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The impact of perceived ethical leadership of supervisors on graduate students' creativity: The mediating role of psychological empowerment

Yan Yang[1], Jian-Hao Huang[2*]
[1]Department of Education Management, Chinese International College Dhurakij Pundit University, Thailand, and School of Humanities, College of Arts and Sciences, Kunming, China; yyemails@126.com (Y.Y.).
[2]Department of Education Management, Chinese International College Dhurakij Pundit University, Thailand; rollancekimo@gmail.com (J.H.H.).

Abstract: Creativity has become a vital metric for assessing the quality of talent development. This study aims to analyze the impact of supervisors on graduate students' creativity and to uncover the role of psychological empowerment in this process. Based on cognitive evaluation theory, this empirical study investigates the impact of perceived ethical leadership of supervisors on graduate students' creativity, as well as the mediating role of psychological empowerment. Data were collected using an online questionnaire distributed via the Questionnaire Star platform. The sample comprised master's and doctoral students from four universities in southwestern China. A total of 1,011 questionnaires were distributed, and 139 were excluded due to non-compliance with the research criteria, resulting in 872 valid responses. Results indicate that the perceived ethical leadership of supervisors enhances graduate students' creativity. Furthermore, psychological empowerment fully mediates the relationship between the perceived ethical leadership of supervisors and graduate students' creativity. Enhancing supervisors' ethical leadership could effectively improve graduate students' creativity.

Keywords: *Cognitive evaluation theory, Creativity, Ethical leadership, Psychological empowerment.*

1. Introduction

Creativity is defined as generating novel and valuable ideas or developing new and better ways of doing things [1]. It serves as a driving force for scientific progress and social development and is a core competitive advantage for nations [2, 3]. Universities worldwide are responsible for nurturing creative individuals and fostering creativity [2]. In recent years, the adequate stimulation of graduate students' creativity has attracted increasing attention from scholars and educators [4]. Therefore, understanding the factors and mechanisms influencing graduate students' creativity is crucial for stimulating and developing.

Previous research on the antecedents of graduate students' creativity has mainly focused on two main aspects. First, external environmental factors in graduate education have been extensively examined. These include the mentoring style [5] supervisor leadership [2, 6] and academic atmosphere [7] all of which are associated with graduate students' creativity. Second, individual factors of graduate students have also been identified as significant contributors to creativity. These factors include personality traits [8] intrinsic motivation [2, 9] and self-efficacy [7].

However, creativity is not merely the result of either external environmental factors or individual factors alone. It is the outcome of the interaction between these two sets of factors Jung and Hong [10] and Said-Metwaly, et al. [11]. Meng and Zhao [2] highlighted that leadership, as an important external environmental factor influencing creativity, primarily influences individual factors, which can enhance or inhibit creativity. Therefore, individual factors play a mediating role in the relationship

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* Correspondence: rollancekimo@gmail.com

between leadership and creativity. Only by identifying these individual factors and understanding their mediating effects can we more effectively promote creativity education and enhance creativity.

In this context, we can further explore how external environmental factors stimulate creativity by influencing individual factors. According to cognitive evaluation theory, external factors can affect intrinsic motivation [12-14]. It is reasonable to hypothesise that supervisor leadership, as an external factor, can enhance graduate students' sense of psychological empowerment by providing positive support and feedback. This sense of psychological empowerment, in turn, enhances their autonomy and self-efficacy, thereby further stimulating their intrinsic motivation and ultimately fostering creativity. Han, et al. [15] also identified psychological empowerment as a key factor influencing individual creativity. Meng and Zhao [2] proposed the theoretical hypothesis that supervisor leadership enhances, protects, and develops graduate students' creativity through empowerment. However, there is limited research on how psychological empowerment influences the relationship between supervisor leadership and graduate students' creativity.

2. Literature Review

2.1. Perceived Supervisors' Ethical Leadership and Graduate Students' Creativity

Perceived supervisors' ethical leadership primarily refers to the behaviour exhibited by supervisors that graduate students perceive as conforming to norms in personal actions and interpersonal relationships. It promotes ethical behaviour and encourages specific, norm-compliant actions through bidirectional communication, reinforcement, and decision-making [16]. Leadership style is a crucial contextual variable in various organisational contexts that guides followers in perceiving and processing information related to their job characteristics. This, in turn, influences their work attitudes, behaviours, and performance [17]. Additionally, leadership style has a modelling effect, potentially encouraging followers to imitate and learn from their leaders, thereby shaping their perceptions, attitudes, and behaviours [18]. Empirical research has demonstrated that ethical leadership can influence followers' cognition of task meaning and self-identity, leading to more incredible innovation [19]. Ethical leadership is also significantly correlated with followers' creativity [20, 21]. Ethical leadership can inspire followers' creativity by creating a supportive, trustworthy, and fair organisational atmosphere [22].

