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The Impact of Learning Burnout on Adolescents' Creative Tendency: A Moderated Mediation Model

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Abstract

A survey was conducted among 2226 adolescents (Learning burnout: $M = 2.517$, $SD = 0.718$; Creative tendency: $M = 3.544$, $SD = 0.441$; Learning motivation: $M = 3.854$, $SD = 0.777$) using the Middle School Student Learning Burnout Questionnaire, the Williams Creative Tendency Test, and the Student Learning Motivation Questionnaire. The results revealed that: Firstly, learning burnout was significantly negatively correlated with creative tendency. Secondly, learning motivation was significantly positively correlated with creative tendency. Thirdly, learning burnout was significantly negatively correlated with learning motivation. Fourthly, learning motivation fully mediated the relationship between learning burnout and creative tendency. Fifthly, school type moderated the first half of the mediation path (i.e., the relationship between learning burnout and learning motivation). Compared to county-level schools, provincial/municipal-level schools were more susceptible to the negative impact of learning burnout on learning motivation. Furthermore, as learning burnout increased, students in township schools consistently exhibited the lowest level of learning motivation among the three school types, and the mediating effect had the strongest impact on this group.

Keywords: Learning burnout, Learning motivation, Creative tendency, Adolescents

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1. Introduction

Adolescent creative tendency refers to an individual's positive psychological inclination toward creative activities and constitutes a crucial component of creativity (Shen et al., 2005). Against the backdrop of the "Double Reduction" policy, alleviating student burden and promoting holistic student development have emerged as key objectives. Fostering student creativity is not only a consensus in international talent development but also a pivotal goal within the development of basic education in China. Since the 21st century,

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core competency frameworks established by organizations and countries such as the Organization for Economic Co-operation and Development (OECD), the European Union, the United States, and Japan have consistently emphasized creativity and innovative ability as vital aspects of talent cultivation (Shi et al., 2017). China has identified it as one of the six core competencies in the Chinese Student Development Core Competencies Framework. Furthermore, the National Education Development 13th Five-Year Plan emphasized that fostering an entrepreneurial spirit and innovative ability should start from primary and secondary schools, focusing on stimulating students' learning interest, scientific curiosity, and innovation awareness. Therefore, directing attention toward the development of students' creative thinking and personality is a critical focus in advancing quality-oriented education.

Concurrently, creativity is susceptible to influences from individual emotions, motivations, and the environment (Li, 2020). For most students, parents often lack the time or capacity to provide substantial guidance throughout their learning process. Coupled with the progressively increasing difficulty of academic tasks, this situation can easily lead students to experience feelings of frustration and helplessness in their studies (Wang, 2018). Prolonged exposure to heavy academic pressure can predispose students to develop a sense of burnout, thereby diminishing their learning motivation and even fostering an aversion to learning, which is detrimental to student development (Jiang and Shao, 2019). This suggests that adolescent creative tendency may be adversely affected by learning burnout. Consequently, investigating the relationships between learning burnout, learning motivation, and creative tendency constitutes the primary focus of this study.

2. Literature Review

2.1. The Relationship between Learning Burnout and Creative Tendency

Learning burnout refers to a phenomenon where students, due to chronic academic pressure and excessive workload, experience emotional and physical exhaustion, develop a sense of detachment and disengaged behavior towards teachers, peers, and the learning environment, and suffer from low personal accomplishment (Xue, 2008). It is a significant factor influencing students' creative tendency. Research has indicated that negative emotions can impede creative activities; when individuals experience negative emotions, they tend to utilize more psychological resources for problem-solving, making high levels of creative performance difficult to achieve (Nathanson, 1996). Furthermore, teacher-student relationships and peer relationships also impact the development of student creativity. Positive relationships are conducive to fostering individual creativity, whereas negative relationships can hinder it (Hu, 2010; Dudek et al., 1993). Some studies have also pointed out that state anxiety can adversely affect student creativity, with students exhibiting high state anxiety demonstrating significantly lower creativity compared to those with low state anxiety (Lu et al., 2005). However, concurrent research also suggests that negative emotions and ego depletion might, under certain circumstances, promote creative development (Bartolic et al., 1999; Zhang, 2020).

