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Research Article

The impact of creativity on creative performance among university students in higher vocational education in China: The mediating role of autonomous motivation

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This study aims to explore whether the creativity of university students in Higher Vocational Education in China can enhance their creative performance through autonomous motivation. The theoretical foundation of this study is interactionist model of creativity, the study employs structural equation modeling for analysis and validation. A survey assessing creativity, creative performance, and autonomous motivation was administered to students from higher vocational schools in China, yielding a valid sample of 392. The overall model results indicate that the creativity of vocational college students has a significant positive impact on creative performance, creativity positively predicted autonomous motivation, which enhanced creative performance. The autonomous motivation partially mediates the relationship between creativity and creative performance. The findings recommend that higher vocational institutions initiate creative activities to foster students' creativity and continuously bolster their autonomous motivation, thus enhancing the creative performance of future technical and skilled professionals – vocational college students.

Keywords: Creativity; Autonomous motivation; Creative performance

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1. Introduction

Creativity is a fundamental concept in both educational and professional domains, particularly in the context of Higher Vocational Education in China. This sector has evolved into a pivotal component of higher education, representing not only a substantial form of higher learning but also a realm of advanced vocational education (Ling et al., 2023). China is in the midst of a transition from a labor-intensive economy to a technology-intensive one (Ba et al., 2022), demanding a substantial workforce of frontline technical professionals, particularly those imbued with innovation and creativity (Ling et al., 2023). In this context, vocational education has emerged as a crucial avenue for nurturing technically adept individuals (Chiang et al., 2022). However, vocational education in China started later compared to other forms of higher education. Due to the lower level of education in vocational education compared to undergraduate education (Wang

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& Wang, 2023), people generally believe that the quality of students in vocational colleges is lower, and the teaching level is relatively low. Most students engage in occupations with lower technical content, which has raised doubts about the necessity of cultivating their creativity, and even whether they possess creativity (Zhang, 2013). Emphasizing the development of practical skills alone no longer aligns with the imperative of achieving high-quality economic growth and industrial advancement. Consequently, cultivating the practical creativity of vocational college students has become the cornerstone of Higher Vocational Education in China's vision for the new era.

Creativity is an innate aptitude inherent in all individuals, not the exclusive purview of a select few (Amabile, 1997). Creativity is defined as the traits of risk-taking, curiosity, imagination, and a propensity for challenge that an individual exhibits in creatively solving problems.(Amabile, 1997; Robinson & Aronica, 2016; Sternberg & Collaborators, 2006; Williams, 1993). In an educational context, creativity empowers learners to forge connections between seemingly unrelated elements, identify significant challenges, pose queries driven by curiosity, maintain an open disposition toward novel concepts, defy established conventions, and display adaptability and originality (Bishara, 2016; Meinel et al., 2019; Rostan, 2010). Similarly, creativity is not static (Scott et al., 2004). In an educational environment, the ability of creative thinking is considered teachable and cultivable (Ritter et al., 2020), and cultivating creativity can enhance students' creative performance (Hu et al., 2022; Khan & Abbas, 2022).

Students' creative performance is often associated with divergent thinking, convergent thinking, motivation, environment, general knowledge, and skills (Amabile et al., 1996; Kaufman et al., 2016; Keleş, 2022). Xie et al. (2023) posits that the creative performance of vocational college students is a goal-oriented behavior, reflecting their mastery of essential skills for professional work through practical training, and resulting in the creation of novel, appropriate, practical, and valuable products. Building on the aforementioned studies, this research defines creative performance as the outcome of an individual's interaction among divergent thinking, convergent thinking, motivation, skills, and environment, which leads to the generation of novel, appropriate, practical, and valuable ideas and products. However, the cultivation of creativity and academic learning are often seen as independent course objectives (Beghetto & Plucker, 2006), with only a few students (such as gifted students) having the opportunity to systematically develop their creative potential in academic environments (Beghetto, 2010).