In the context of graduate education, supervisors play a pivotal role in fostering a safe and supportive learning environment by establishing trust and ethical standards. This enables graduate students to express their ideas and innovations more freely [6]. Studies have shown that supervisors not only enhance students' motivation but also boost their confidence, thereby fostering the development of creativity [23]. For example, through fair feedback and caring support, supervisors help graduate students better understand the meaning of tasks, stimulating their innovative thinking [24]. Additionally, supervisors promote students' identification with ethics and responsibility by setting an example, which further enhances their creative performance in academic research [25]. Given these findings, it can be hypothesised that there is a positive correlation between supervisors' ethical leadership and graduate students' creativity, although empirical research specifically exploring this relationship remains limited.

2.2. Psychological Empowerment and Creativity

Individual factors also influence creativity among graduate students. According to Cognitive Evaluation Theory, a strong sense of meaning and cognitive appraisal can enhance an individual's intrinsic motivation [13]. Psychological empowerment is a form of intrinsic motivation that stems from individuals' feelings of goal internalisation, control, and self-efficacy. It manifests in four key psychological perceptions: meaning, competence, autonomy, and influence, all shaped by the external environment [26]. Individuals who believe they can perform their tasks effectively and receive the necessary support experience a sense of self-determination. This sense of self-determination is further strengthened when individuals feel they can shape desired outcomes through their actions. As a result,

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they are more likely to focus on generating solution ideas more concentrated and sustainedly [27-29]. This focused and sustained effort is crucial for creative problem-solving. Further studies also supported the positive relationship between psychological empowerment and creativity [30-32].

Intrinsic motivation is a key driver of creativity [33] and psychological empowerment is one form of intrinsic motivation. When Students' engagement and interest in tasks are enhanced by intrinsic motivation, creative thinking is fostered [14]. Moreover, when students' psychological needs are met, their autonomy in learning is strengthened [34]. This enhanced autonomy enables them to be more willing to try new methods and explore different problem-solving approaches, which stimulates creativity [35]. Existing research has confirmed that students' psychological empowerment positively impacts creativity [15]. When students perceive higher levels of psychological empowerment, they are more likely to exhibit creativity [36] consistent with the impact of employee innovation behaviour in the enterprise [37]. Therefore, it can be inferred that psychological empowerment is an important factor influencing graduate students' creativity.

2.3. Perceived Supervisors' Ethical Leadership and Graduate Students' Psychological Empowerment

Conger and Kanungo [38] proposed that psychological empowerment enhances intrinsic motivation by increasing an individual's perception of their work's significance, competence, autonomy, and influence. Empowerment involves delegating decision-making authority, granting lower-level members the responsibility to make decisions, and ensuring they have the necessary resources [39, 40]. Ethical leadership commonly advocates these characteristics [41]. Ethical leaders consider each follower's developmental needs and strengths to place them in appropriate roles [41, 42]. For example, ethical leaders are skilled at enhancing followers' self-esteem, self-confidence, and ownership while also promoting team members' development and aligning followers' aspirations and organisational goals [42, 43]. Ethical leadership integrates followers' expertise with their work roles and emphasises the importance of work engagement [44, 45] thereby increasing followers' empowerment [46]. Ethical leaders also support followers in making difficult ethical decisions and seek adequate training opportunities, fostering greater empowerment [41]. Researchers have identified a positive relationship between ethical leadership and psychological empowerment [47-49]. Therefore, supervisors' ethical leadership may be related to graduate students' psychological empowerment.

In summary, graduate students' perception of supervisors' ethical leadership should be related to their psychological empowerment and creativity. Psychological empowerment may mediate the relationship between perceived ethical leadership and creativity. Based on the reviewed literature and relevant theories, the following hypotheses are proposed:

Hypothesis 1: Perceived supervisors' ethical leadership relates to graduate students' creativity.

