting them to explore further and uncover novel insights of practical value, especially for SMEs.

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