Autonomous motivation is defined as a form of intrinsic motivation that emphasizes an individual's engagement in activities freely chosen based on personal interest or beliefs (Vansteenkiste & Sheldon, 2006). It epitomizes the self-determined drive of individuals acting in accordance with their volition (Ryan & Deci, 2000). Research shows that creative individuals are often more flexible in absorbing information, have significantly higher levels of creative intrinsic motivation, and are more open to new experiences (de Stobbeleir et al., 2011; Gong et al., 2009). Individuals with intrinsic motivation prefer engaging in tasks that are interesting and enjoyable, pursuing activities for the sake of internal challenges and curiosity (Hong et al., 2016). In the school environment, creativity stimulates students' autonomous motivation (Bishara, 2016; Rostan, 2010), and autonomous motivation substantially enhances students' creative performance (Ren et al., 2017; Wang et al., 2023; Xu-Wen et al., 2022). Autonomous motivation facilitates effective performance in intricate or heuristic tasks (Deci & Ryan, 2008) and fosters greater perseverance and determination in creative endeavors, ultimately culminating in heightened creative performance (Abbas & Raja, 2015).

As future technical and skilled talents, vocational college students in China need to demonstrate excellent creative performance in their professional roles. However, existing research on student creativity largely focuses on undergraduate-level higher education, hence this study concentrates on vocational college students. This study endeavors to employ a structural equation model to scrutinize the influence of creativity among higher vocational college students in China on their

creative performance. Furthermore, it aims to explore whether creativity affects creative performance through the mediating mechanism of autonomous motivation.

2. Literature Review

2.1. Creativity and Creative Performance

Woodman et al. (1993) in their interactionist model of creativity, posit that creative processes within organizations yield innovative products, including novel ideas, products, services, procedures, or processes. Furthermore, it is crucial to recognize that creativity, in itself, constitutes a creative process (Clydesdale, 2006). Consequently, one can infer that the creative process of creativity significantly contributes to creative performance.

According to McCrae and John (1992), individual creativity stands as a pivotal factor influencing creative performance. Extensive studies on creativity and creative performance consistently demonstrate a positive correlation between individual creativity and creative performance (Bharadwaj & Menon, 2000; Litchfield et al., 2015). Individuals characterized by higher creativity traits generate a wider array of ideas and actively endeavor to transform these ideas into tangible innovative endeavors, thereby yielding heightened creative performance (Mccrae & Costa, 2010).

Furthermore, fostering creativity proves advantageous in augmenting participants' creative performance (Ma, 2006; Meinel et al., 2019; Scott et al., 2004). Meinel et al. (2019) discovered that while creativity training enhanced students' creative performance, the effectiveness of such training varied significantly based on the individual's initial creativity level. Hence, this study, grounded in the interactionist model of creativity, investigates whether creativity within an educational setting can significantly influence creative performance. Hypothesis 1 is postulated:

H1: The nurturing of students' creativity within the vocational college context significantly impacts their creative performance.

2.2. Creativity and Autonomous Motivation

Woodman et al. (1993) extended the Interactionist Theory of Creativity by highlighting that creative behavior is influenced internally by cognitive factors such as knowledge, cognitive skills, and cognitive styles/preferences, as well as non-cognitive factors such as personality traits. This encompasses traits such as a strong appreciation for aesthetic qualities in experiences, broad interests, an affinity for complexity, abundant energy, autonomous judgment, intuition, confidence, the capability to reconcile contradictions, or adapt to seemingly contradictory facets of self-concept, and a robust self-awareness of creativity (Barron & Harrington, 1981). Among these traits, learners' autonomous motivation holds particular significance (Woodman et al., 1993).

In the early stages of creativity research, Guilford (1950) postulated that creative production results from the interplay between creative ability and motivational attributes. In creative endeavors, a heightened intrinsic motivation plays a crucial role in initiating and sustaining creativity (Steele et al., 2017). As an illustration, in a survey examining the use of the social media app Instagram by young individuals, Sheldon and Newman (2019) discovered that individual creativity levels constitute a significant motivation for app usage. Young individuals aspire to exhibit their creativity through social media platforms. Bishara (2016) observed in a study focused on mathematics education that the degree of creativity displayed in solving mathematical problems closely correlates with motivation for autonomous learning. This phenomenon arises from the fact that, when confronted with challenges and difficulties, students' creative inclinations facilitate a more profound comprehension of course materials, foster memory retention, and amplify motivation for problem-solving and self-directed learning (Geary, 2013). Among these traits, "curiosity," a pivotal component of creativity, notably contributes to the stimulation of autonomous motivation (Silvia, 2012). Autonomous motivation effectively propels students to partake in ongoing learning endeavors aimed at goal attainment (Yoshida et al., 2008). Consequently, this study posits Hypothesis 2:

H2: The creativity of vocational college students significantly enhances their autonomous motivation.