Hypothesis 2: Perceived supervisors' ethical leadership relates to graduate students' psychological empowerment.

Hypothesis 3: Graduate students' psychological empowerment is related to creativity.

Hypothesis 4: Graduate students' psychological empowerment mediates the relationship between perceived supervisors' ethical leadership and creativity.

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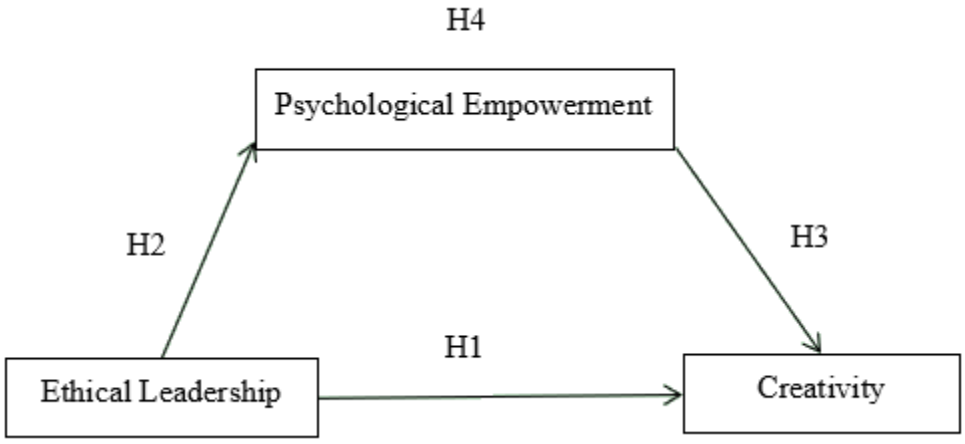

Figure 1.
Theoretical model

3. Methods

3.1. Participants

The sample for this study comprised 872 graduate students from four universities in China. The questionnaires were completed anonymously, and the purpose of the study was explained to all respondents. A total of 1,011 questionnaires were distributed, of which 139 were excluded due to non-compliance with the research criteria. Consequently, 872 valid responses were obtained, yielding an effective response rate of 86.25%.

3.2. Procedures

Data for this study were collected using an online questionnaire distributed via the Questionnaire Star platform (www.wjx.cn). Participants accessed the electronic questionnaire by scanning a QR code containing a link to the survey. Before administering the questionnaire, participants were informed about the nature and purpose of the study and the confidentiality agreement. They were assured that all responses would be submitted anonymously and that data processing would be strictly confidential. Participants had the right to decline participation or withdraw from the study at any time if they had any concerns. Informed consent was obtained online before participants proceeded to complete the survey. The sample consisted of master's and doctoral students from four universities in China. A total of 1,011 questionnaires were distributed, and 139 were excluded due to non-compliance with research criteria, resulting in 872 valid responses, with an effective response rate of 86.25%. The demographic characteristics of the graduate student sample closely resemble those of the broader graduate student population in Yunnan Province. Precisely, the distribution of gender, educational background, place of origin, and age of the participants generally reflects the overall characteristics of graduate students in the region, enhancing the representativeness of the study's findings. The Ethics Committee of a university in Thailand approved the research protocol.

4 Measures

4.1. Perceived Ethical Leadership of Supervisors

The perceived ethical leadership of graduate students' supervisors was measured using the Modified Ethical Supervision Scale (MESS) developed by Nejati and Shafaei [16]. This scale is adapted from the Ethical Leadership Scale initially developed by Brown, et al. [50]. The MESS is a unidimensional scale comprising 10 items, rated on a 5-point Likert scale ranging from 1 ("Never") to 5 ("Always"), with intermediate options of "Rarely," "Occasionally," and "Often." Higher scores indicate a stronger

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perception of ethical leadership exhibited by the advisor. The scale demonstrated strong internal consistency, with a Cronbach's alpha coefficient of 0.910.

4.2. Psychological Empowerment Scale

The Psychological Empowerment Scale developed by Spreitzer [26] was used to measure psychological empowerment in this study. This scale comprises four dimensions with a total of 12 items. Responses were rated on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"), with intermediate options of "Disagree," "Neutral," and "Agree." Higher scores indicate a greater level of psychological empowerment. The scale demonstrated high internal consistency, with a Cronbach's alpha coefficient of 0.918.