2.2. The Relationship between Learning Motivation and Creative Tendency

Learning motivation is an internal psychological state that arouses and sustains an individual's learning activities, directs these activities towards specific learning goals, and fulfills certain learning needs (Zhang, 2005). Its primary components include the value of knowledge, learning interest, academic self-efficacy, and attribution of success and failure. Among these, learning interest has a significantly positive impact on children's creative thinking; that is, children tend to actively explore subjects they are interested in, which increases their curiosity and thereby promotes the development of creative thinking (Chen and Qiao, 2020). Academic self-efficacy, synonymous with self-efficacy, has been shown through research to shape an individual's creativity, their inclination to engage in creative performance, and their effort to achieve creative challenges (Karwowski and Kaufman, 2017). Although different types of motivation influence creativity through distinct mechanisms, they generally contribute to its development and are considered important factors affecting creative growth (Lin and Hu, 2012).

2.3. The Relationship between Learning Burnout and Learning Motivation

Both learning burnout and learning motivation are significant factors influencing students' physical and mental development during the learning process. The onset of burnout can lead to difficulties in concentration,

low self-efficacy, reduced learning efficiency, and a loss of motivation. Relevant studies indicate a correlation between learning burnout and learning motivation. For instance, Ariani (2017), investigating the relationships among personality, motivation, and academic achievement in 365 business students, found that all variables – self-efficacy, intrinsic motivation, extrinsic motivation, overall motivation, learning engagement, and learning burnout – were intercorrelated. Mahnaz et al. (2020) identified achievement motivation as one of the most influential factors affecting learning burnout. Shang (2021) further highlighted that achievement motivation negatively predicts learning burnout. Learning motivation can directly influence learning burnout and can also indirectly affect it by serving as either a mediating or moderating variable (Xiang et al., 2022; Zhou, 2015; Li et al., 2019).

In research examining the relationship between learning burnout and creative tendency, learning motivation is a crucial individual variable. However, studies specifically exploring the relationships between learning burnout, learning motivation, and creative tendency are currently lacking. Existing research has suggested that learning motivation plays a partial mediating role in the influence of self-efficacy on autonomous learning. This indicates that positive psychological phenomena can not only directly foster individual development but also promote the growth of autonomous learning by enhancing learning motivation (Wang, 2014). By extension, it can be inferred that negative psychological phenomena may directly hinder individual development and/or exert a negative impact by diminishing learning motivation.

2.4. The Moderating Role of School Type

Various factors influence student development, which is shaped not only by school education but also by the individual's living and learning environment. Therefore, when examining the impact of learning burnout on student creativity, it is essential to consider how this relationship manifests across different contexts and populations. Due to influences such as information access, resources, peer groups, family background, and geographic location associated with different types of schools, students' behavioral and psychological responses to learning burnout vary. Some students with high levels of learning burnout may possess effective coping strategies, thereby mitigating its negative effects; others with relatively low burnout levels might experience significant psychological distress due to lower psychological resilience. These differential responses to burnout can further influence students' learning motivation. Consequently, a student's learning motivation is associated not only with burnout itself but also with the type of school they attend (Gao, 2017). Existing research has identified significant differences in learning burnout and learning motivation across school types (Zheng, 2010; Wang et al., 2019; Zhao and Yuan, 2021). Thus, investigating whether school type moderates the relationship between learning burnout and learning motivation can enhance our understanding of the developmental trajectories of learning motivation among students with varying burnout levels in different school contexts. This understanding can thereby inform targeted interventions to reduce student burnout and promote positive development.