2.3. The Mediating Effect of Autonomous Motivation

According to Amabile et al. (1994), motivation plays a pivotal role in creative endeavors. While an individual's skills and knowledge can be improved through training, the absence of adequate motivation may hinder the realization of creative outcomes. Niu and Liu (2009) found in their investigation of Chinese students that guided and heuristic methods of creativity training correspondingly elevated students' creative performance. Bhakti and Astuti (2018) discovered that elevated levels of students' learning motivation corresponded to higher performance in creative learning. This phenomenon arises from the fact that, within the context of a creative activity, intrinsic motivation wields significant influence in propelling an individual toward goal achievement (Amabile et al., 1996). In a mind-mapping training activity, Wang et al. (2010) ascertained that the utilization of both text and non-textual symbols in drawing can serve as a stimulus for students' learning motivation and can trigger their abstract thinking processes, consequently augmenting their creative performance.

In cases where a performance-oriented student exhibits high motivation without intrinsic interest, there is a greater propensity for them to adopt a "surface-level" approach to learning (Wilson, 2009). Dörnyei and Skehan (2003) delineate motivation as encompassing three aspects: 1) the rationale behind one's actions, 2) the duration of engagement, and 3) the magnitude of effort expended in pursuit of a goal. Carpenter (2016) reported that students who value creativity and have confidence in their creative abilities demonstrate superior creative performance in diverse engineering design scenarios. This is attributable to the fact that individuals with higher creativity exhibit heightened autonomous motivation for creativity, resulting in superior creative outcomes. In a study involving students of varying ages in drawing classes, Rostan (2010) observed that older students demonstrate a heightened level of creativity and manifest superior creative performance when both knowledge and autonomous motivation exert a combined influence. Individuals characterized by autonomous motivation may exhibit an inclination toward acquiring novel methodologies and fresh knowledge (Runco, 2005). They also display a greater enthusiasm for embracing innovative modes of thinking and behavior (Rostan, 2010). It is only a motivated individual who will actively seek to acquire the necessary skills and invest the effort required for persistent problem-solving (Chand & Runco, 1993). Consequently, this study posits Research Hypotheses 3 and 4:

H3: The autonomous motivation of vocational college students significantly enhances their creative performance.

H4: The autonomous motivation of vocational college students has a mediating effect between creativity and creative performance.

3. Method

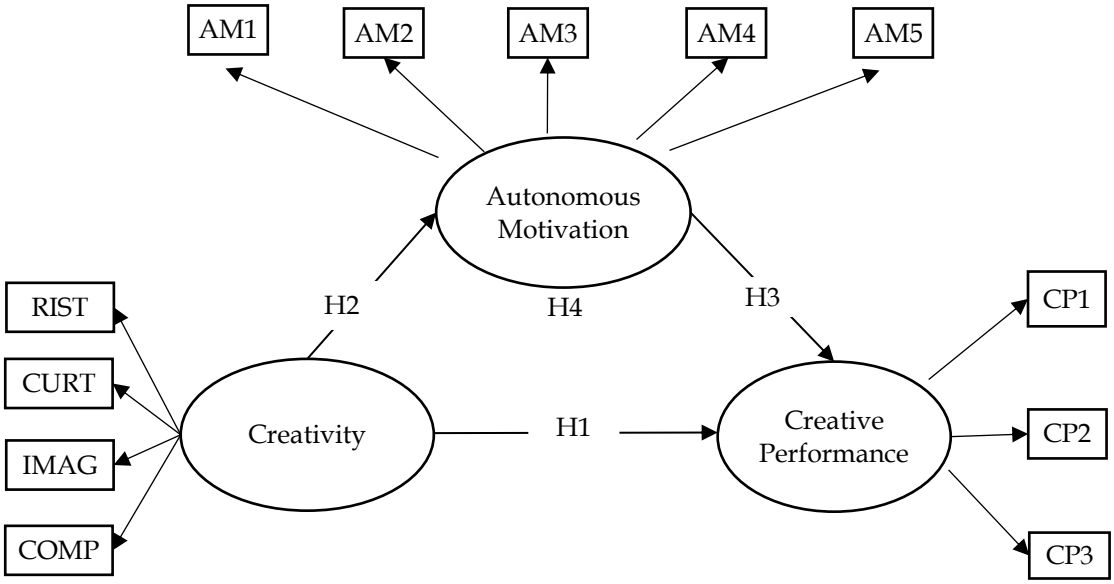
3.1. Study Model

From the collation of literature above, and with the theory of interactionist model of creativity as the theoretical foundation, this study investigated the effect of students in Higher Vocational Education’s creativity on their creative performance, with the autonomous motivation as the mediating variables. The research model is illustrated in Figure 1.