4.3. Creativity Scale

The Creativity Scale developed by Zhou and George [1] was used to assess creativity in this study. This unidimensional scale consists of 13 items, rated on a 5-point Likert scale ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"), with intermediate options of "Disagree," "Neutral," and "Agree." Higher scores indicate a greater level of creativity among graduate students. The scale demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of 0.951.

5. Results

5.1. Common Method Variance

Since all variables in this study were measured using self-reported data, the potential for standard method variance (CMV) was a concern. To mitigate CMV, both procedural and statistical controls were employed. First, to reduce respondents' concerns, the survey was conducted anonymously. Second, a confirmatory factor analysis (CFA) was performed to compare the model fit between a single-factor model and a multi-factor model to assess the presence of common method bias. The multi-factor model in this study included seven factors. As shown in Table 1, the chi-square value for the seven-factor model (χ^2 = 3,328.533) was significantly lower than that of the single-factor model (χ^2 = 14,159.323). Additionally, the model fit indices indicated that the seven-factor model demonstrated a significantly better fit than the single-factor model ($\Delta\chi^2$ = 10,830.79, Δdf = 21, p < .001). These results suggest that common method bias is not a serious concern in this study.

Table 1.
Common Method Variance.

Model	χ^2	df	χ^2/df	χ^2	df
Single Factor	14159.323	740	19.134	10830.79***	21
7 Factors	3328.533	719	4.629		

5.2. Correlation Analysis

The means, standard deviations, and bivariate correlations of all variables are presented in Table 2. Ethical leadership was significantly correlated with psychological empowerment (r = 0.490, p < 0.001) and creativity (r = 0.320, p < 0.001). Additionally, psychological empowerment was significantly and positively correlated with creativity (r = 0.700, p < 0.001).

Table 2.
Descriptive Statistics and Correlation Analyses of Each Observed Variable.

Variables	Mean	SD	1	2	3
1. Ethical leadership	4.167	0.657	1		
2. Psychological empowerment	3.562	0.631	0.490***	1	
3. Creativity	3.634	0.626	0.320***	0.700***	1

Note: n = 872.*** p < 0.001,** p < 0.01, * p < 0.05.

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5.3. Mediation Analysis

This study employed Model 4 of the PROCESS macro to test the mediation effect, with a bootstrapped sample size of 5,000 and a 95% confidence interval (CI). The analysis aimed to examine whether graduate students' perceived ethical leadership of supervisors indirectly influences creativity through psychological empowerment. The results indicated that psychological empowerment fully mediated the relationship between perceived ethical leadership and creativity. The indirect effect was significant, and the 95% confidence interval did not include zero (indirect effect = 0.348; 95% CI = [0.297, 0.401]). Furthermore, after controlling for psychological empowerment, the direct effect of perceived ethical leadership on creativity was no longer significant. The 95% confidence interval for the direct path (-0.079 to 0.026) included zero, with an estimated direct effect of -0.026 (see Table 3). Thus, psychological empowerment fully mediated the relationship between perceived ethical leadership and creativity among graduate students.

Table 3.
Standardised Indirect Effects and 95% Confidence Intervals for the Meditational Model.

					Confidence interval	
Model	**Coefficients**	**SE**	***t*-value**	***p*-value**	**Lower**	**Upper**
Outcome: Creativity						
Constant	2.320	0.135	17.205	0.000	2.055	2.585
Gender	0.137	0.041	3.357	0.001	0.057	0.217
Place of origin	-0.035	0.041	-0.857	0.391	-0.115	0.045
EL	0.307	0.031	10.001	0.000	0.246	0.367
Outcome: Creativity						
Constant	1.201	0.111	10.778	0.000	0.982	1.420
Gender	0.025	0.031	0.795	0.427	-0.037	0.086
Place of origin	0.006	0.031	0.195	0.845	-0.055	0.067
PE	0.710	0.028	25.328	0.000	0.655	0.765
EL	-0.026	0.027	-0.989	0.323	-0.079	0.026
Direct effect of ethical leadership on creativity						
Effect	SE	*t*-value	*p*-value		Confidence interval	
					Lower	Upper
-0.026	0.027	-0.989	0.323		-0.079	0.026
Indirect effect of ethical leadership on creativity						
	Effect	SE	LLCI	ULCI		
Total	0.307	0.031	0.246	0.367		
PE	0.348	0.027	0.297	0.401		

Note: $n = 872$. Bootstrap sample size = 5,000. EL, ethical leadership; PE, psychological empowerment; LL, lower limit; CI, confidence interval; UL, upper limit.