In summary, grounded in cognitive resource theory and the person-environment perspective, this study integrates learning burnout, learning motivation, creative tendency, and the moderating role of school type to construct a moderated mediation model. This model is designed to examine the relationships between learning burnout, learning motivation, school type, and creative tendency. Specifically, the study aims to investigate the mediating (via learning motivation) and moderating (via school type) mechanisms through which learning burnout predicts the development of adolescents' creative tendency. The goal is to further clarify the relationship between learning burnout and creative tendency, with the practical objective of mitigating student burnout and providing theoretical guidance for fostering creative tendency in adolescents. Based on the aforementioned literature, the following research hypotheses are proposed:

Hypothesis H₁: Learning burnout will be significantly negatively correlated with creative tendency.

Hypothesis H₂: Learning motivation will be significantly positively correlated with creative tendency.

Hypothesis H₃: Learning burnout will be significantly negatively correlated with learning motivation.

Hypothesis H₄: Learning motivation will mediate the relationship between learning burnout and creative tendency.

Hypothesis H₅: School type will moderate the relationship between learning burnout and learning motivation.

3. Method

3.1. Participants and Procedures

Utilizing a combination of convenience sampling and cluster sampling, 2534 students from 12 primary and secondary schools were selected as participants. A total of 2534 questionnaires were distributed and collected. Among these, 2226 were valid, yielding a valid response rate of 87.8%. The sample consisted of 471 primary school students (21.2%), 770 junior high school students (34.6%), and 985 senior high school students (44.2%). In terms of gender distribution, there were 1155 males (51.9%) and 1067 females (47.9%), with data from 4 individuals missing (0.2%). Regarding household registration status, 1041 students had rural registration (46.8%) and 1177 had urban registration (52.9%), with 8 cases missing (0.4%). Based on school location, the sample included 353 students from township schools (15.9%), 778 from county-level schools (35.0%), and 1095 from provincial/municipal-level schools (49.2%).

3.2. Measures

3.2.1. The Middle School Student Learning Burnout Questionnaire

The Middle School Student Learning Burnout Questionnaire was developed by Xue (2008). It employs a 5-point Likert scale, where 1 to 5 represents "Strongly Disagree" to "Strongly Agree." This questionnaire comprises three dimensions: inefficacy, exhaustion, and alienation, with a total of 20 items. Items 1, 2, 3, 5, 7, 8, 9, 10, and 13 are reverse-scored. A higher total score indicates a stronger sense of learning burnout. In this study, the Cronbach's α coefficient for this questionnaire was 0.898.

3.2.2. The Williams Creative Tendency Test

This scale was developed by Williams and adapted by Lin and Wang (1987). It includes four subscales: risk-taking, curiosity, imagination, and challenge, totaling 50 items. The original questionnaire used a 3-point rating scale ("Does not describe me at all" to "Describes me very well"). However, preliminary analysis of the pilot survey data revealed a lack of discriminative power in the responses. Consequently, based on expert consultation, the rating scale was modified to a 5-point scale: 5 for "Strongly Agree," 4 for "Agree," 3 for "Uncertain," 2 for "Disagree," and 1 for "Strongly Disagree." Items 4, 9, 12, 17, 29, 35, 45, and 48 are reverse-scored. Higher total scores indicate a stronger creative tendency. In this study, the Cronbach's α coefficient for this scale was 0.856.

3.2.3. The Student Learning Motivation Questionnaire

This questionnaire was adapted from the learning motivation dimension of the 2012 Programme for International Student Assessment (PISA) student questionnaire. The Chinese version of this scale is the one presented in the report by the Shanghai PISA 2012 Project Team (2016). It consists of 8 items covering two dimensions: intrinsic motivation and extrinsic motivation. A 5-point Likert scale is used, where 1 to 5 represents "Strongly Disagree" to "Strongly Agree." In this study, the Cronbach's α coefficient for this questionnaire was 0.870.

4. Research Results

4.1. Control and Test of Common Method Bias

As this study utilized a questionnaire survey method, which is susceptible to common method bias, Harman's single-factor test was employed for assessment. An unrotated exploratory factor analysis was conducted on all measurement items. The results indicated the presence of 18 factors with eigenvalues greater than 1. The first factor accounted for 15.65% of the variance, which is well below the critical threshold of 40% (Podsakoff et al., 2003). This suggests that common method bias was not a significant concern in this study.