3.2. Sample and Data Collection

In this study, convenience sampling was employed at five vocational colleges in China. To aid the distribution and collection of survey questionnaires, five representative vocational colleges situated in four provinces of China were selected. These colleges enroll students from various regions across the country.

Figure 1
Hypothetical Model



Note. RIST: Williams Creativity Scale - Risk-taking subscale total score; CURT: Williams Creativity Scale- Curiosity subscale total score; IMAG: Williams Creativity Scale- Imagination subscale total score; COMP: Williams Creativity Scale- Complexity subscale total score; AM1-5: Five parcels from the Autonomous Motivation Scale items; CP1-3: Three parcels from the Creative Performance Scale items.

One representative vocational college was selected from each province, with two being selected from Shandong Province. This study plans to distribute surveys to 100 students at each school involved, the counselors distributed the questionnaires to the students, with 417 students willing to participate, yielding a total of 392 valid responses, which corresponds to a completion rate of 94%. Among the 392 student participants, 232 (59.2%) identified as male and 160 (40.8%) as female. The distribution among academic years comprised: first-year 94 students (24%), second-year 196 students (50.0%), and third-year 102 students (26.0%).

3.3. Research Instruments

This study adopted the Williams Creativity Scale, the Creative Performance Scale, and the Autonomous Motivation Scale. Analyses were conducted on these data. Reliability analysis and confirmatory factor analysis (CFA) were used to test the reliability, convergent validity, and goodness-of-fit of various scales. Hair et al. (2009) pointed out that the goodness-of-fit test of the overall model includes three aspects in its index evaluation, namely, measures of absolute fit, which are χ^2/df, GFI≥ .90, AGFI ≥.90, SRMR≤ .05, RMSEA< .08; incremental fit measures which are CFI≥ .90, IFI ≥ .90, NFI ≥ .90; and parsimonious fit measures which are PNFI ≥ .50, PGFI ≥ .50.

3.3.1. Creativity

In this study, creativity is operationally defined as "Creativity is a trait that manifests as risk-taking, curiosity, imagination, and a complexity for challenges during the process of problem-solving (Amabile, 1997; Robinson & Aronica, 2016; Williams, 1993). The measurement of creativity in this study intends to use the Williams Creativity Scale (Williams, 1993). The scale includes four dimensions: risk-taking, curiosity, imagination, and complexity, comprising 50 items. Based on expert recommendations, 8 reverse items were removed from the 50, resulting in a total of 42 items. The measurement adopts a three-point scale, with the total score indicating higher levels of student creativity. A total score above 109 indicates significant creativity, 87-109 indicates good creativity, and below 87 suggests average creativity.

Regarding the reliability of creativity, the Cronbach's alpha for the four dimensions are .882, .926, .940, .925, all greater than .700, exceeding the recommended standard. Subsequently,

CFA was used to test autonomous motivation, with factor loadings for each dimension and item ranging from .700 to .936. The CR values for the risk-taking, curiosity, imagination, and complexity dimensions are .869, .926, .943, .934, respectively, all exceeding the evaluation standard of 0.60. The CR values for the adventurousness, curiosity, imagination, and challenge dimensions are .869, .926, .943, .934, respectively, all exceeding the evaluation standard of 0.60. The CR values for the adventurousness, curiosity, imagination, and challenge dimensions are .869, .926, .943, .934, respectively, all exceeding the evaluation standard of 0.60. $\chi^2 = 2690.529$, $\chi^2/df = 3.309$, RMSEA=.077. Parsimonious fit measures: PNFI=.755, PGFI=.647. These results indicate that the creativity scale's indicators possess composite reliability and convergent validity, meeting the fit standards.