5.4. Discussion

Drawing on cognitive evaluation theory, this study first examined the relationship between the perceived ethical leadership of supervisors and graduate students' creativity. Previous research has suggested that ethical leadership is a crucial factor influencing subordinates' motivation, attitudes, and behaviours [19] and creativity [20, 21]. However, few studies have explored the impact of supervisors' ethical leadership behaviours on graduate students in higher education. Our findings indicate a significant positive relationship between the perceived ethical leadership of supervisors and graduate students' creativity. Specifically, the higher the students' perception of their supervisors' ethical leadership, the higher their level of creativity. These results align with previous studies conducted in business contexts, confirming that in higher education, supervisors serve as a critical external environmental factor influencing graduate students' creativity. By setting an example, providing fair feedback, and offering supportive guidance, supervisors can foster graduate students' identification with

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moral values and a sense of responsibility, helping them better understand the significance of their tasks and ultimately enhancing their creativity [24, 25].

Furthermore, this study found a positive relationship between the perceived ethical leadership of supervisors and the psychological empowerment of graduate students. This finding is consistent with previous research, which suggests that individuals' psychological empowerment can be influenced by leadership styles Dust, et al. [48]; Frazier and Jacezko [49] and Zheng, et al. [37]. Beiranvand, et al. [51] highlighted that ethical leadership, as a key external environmental factor, can enhance individuals' sense of meaning, competence, autonomy, and impact in their work, thereby increasing their psychological empowerment. Consistent with this perspective, our findings suggest that supervisors can foster graduate students' psychological empowerment by demonstrating integrity, honesty, trustworthiness, and role modelling.

The results of this study confirm that psychological empowerment has a significant positive impact on graduate students' creativity. These findings are consistent with previous research, which suggests that psychological empowerment positively influences creativity [30-32, 52]. The inferred reason for this relationship is that psychological empowerment enhances students' sense of meaning in their learning and research tasks [15]. Therefore, when graduate students perceive their work as important and valuable, they are more likely to invest additional time and effort, which fosters creative thinking and enhances creativity.

In addition, this study also hypothesised that psychological empowerment mediates the relationship between perceived supervisors' ethical leadership and graduate students' creativity. The findings support this hypothesis. By providing support, care, and trust, supervisors' ethical leadership can enhance graduate students' intrinsic motivation, making them feel greater control and autonomy. As an intrinsic motivator [31] psychological empowerment boosts students' self-efficacy and positive emotions, stimulating their innovative thinking and creativity [15]. Therefore, supervisors' ethical leadership creates a supportive environment for graduate students, enabling them to approach challenges with greater confidence and motivation, enhancing their creative performance.

5.5. Implications

These findings have important implications for educational practice. First, graduate supervisors should enhance students' psychological empowerment and stimulate creativity by granting them more academic autonomy and decision-making space, along with regular communication and constructive feedback. Second, university administrators should organize regular training sessions and workshops to enhance supervisors' ethical leadership, improving their ethical awareness and leadership abilities. This will help supervisors implement fairness, justice, and respect for students' autonomy in academic guidance, strengthening their ethical leadership. Through these measures, universities can effectively enhance graduate students' creativity.

5.6. Limitations and Future Research

This study focuses on graduate students and explores the relationships between perceived supervisors' ethical leadership, psychological empowerment, and the creativity of graduate students. However, several limitations exist within this research. Firstly, the study was conducted solely among graduate students from four universities in Yunnan Province, China. As a result, it may not entirely represent the wider situation across China, thereby limiting the generalizability of the findings. Secondly, the data gathered in this study originates from a single source and depends on self-reporting, which could introduce common method bias (CMV). Thirdly, this cross-sectional study reveals predictive relationships between variables, yet it offers insufficient causal inference. Fourthly, this study investigates only psychological empowerment as a mediating variable between perceived supervisors' ethical leadership and creativity; there may be other potential mediators or outcome variables that remain unexplored.

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Institutional Review Board Statement:

The Ethical Committee of Dhurakij Pundit University approved this study on 21 August 2024 (Ref. No. DPU_BSH 210867/2567).

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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