4.2. Descriptive Statistics and Correlation Analysis of Student Learning Burnout, Learning Motivation, and Creative Tendency

As shown in Table 1, adolescent learning burnout demonstrated significant negative correlations with both creative tendency and learning motivation ($r = -0.192, -0.578, p < 0.01$). Learning motivation showed a significant positive correlation with creative tendency ($r = 0.347, p < 0.01$). Thus, Hypotheses $H_1, H_2,$ and H_3 were supported. These results indicate that higher levels of learning burnout are associated with weaker learning motivation and a corresponding decrease in creative tendency, which aligns with the initial expectations.

Table 1: Descriptive Statistics and Correlation Matrix of Major Variables (n = 2226)

	M	SD	1	2	3	4	5
Learning Burnout	2.517	0.718	1				
Creative Tendency	3.544	0.441	-0.192**	1			
Learning Motivation	3.854	0.777	-0.578**	0.347**	1		
County-level schools (a)	0.350	0.477	0.140**	-0.009	-0.051*	1	
Provincial/municipal-level schools (b)	0.492	0.500	-0.172**	0.067**	0.120**	-0.721**	1
Township schools (c)	0.159	0.365	0.053*	-0.080**	-0.097**	-0.318**	-0.427**

Note: County-level schools (a), provincial/municipal-level schools (b), and township schools (c) were dummy-coded (0 = not belonging to the type, 1 = belonging to the type). *p < 0.05, **p < 0.01.

4.3. The Impact of Learning Burnout on Creative Tendency: Testing the Moderated Mediation Model

With learning burnout as the independent variable (X), creative tendency as the dependent variable (Y), learning motivation as the mediator (M), and school type as the moderator (W), a moderated mediation analysis was conducted. All variables were standardized first. Model 7 from Hayes’s (2015) PROCESS macro (version 3.3) was employed, as it tests whether the first half of the mediation path (X → M) is moderated, which aligns with the proposed theoretical model. Bootstrap sampling was set to 5000 repetitions. The specific test results are presented in Table 2.

Table 2: Moderated Mediation Model Test Results

Outcome Variable	Predictor	R ²	F	β	SE	t	LLCI	ULCI
M	i ₁ Intercept	0.342	231.015***	0.026	0.030	0.867	-0.032	0.084
	a ₁ X			-0.497	0.029	-16.932***	-0.555	-0.440
	a ₂ W ¹			-0.010	0.039	-0.268	-0.086	0.066
	a ₃ W ²			-0.170	0.053	-3.225**	-0.273	-0.067
	a ₄ X×W ¹			-0.109	0.039	-2.786	-0.185	-0.032
	a ₅ X×W ²			-0.157	0.051	-3.103*	-0.256	-0.058
Y	i ₂ Intercept	0.120	152.025***	0.000	0.020	0.000	-0.039	0.039
	c' X			0.012	0.024	0.493	-0.036	0.060
	b M			0.354	0.024	14.508***	0.306	0.402

Note: All data were standardized. School type was treated as a dummy-coded variable, with county-level schools serving as the reference group. Provincial/municipal-level schools and township schools were compared against this reference group. X = Learning burnout, M = Learning motivation, Y = Creative tendency. W1: Provincial/Municipal-level school = 1, County-level school = 0, Township school = 0. W2: Township school = 1, Provincial/Municipal-level school = 0, County-level school = 0. *p < 0.05, **p < 0.01, ***p < 0.001.

As shown in Table 2, the direct predictive effect of learning burnout on creative tendency was not significant (c': β = 0.012, t = 0.493, p > 0.05). However, the negative predictive effect of learning burnout on learning motivation was significant (a1: β = -0.497, t = -16.932, p < 0.001), and the positive predictive effect of learning motivation on creative tendency was also significant (b: β = 0.354, t = 14.508, p < 0.001). Furthermore, the bootstrap 95% confidence interval for the direct effect of learning burnout on creative tendency included zero, whereas the interval for the indirect effect through learning motivation did not include zero. This indicates that learning burnout does not directly predict creative tendency but rather predicts it solely through the mediating role of learning motivation, representing a full mediation model. Thus, Hypothesis H4 is supported.