3.3.2. Creative performance

In this study, team creative performance is operationally defined as "students' perception of the practicality, novelty, and originality in their learning." This study utilizes the Creative Performance Scale developed by Madjar et al. (2002), widely applied for measuring creative performance in school environments (Huang et al., 2019; Zheng & Ahmed, 2022), with good reliability and validity. The scale consists of 3 items (e.g., "I think my performance in learning is very creative," "I often find myself being very novel in my learning").The measurement uses a five-point Likert scale, and the average is taken to form a rated index of creative performance.

Regarding the reliability of creative performance, Cronbach's alpha is .960, greater than .700, exceeding the recommended standard. When establishing a confirmatory factor analysis model for the Creative Performance Scale, since this model is a saturated model, meaning all parameters to be estimated equal the elements in the covariance matrix, with degrees of freedom being zero, its fit indices are not estimated (Prudon, 2013), focusing only on its path coefficients (Wu, 2010). The factor loadings for each item range from .934 to .956. The CR value of the latent variable is 0.977, exceeding the evaluation standard of 0.60. The AVE index is .889, surpassing the evaluation standard of .40.

3.3.3. Autonomous motivation

In this study, autonomous motivation is operationally defined as "a type of intrinsic motivation where individuals act according to their own will" (Ryan & Deci, 2000; Vansteenkiste & Sheldon, 2006).This study employs the autonomous motivation dimension scale from the "Personal Responsibility Oriented Self-Directed Learning Scale" developed by Stockdale and Brockett (2011), which has been validated by numerous scholars and possesses good reliability and validity.The Autonomous Motivation Scale consists of 7 items. Based on expert advice, 2 reverse items were removed from the 7, resulting in a total of 5 items (e.g., "I complete most activities in college because I want to, not because I have to," "Most of the work I do for my studies is what I personally like and is also my goal during my university years").The measurement uses a five-point Likert scale, calculated by the average score. The higher the score, the stronger the autonomous motivation.

Regarding the reliability of autonomous motivation, Cronbach's alpha is .921, greater than .700, exceeding the recommended standard. Subsequently, CFA was used to test autonomous motivation, with factor loadings for each item ranging from .700 to .936.The CR value for the latent variable is 0.945, exceeding the evaluation standard of 0.60. The AVE index is .725, surpassing the evaluation standard of .40. $\chi^2 = 5.109$, $\chi^2/df = 1.022$, RMSEA=.007, GFI=.995, AGFI=.985, SRMR=.007. Incremental fit indices: CFI=.998, IFI=.998, NFI=.999.These results indicate that the Autonomous Motivation Scale's indicators possess composite reliability and convergent validity, meeting the fit standards.

4. Results

4.1. Descriptive Results

Creativity is calculated by the total score, with an average total score of 107 and a standard deviation (SD) of 15.889, indicating a good level of creativity among vocational college students. The mean (M) value for creative performance is 3.87, with an SD of .576. The mean (M) value for autonomous motivation is 3.56, with an SD of .604. This indicates that, in this sample, the creativity, creative performance, and autonomous motivation of vocational college students are all above average.

4.2. Structural Equation Model

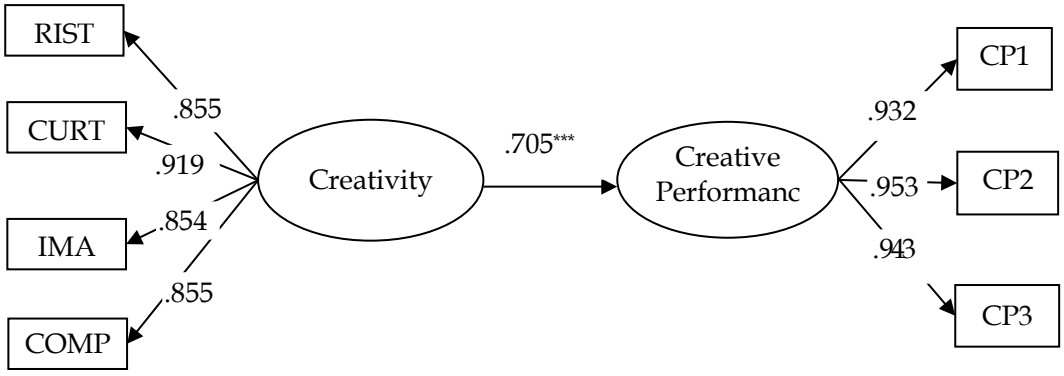
This study employs structural equation modeling analysis to test the overall model of creativity, creative performance, and autonomous motivation. Initially, a main effect model test of creativity on creative performance is conducted to determine the presence of a direct effect. Subsequently, autonomous motivation is added between creativity and creative performance to examine its mediating effect between the two.

