

# Study on the Relationship Between Peer Support and Aesthetic Ability Among University Students in Hebei Province: The Mediating Role of Self-efficacy

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**Abstract:** This study is grounded in the holistic education framework of higher education and focuses on the social and psychological mechanisms underlying the development of university students' aesthetic ability. It aims to examine the relationships among peer support, self-efficacy, and aesthetic ability, as well as the pathways through which these variables interact. In current practice, aesthetic education in higher education institutions tends to emphasize curricular offerings and extracurricular activities, while insufficient attention has been paid to the roles of peer interaction and psychological factors in the formation of aesthetic ability. Consequently, the underlying mechanisms warrant further empirical investigation. Addressing this gap, the present study takes university students from higher education institutions in Hebei Province as its research sample and proposes three research objectives: to examine the overall levels and characteristics of peer support, self-efficacy, and aesthetic ability; to analyze the interrelationships among these three variables; and to test the mediating role of self-efficacy in the relationship between peer support and aesthetic ability. A quantitative research design was adopted, employing questionnaire surveys and statistical analyses. Stratified random sampling was used to select undergraduate students from different types of universities across Hebei Province. The research instruments included contextually adapted scales measuring peer support, self-efficacy, and aesthetic ability. Specifically, aesthetic ability was conceptualized in terms of aesthetic perception, aesthetic appreciation, and aesthetic creativity, while peer support was operationalized through four dimensions: emotional support, behavioral modeling, informational support and advice, and companionship and supervision. Following data collection, descriptive statistics, correlation analysis, regression analysis, and Bootstrap mediation tests were conducted. The results indicate that university students in Hebei Province demonstrate moderately high levels of peer support, self-efficacy, and aesthetic ability. Significant positive correlations were found among all three variables, and self-efficacy was shown to play a significant partial mediating role in the relationship between peer support and aesthetic ability. These findings reveal the internal psychological pathways through which peer support influences aesthetic ability and provide empirical evidence for optimizing peer support environments and enhancing aesthetic education practices in higher education. Future research may extend the sample to different regions and cultural contexts and employ longitudinal or experimental designs to further explore the dynamic effects of multiple forms of social support and psychological variables on the development of aesthetic ability.

**Keywords:** Peer Support, Aesthetic Ability, Self-efficacy, University Students, Hebei Province.

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## 1. Introduction

In the contemporary context of higher education, which emphasizes the integrated development of students' moral, intellectual, physical, aesthetic, and labor education, the cultivation of university students' aesthetic ability has increasingly become a central component of talent development systems in higher education institutions. [1] Chang and Jaisook (2021) [3] indicated that, aesthetic experiences not only enhance students' understanding of art and culture but also exert a positive influence on their innovative behaviors, thereby highlighting the educational value of aesthetic ability in higher education. From a mental health perspective, Ye et al. (2025) [20] further confirmed that aesthetic education significantly promotes university students' positive psychological qualities and subjective well-being. At the same time, Austin (2024), drawing on practices in arts education, found that meaningful artistic experiences can effectively strengthen students' self-efficacy, providing sustained psychological motivation for engagement in learning and daily life. Collectively, these studies demonstrate a close association among aesthetic ability, self-efficacy, and

the holistic development of university students, thereby establishing a solid theoretical foundation for research from psychological and social support perspectives [2].

However, a certain disconnect remains between existing research and the practical realities of higher education contexts. Qing and Wahid (2025), in their study of dance major students, found that peer support has a significant impact on academic performance; nevertheless, their research primarily focused on achievement outcomes, with limited attention given to comprehensive competencies such as aesthetic ability. Shao and Kang (2022) revealed a chain mediation mechanism among peer relationships, self-efficacy, and learning engagement through empirical analysis, yet their findings were largely confined to the learning domain and have not been extended to the development of aesthetic ability. In addition, Salim et al. (2023) [15] demonstrated that self-efficacy mediates the relationship between peer support and individual adaptation outcomes, but their research was situated mainly in the context of career development, lacking validation within higher education aesthetic education settings [5]. Therefore, within the specific regional context of universities in Hebei Province, systematically examining how

peer support influences university students' aesthetic ability through self-efficacy not only responds to practical issues such as insufficient perceived peer support and imbalanced aesthetic development, but also addresses existing gaps in variable integration and research samples in the current literature.

Focusing on university students in higher education institutions across Hebei Province, China, this study systematically investigates the relationships among peer support, self-efficacy, and aesthetic ability from three complementary perspectives: descriptive assessment, relational analysis, and mechanism testing. The study aims to provide a comprehensive understanding of the internal linkages among these variables. Specifically, the research objectives are as follows:

RO1) To examine the overall levels and basic characteristics of peer support, self-efficacy, and aesthetic ability among university students in Hebei Province.

RO2) To analyze the interrelationships among peer support, self-efficacy, and aesthetic ability among university students in Hebei Province.

RO3) To test the mediating role of self-efficacy in the relationship between peer support and aesthetic ability.

By achieving these objectives and Questions, the study seeks to clarify the developmental status and interaction pathways of peer support, self-efficacy, and aesthetic ability among university students in Hebei Province, deepen the understanding of the mediating mechanism of self-efficacy, and provide theoretical foundations as well as practical implications for higher education institutions in optimizing peer support environments, enhancing students' self-efficacy, and promoting the coordinated development of aesthetic education.