After incorporating school type into the model, the interaction terms between the dummy variables (W1, W2) and learning burnout were both significant negative predictors of learning motivation (W1: β = -0.109, t = -2.786, CI[-0.185, -0.032]; W2: β = -0.157, t = -3.103, CI[-0.256, -0.058]), thus supporting Hypothesis H₅. To further analyze the simple effects of school type on the relationship between learning burnout and learning motivation, dummy coding was applied with county-level schools as the reference group. The effect sizes of

learning burnout on learning motivation and their bootstrap 95% confidence intervals were calculated for each school type, with results presented in Table 3.

		Effect Size	Boot SE	LLCI	ULCI
Direct Effect		0.012	0.024	-0.036	0.060
Indirect Effect	County-level Schools	-0.176	0.019	-0.214	-0.141
	Provincial/Municipal-level Schools	-0.214	0.019	-0.253	-0.178
	Township Schools	-0.231	0.022	-0.275	-0.189
Effect Contrast	Provincial/Municipal - County	-0.038	0.016	-0.070	-0.007
	Township - County	-0.056	0.020	-0.096	-0.017
	Township - Provincial/Municipal	-0.017	0.017	-0.051	0.018

To elucidate the nature of the moderation, a simple slope analysis was conducted, and a schematic diagram of the interaction effect was plotted (Figure 1). The results indicated that for students in township schools, learning burnout had a significant negative predictive effect on learning motivation (simple slope = -0.497, $t = -16.932$, $p < 0.001$). Similarly, significant negative predictive effects were found for students in provincial/municipal-level schools (simple slope = -0.606, $t = -23.650$, $p < 0.001$) and township schools (simple slope = -0.654, $t = -15.879$, $p < 0.001$).

Overall, students in provincial/municipal-level schools exhibited higher levels of learning motivation across increasing levels of learning burnout compared to the other two school types. However, this trend intersected with that of county-level schools at a specific point, beyond which, as learning burnout increased, students in county-level schools surpassed those in provincial/municipal-level schools, ultimately demonstrating the highest learning motivation among the three types under conditions of high learning burnout. In contrast, students in township schools consistently showed the weakest learning motivation across the increasing spectrum of learning burnout.