4.2.1. Testing of main effect

First, a direct effect test of students' creativity on creative performance is conducted. An initial model fit test shows that "absolute fit": $\chi^2/df = 2.497$, which is less than the χ^2/df <5 standard. GFI = .996, meeting the standard of greater than 0.9 (Doll et al., 1994), SRMR = .022, meeting the standard of less than .05 (Hu & Bentler, 1999); "incremental fit": CFI = .993, IFI = .993, NFI = .988, all exceeding the .900 standard (Hair et al., 2009); "Parsimonious fit": PNFI and PCFI are .612 and .615, respectively, both exceeding the .500 standard (Ullman, 2001). When the model meets more than one criterion, it indicates a good degree of fit (Breckler, 1990). The results indicate that the model of students' creativity on creative performance has good fit, allowing for direct effect model analysis.

Regarding the direct effect of the overall model, it can be seen from Figure 2 that students' creativity has a significant positive impact on creative performance, with a path coefficient of .705 (p <.001), indicating that students' creativity contributes to the enhancement of their creative performance. Hence, Hypothesis 1 is supported.

Figure 2
Structural Model of Main Effect of Creativity on Creative Performance



Note. ***p <.001.RIST: Williams Creativity Scale - Risk-taking subscale total score; CURT: Williams Creativity Scale - Curiosity subscale total score; IMAG: Williams Creativity Scale - Imagination subscale total score; COMP: Williams Creativity Scale - Complexity subscale total score; CP1-3: Three parcels from the Creative Performance Scale items.

4.2.2. Testing of mediating effects

Subsequently, a test of the overall model of students' creativity, creative performance, and autonomous motivation is conducted. First, a test of model fit is conducted, with results showing "absolute fit": χ^2/df =2.119, which is less than the standard of χ^2/df <5. GFI = .956, meeting the

standard of greater than 0.9 (Doll et al., 1994), SRMR = .045, meeting the standard of less than .05 (Hu & Bentler, 1999); "incremental fit": CFI = .988, IFI = .988, NFI = .978, all exceeding the .900 standard (Hair et al., 2009); "parsimonious fit": PNFI, PGFI, PCFI are .756, .625, and .764, respectively, each exceeding the .500 standard (Ullman, 2001). When the model meets more than one criterion, it indicates a good degree of fit (Breckler, 1990). The results show that the overall model of students' creativity, creative performance, and autonomous motivation has good fit, allowing for direct effect model analysis.

Regarding the direct effects of the overall model, Table 1 and Figure 3 reveal that students' creativity has a significant positive impact on autonomous motivation, with a path coefficient of .769, reaching a significant level; autonomous motivation has a significant positive impact on creative performance, with a path coefficient of .669, reaching a significant level; and students' creativity has a significant positive impact on creative performance, with a path coefficient of .192, reaching a significant level. Hence, research hypotheses H2 and H3 are supported.