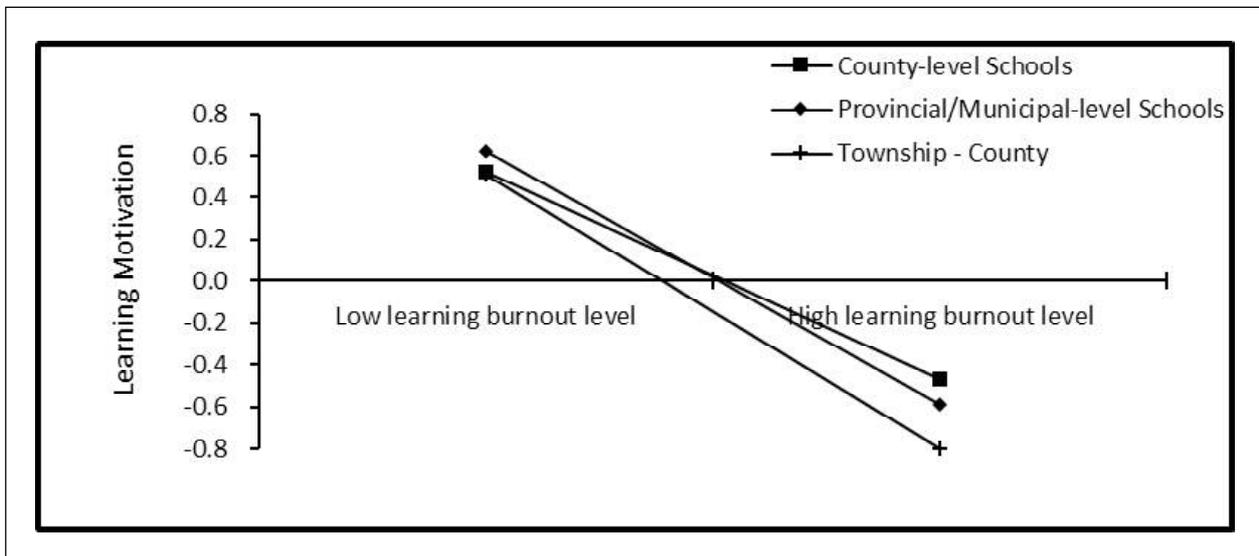


Figure 1: The Moderating Role of School Type in the Relationship between Learning Burnout and Learning Motivation

5. Discussion

5.1. The Relationship between Learning Burnout, Learning Motivation, and Creative Tendency

Firstly, the results of this study indicate a significant negative correlation between learning burnout and creative tendency. Furthermore, learning burnout significantly and negatively predicted creative tendency, supporting Hypothesis H₁. This confirms a close relationship between learning burnout and creative tendency.

A possible explanation lies in Cognitive Resource Theory. Learning burnout may lead students to develop a mindset of withdrawal and avoidance after prolonged disappointment or during experiences of confusion and exhaustion. The emergence of such negative emotions and psychological states can trigger defense mechanisms, diverting a portion of cognitive resources to counteract these negative effects. Consequently, fewer cognitive resources remain available for the individual to engage in creative activities. It can thus be inferred that higher levels of learning burnout consume more cognitive resources for coping with emotional and psychological issues, leaving fewer resources for developing creative activities, ultimately resulting in a lower creative tendency.

Secondly, the results confirmed a significant positive correlation between learning motivation and creative tendency, with learning motivation being a significant positive predictor of creative tendency, supporting Hypothesis H₂. This aligns with previous research (Hao and Tang, 2017). Creativity is more likely to occur when individuals discover areas of greatest interest and actively engage in fields they are passionate about, whether in learning or work. The Investment Theory of Creativity posits motivation as a key element of creativity, suggesting that intrinsic motivation more frequently fosters such behavior (Sternberg and Lubart, 1999). Individuals with high learning motivation exhibit greater enthusiasm and proactivity during learning. They are more inclined to show curiosity towards the unknown and to take risks and face challenges in areas of interest, thereby promoting the development of creative tendency. Although extrinsic motivation can sometimes undermine creative tendency, it can also positively influence creativity when combined with intrinsic motivation (Amabile, 1993).

Finally, a significant negative correlation was found between learning burnout and learning motivation in this study, with learning burnout significantly and negatively predicting learning motivation, thus supporting Hypothesis H₃. This is consistent with previous findings (Abaid et al., 2020). However, most prior studies primarily discussed learning motivation as a predictor of learning burnout (i.e., higher motivation leads to lower burnout). Building on this, our study investigated the reverse predictive relationship and found that learning burnout also significantly and negatively predicts learning motivation. This indicates that learning burnout is an important factor affecting learning motivation. Under prolonged academic pressure, students are prone to decreased self-efficacy, attributing setbacks and failures in learning to insufficient ability or excessive workload. This can lead to withdrawal, unwillingness to invest effort, emotional and physical exhaustion, detachment from teachers, peers, and the learning environment, a sense of meaninglessness towards learning, and ultimately, a decline in learning motivation (Guo and Zhou, 2008; Ling et al., 2014).

5.2. The Mediating Role of Learning Motivation between Learning Burnout and Creative Tendency

Learning burnout demonstrated a significant negative predictive effect on learning motivation, while learning motivation showed a significant positive predictive effect on creative tendency. This indicates a significant indirect effect. However, the direct effect of learning burnout on creative tendency was not significant. Therefore, learning motivation plays a full mediating role in the relationship between learning burnout and creative tendency, supporting Hypothesis H₄. This result reveals a crucial mechanism through which learning burnout affects creative tendency: the role of learning motivation. Essentially, learning burnout primarily influences the development of creative tendency by undermining learning motivation.

While pressure is a natural part of the learning process, ineffective management of this pressure can easily lead to burnout (Zhu and Wang, 2009). Once students experience learning burnout, they often develop low self-confidence and self-efficacy, attributing failures to a lack of innate ability. They lose interest in classes, become unwilling to communicate with teachers and peers, and withdraw, leading to a decline in learning motivation. From the humanistic perspective, the essence of creative realization lies in the self-actualizing tendency, a motivation that drives individuals to continually explore their potential to achieve self-fulfillment (Zhang, 2018). When learning motivation declines due to burnout, the development of creative tendency is consequently hindered.

As a multi-dimensional positive psychological inclination, the development of creative tendency is influenced by cognitive, motivational, personality, and environmental factors. When students are experiencing a negative outcome like learning burnout, enhancing their internal drive and reshaping their pursuits and

goals warrant consideration. Therefore, in educational practice, it is essential to focus on learning motivation as this internal driver and pay close attention to the development of students with high burnout and low motivation. On one hand, students should be encouraged to engage in activities they enjoy, given the freedom to choose their pursuits, and guided to identify problems that align with high intrinsic motivation, while receiving recognition and support for their capabilities. On the other hand, external constraints within the school environment, such as pressures from grades, task demands, and competition, should be reduced, allowing creativity to become part of student evaluation.

Furthermore, although the direct effect of learning burnout on creative tendency was not significant in the mediation model, its positive regression coefficient is noteworthy. In mediation analysis, when the total effect is small and the sample size is also small, the indirect effect might account for less than 70% of the total effect, and the direct effect may already be non-significant. Thus, the significance of the direct effect is related to sample size (Preacher and Hayes, 2008). This implies that with a larger sample size, the coefficient might remain positive and potentially become significant, suggesting that learning burnout could, under certain conditions, have a positive predictive effect on creative tendency. In school settings, creative activities and behaviors are sometimes observed among students experiencing learning burnout. Failing to gain a sense of accomplishment in academics, they may shift their focus to areas where they excel or have interest, such as drawing comics, writing novels, handicrafts, or sports, thereby fostering their creative tendency. This aligns with Abele's mood-repair theory, which posits that creativity has a mood-repair function. Negative emotions may create a need for creative acts to repair one's mood, whereas positive emotions do not. Thus, negative emotions could potentially enhance creativity (Abele, 1992). The inconsistent findings regarding the impact of emotion on creativity might stem from the complexity of this relationship, involving factors like the problem-solving context, the depth and breadth of information processing, and problem-solving strategies (Kaufmann and Vosburg, 1997).

Therefore, it can be concluded that individuals may respond differently to negative states. If an individual chooses active coping strategies and seeks out areas of interest, learning burnout might potentially exert a positive influence on creative tendency. Consequently, teachers should consistently pay attention to students' individual development in teaching activities, affirm their interests, create opportunities for successful experiences, guide students toward appropriate attributions, and help build self-efficacy, thereby promoting their holistic development.

5.3. The Moderating Role of School Type in the Mediation Path of Learning Burnout → Learning Motivation → Creative Tendency

Based on the person-environment interaction theory, this study constructed a moderated mediation model to examine the moderating role of school type in the relationships between learning burnout, learning motivation, and creative tendency. The results revealed that school type moderated the first half of the mediation path (i.e., the relationship between learning burnout and learning motivation), thus supporting Hypothesis H₃. At low levels of learning burnout, students in provincial/municipal-level schools exhibited higher learning motivation than those in county-level schools. However, at high levels of learning burnout, this pattern reversed, with county-level school students showing higher motivation. This suggests that, compared to county-level schools, learning burnout has a stronger negative impact on learning motivation for students in provincial/municipal-level schools.