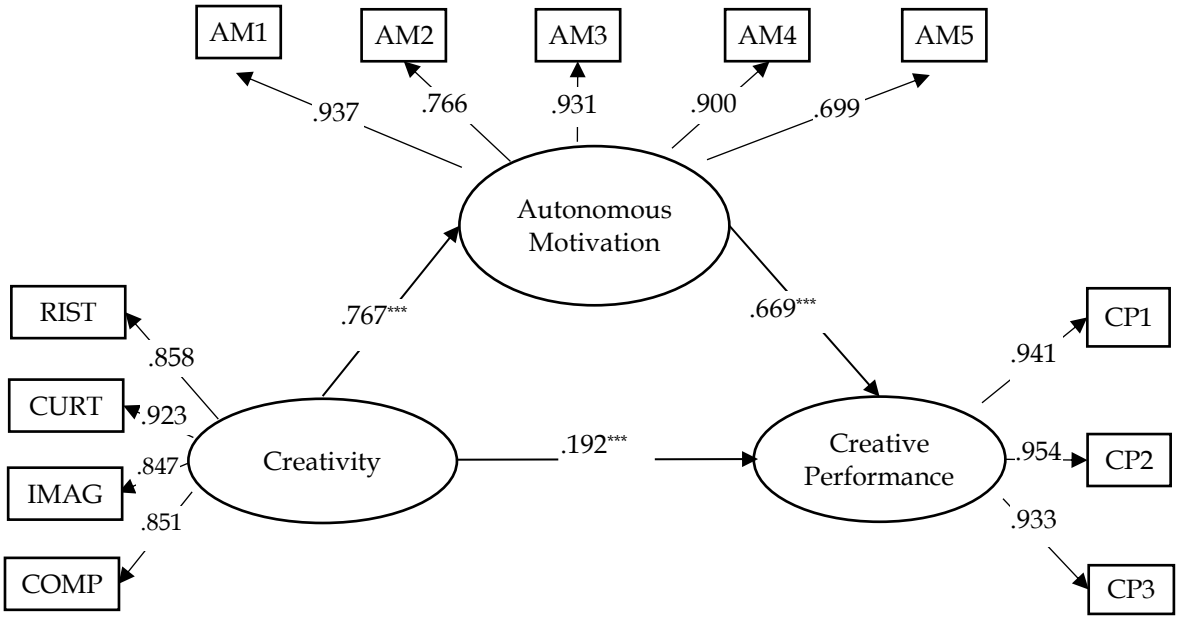
To further test the multiple mediation model, this study employed the proposed Bootstrap method. This is a method of using resampling procedures to obtain median effects and 95% confidence intervals. If the 95% confidence interval of the mediation effect obtained through resampling does not include 0, then the mediation effect is statistically significant (p <.05) (Shrout & Bolger, 2002).

The indirect impact of autonomous motivation between students' creativity and creative performance is .514 (.769*.669), with a confidence interval [.386, .644] not including 0, indicating the effect is statistically significant (p <.05), suggesting autonomous motivation plays a mediating role.

The direct effect of students' creativity on creative performance is .192, with a confidence interval [.062, .330] not including 0, and the total effect is .761, with a confidence interval [.642, .761] not including 0, indicating the effect is statistically significant. Autonomous motivation has a partial mediating role between students' creativity and creative performance (Table 1 and Figure 3), thus supporting research hypothesis H4.

Figure 3

Structural Model of Creativity, Autonomous Motivation, and Creative Performance



Note. ***p <.001. RIST: Williams Creativity Scale - Risk-taking subscale total score; CURT: Williams Creativity Scale - Curiosity subscale total score; IMAG: Williams Creativity Scale - Imagination subscale total score; COMP: Williams Creativity Scale - Complexity subscale total score; AM1-5: Five parcels from the Autonomous Motivation Scale items; CP1-3: Three parcels from the Creative Performance Scale items.

Table 1
Bootstrap SEM analysis of total, direct, and indirect effects

Effect	*Estimate*	*p*	*Confidence Interval*
Direct effect			
Creativity→Autonomous Motivation	.767	<.001	[.709, .816]
Autonomous Motivation→Creative Performance	.669	<.01	[.503, .812]
Creativity→Creative Performance	.192	<.001	[.062, .330]
Indirect effect			
Creativity→Autonomous Motivation→Creative Performance	.513	<.001	[.386, .644]
Total effect			
Creativity→Creative Performance	.705	<.001	[.642, .761]

Note. Bootstrap was conducted on a sample of 5000 observations.

5. Discussion

This study, based on the interactionist model of creativity, with autonomous motivation as a mediating variable, examines the impact of creativity of Chinese vocational college students on their creative performance. The findings indicate that in the school environment, students' creativity enhances their creative performance, while their creativity also stimulates their autonomous motivation in learning and life, leading to higher creative performance. Thus, it can be seen that autonomous motivation has a partial mediating effect between students' creativity and creative performance.

This study, which is grounded in the interactionist model of creativity and considers autonomous motivation as a mediating variable, investigates the impact of creativity among Chinese vocational college students on their creative performance. The findings reveal that in the school environment, students' creativity not only enhances their creative performance but also stimulates their autonomous motivation in learning and life, culminating in higher creative performance. Consequently, it is evident that autonomous motivation exerts a partial mediating effect between students' creativity and creative performance.