The person-environment interaction theory posits that a child's biological factors interact with environmental factors to influence their psychosocial development. The diathesis-stress model suggests that children carrying certain risk or vulnerability factors are more susceptible to the negative effects of adverse environments, leading to maladjustment. Conversely, the differential-susceptibility model proposes that children with specific susceptibility traits are not only more vulnerable to negative environments but also more likely to benefit from positive environments, potentially thriving better (Monroe and Simons, 1991; Belsky and Pluess, 2009). Students in different school types experience varying environmental influences. Those in provincial/municipal-level schools may be consistently exposed to high-pressure and competitive environments, leading to greater sensitivity and perception of stress, thereby increasing their vulnerability to burnout. Furthermore, research indicates that adolescent depression symptoms can be higher in urban areas

compared to rural ones, potentially indicating weaker psychological adaptability, making these students more susceptible to environmental pressures, burnout, and consequently, hindered development of creative tendency (Yang et al., 2015; Wang et al., 2015). Therefore, in practical teaching, greater attention should be paid to learning burnout among students in provincial/municipal-level schools compared to the other two types.

In the educational process, teachers should firstly guide students to balance their academic and personal lives scientifically to alleviate burnout. Secondly, they should provide effective learning methods and strategies, create opportunities for successful experiences, and boost students' self-confidence. Thirdly, strengthening mental health education is crucial to enhance students' psychological adaptability. Finally, offering ample affirmation and praise, guiding students towards constructive attributions, and fostering an optimistic mindset are essential.

Simultaneously, this study found that learning burnout significantly and negatively predicted learning motivation for students in township schools, who exhibited the lowest motivation levels among the three school types. Additionally, as shown in Table 3, the mediating effect of learning motivation was strongest for this group. Therefore, prioritizing the development of learning motivation among township school students is imperative. The reasons for these findings may include generally lower economic conditions in rural areas, outdated family education concepts, limited parental capacity to support development, and a perception that education culminates at junior high school level. Parental absence due to migrant work can also lead to neglect of academic achievement. Furthermore, unequal distribution of educational resources and limited access to external information might contribute to weaker aspirations for higher education, resulting in lower learning motivation. According to the Ministry of Education's "2020 National Education Development Statistics," rural students constituted 60.81% of primary school and 61.27% of junior high school enrollments nationally. These students will form the backbone of China's future modernization. Thus, it is crucial to tailor approaches to local conditions, focusing on enhancing learning motivation in rural students. Educational practices should guide students to set appropriate goals, reduce feelings of helplessness, and boost intrinsic motivation. Optimizing the learning environment through school culture development and guiding parents and students to adopt correct views on education and learning is necessary to maintain student engagement. Finally, improving instructional design to increase students' interest and enthusiasm for learning is vital.

6. Research Conclusions and Prospects

This study investigated the relationship between learning burnout and creative tendency in adolescents, revealing the mediating role of learning motivation and the moderating role of school type. The findings deepen our understanding of the relationship between learning burnout and creative tendency, providing both theoretical and practical insights for parents and educational administrators in fostering adolescent creative development. However, certain limitations should be acknowledged. Firstly, the study examined learning burnout, learning motivation, and creative tendency as aggregate variables without considering the specific mechanisms through which different dimensions of these variables might interact. Future research could refine these variables to explore deeper relationships and pathway analyses. Secondly, the study relied solely on self-report measures. Future studies could incorporate multi-informant evaluations (e.g., from parents, teachers) and adopt a longitudinal design to yield richer findings.

In conclusion, this study yielded the following main findings:

- (1) Learning burnout showed a significant negative correlation with creative tendency.
- (2) Learning motivation showed a significant positive correlation with creative tendency.
- (3) Learning burnout showed a significant negative correlation with learning motivation.
- (4) Learning motivation fully mediated the relationship between learning burnout and creative tendency.
- (5) School type moderated the first half of the mediation path (i.e., the relationship between learning burnout and learning motivation). Compared to county-level schools, provincial/municipal-level schools were more susceptible to the negative impact of learning burnout. As learning burnout increased, students in township schools consistently exhibited the lowest level of learning motivation among the three school types, and the mediating effect had the strongest impact on this group.

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