Initially, the study determines that students' creativity has a significant positive impact on their creative performance, aligning with the findings of Bharadwaj and Menon (2000) and Litchfield et al. (2015). This suggests that students with enhanced creativity traits are likely to perceive themselves as having improved creative performance in learning. When confronted with learning challenges, students' creativity traits, such as curiosity, bolster their creative productivity (Hardy et al., 2017), while a rich imagination serves as an incubator for creative performance (Liang & Lin, 2015). Consequently, during the process of creatively solving problems, they demonstrate superior creative performance (Hardy et al., 2017).

Furthermore, the study reveals that students' creativity significantly influences autonomous motivation, mirroring the findings of Bishara (2016). This implies that students' creativity traits play a pivotal role in enhancing their autonomous motivation, as individuals motivated intrinsically engage in activities or tasks primarily due to interest, curiosity, desire, pleasure, satisfaction, and the challenge of the activity itself (Amabile & Pillemer, 2012). Students' curiosity and imagination foster an intrinsic interest in learning and problem-solving (Silvia, 2012), while a strong sense of adventure and exploratory spirit compels students to persist in learning to achieve their goals (Yoshida et al., 2008).

Additionally, the study ascertains that autonomous motivation exerts a considerable positive impact on creative performance, aligning with the findings of Bhakti and Astuti (2018), Prabhu et al. (2008), and Wang et al. (2010). This demonstrates that students' autonomous motivation can amplify their creative performance, as intrinsic motivation elicits pleasure and enjoyment in learning, thus inspiring students to zealously engage in innovative tasks (Amabile et al., 1996). Furthermore, creative performance requires a high level of energy, attention, and willpower, suggesting that elevated autonomous motivation encourages students to consistently exert effort (da Costa et al., 2015), resulting in enhanced creative performance.

Lastly, the study establishes that autonomous motivation partially intermediates the relationship between students' creativity and creative performance, in line with the findings of Rostan (2010). This implies that students' creativity may indirectly influence individual creative performance via autonomous motivation. Individuals possessing higher creativity traits exhibit strong motivation to explore sources of novelty in the early stages of creatively solving problems, resulting in a proliferation of creative ideas (Hardy et al., 2017). Once creative ideas materialize, students' adventurousness and exploratory spirit further fortify their autonomous motivation, activating the "persistence" aspect of autonomous motivation.

6. Conclusion

The mediating model constructed in this study was acceptable, and it supported the value of interactionist model of creativity (Woodman et al., 1993). Its conclusions are as follows: (a) The creativity of vocational college students has a positive effect on creative performance; (b) The creativity of vocational college students has a positive effect on autonomous motivation; (c) The autonomous motivation of vocational college students has a positive effect on creative performance; (d) The autonomous motivation of vocational college students has a mediating effect between creativity and creative performance.

The research results also explain why creativity can enhance students' creative performance through autonomous motivation. When Chinese vocational college students possess higher creativity traits, they exhibit better creative performance. Autonomous motivation, as an intrinsic motivator, can activate creativity traits, endowing students with stronger practical and learning drive to achieve superior creative performance, thereby enhancing their professional creativity.

7. Limitations and Future Implications

Because of location and time constraints, this study only included five representative vocational colleges located in four provinces of China, and therefore, the sample range of this study was relatively small. Future researchers should increase the sample size to increase the generalizability of our findings. Moreover, this study only used quantitative methods to investigate Chinese higher vocational students. Alternatively, follow-up research may integrate interviews to further supplement the research data. In addition, further relevant variables can be added for further discussion to improve the research results.

This study offers valuable insights for higher vocational colleges to foster college students' creativity. The research findings reveal that autonomous motivation plays a critical indirect role in the process of creative activities. Consequently, higher vocational colleges can employ "school-enterprise" scenarios to strategically enhance students' autonomous motivation. Deliberately organize students to participate in enterprise practice activities, motivate them to adopt a "creation-based" learning model, and provide "problem-oriented" innovative practice courses. These courses should incorporate real-world technical problems from enterprises, engaging students in innovative design and physical model creation. This immersion in the creation-based learning process stimulates their innovative energy, fosters identification with creative roles, continually inspires innovative autonomous motivation, and thus culminates in a virtuous cycle.

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