## 2. Literature Review

### 2.1. Learning and Aesthetic Development from the Perspective of Peer Support and Social Support

From the perspective of social support theory, peer support is widely regarded as one of the most important and influential external sources of support in the developmental process of university students, particularly in terms of learning adjustment, psychological development, and ability construction [13]. A substantial body of research indicates that, compared with family support and teacher support, peer support during the university stage is more immediate, interactive, and contextually embedded, enabling it to influence students' learning attitudes and psychological states through multiple channels such as emotional identification, behavioral modeling, and informational exchange [16]. In a study focusing on Generation Z college students, Hou et al. (2025) employed a multiple mediation model and found that peer support not only directly affects learning outcomes but also exerts indirect effects through psychological variables such as self-efficacy, learning motivation, and test anxiety. This finding reveals the complex psychological mechanisms through which peer support influences learning effectiveness. Correspondingly, Shao and Kang (2022) proposed a chain mediation model of "peer relationships–self-efficacy–learning engagement," further emphasizing the foundational role of peer interaction in fostering students' confidence in learning and sustaining their engagement. Meanwhile, in the context of music learning, Orejudo et al. (2021) [12]

highlighted that social support—particularly support from peers—is a crucial condition for the development of musical self-efficacy, a conclusion that is highly consistent with the findings of Qing and Wahid (2025) regarding the relationship between peer support and academic achievement among dance major students. Collectively, these studies across different disciplines and learning contexts consistently verify the fundamental pathway through which peer support influences individual development via psychological mechanisms. However, some scholars have begun to draw attention to the issue of contextual differences in existing research. Salim et al. (2023) extended peer support and self-efficacy into the domain of career adaptability and confirmed the relative stability of the mediating role of self-efficacy; nevertheless, their research variables primarily focused on career decision-making and adaptation outcomes, leaving limited explanatory power for aesthetic ability or art-related competencies. Therefore, although existing studies demonstrate a high degree of consistency in terms of variable relationships, contextual differences in research settings to some extent constrain the direct transferability of these conclusions to the domains of aesthetic and arts education [7].

In the field of research on aesthetic experience and cultural education, peer support and the broader sociocultural contexts in which it is embedded have gradually attracted scholarly attention; however, existing studies continue to exhibit fragmented conclusions and uneven focal emphases. Through a cross-cultural comparison of Thai students and Chinese international students, Chang and Jaisook (2021) found that the influence of aesthetic experience on innovative behavior varies significantly across cultural backgrounds, suggesting that cultural context may play a moderating role in the relationship between aesthetic ability and related behaviors. In contrast, Qing-xia and Nai-liang (2023), based on a sample of Chinese university students, emphasized the close association between aesthetic experience and musical creativity, arguing that stable aesthetic experience constitutes an essential psychological foundation for creative expression. The contrast between these two studies indicates that the development of aesthetic ability is shaped not only by individual psychological factors but also by sociocultural environments. Furthermore, from the perspective of aesthetic needs, Lyu et al. (2023) [9] pointed out that the higher education learning environment and peer cultural climate play a significant role in shaping art students' aesthetic cognition and aesthetic expectations. This conclusion aligns, at a macro level, with the view proposed by Kurbanova and Saidboeva (2024) that school–family support jointly contributes to the formation of students' aesthetic values; nevertheless, the two studies differ substantially in terms of research participants, cultural contexts, and levels of analysis. Meanwhile, Mahfud et al. (2024) [10], through empirical investigation, demonstrated that social support does not exert a direct effect on creative thinking but instead operates through the mediating role of creative self-efficacy, thereby theoretically bridging the explanatory gap between social support and individual ability development. Overall, although existing research widely acknowledges the importance of peer support in learning and aesthetic development, there remains a lack of direct and systematic empirical evidence explaining how peer support influences university students' aesthetic ability through specific psychological mechanisms. In particular, studies that integrate social support, self-efficacy, and aesthetic ability within a unified analytical framework are still

scarce, which provides a clear and important direction for future research.

## 2.2. The Role of Self-Efficacy in Arts Education and Individual Development

As a core construct within social cognitive theory, self-efficacy is widely regarded as a crucial psychological mechanism that links individuals' cognition, emotion, and behavior [21]. Existing research generally agrees that self-efficacy plays an irreplaceable role in arts education, aesthetic experience, and creative development; however, differences remain in terms of research perspectives, target populations, and the delineation of its functional pathways. Drawing on inquiry-based learning contexts, Asda et al. (2025) emphasized the direct facilitating effect of self-efficacy on the generation of creative ideas, arguing that learners who hold strong beliefs in their own abilities are more likely to produce novel ideas when confronted with complex or open-ended tasks. In contrast, Austin (2024), adopting a long-term practice-oriented perspective in arts education, highlighted the profound impact of "meaningful artistic experiences" on the formation of self-efficacy, suggesting that self-efficacy is not an immediate outcome of short-term instructional interventions but rather a psychological attribute gradually constructed through sustained artistic engagement and reflective practice. Through a cross-sectional survey, Fan and Sun (2025) further demonstrated that self-efficacy serves as a bridge linking personality traits, creative thinking, and learning outcomes. This finding is highly consistent with the conclusion of Li and Chang (2023) [8], who reported that innovative self-efficacy significantly predicts innovative ability among dance major students, with both studies underscoring the mediating or predictive function of self-efficacy in the development of art-related competencies. Nevertheless, in contrast to these predominantly quantitative approaches, Manorothkul (2021) [11] employed an intervention design based on performing arts training, emphasizing the immediate effects of concrete artistic practice on the enhancement of self-efficacy. While this approach offers greater contextual specificity and practical operability, limitations related to sample size and situational scope inevitably constrain the generalizability of its findings. Overall, although scholars widely acknowledge the critical role of self-efficacy in arts education, notable disagreements persist regarding whether its formation is primarily driven by situational triggers or long-term internalization, as well as whether its influence is confined to artistic skills or extends to broader domains of individual competence.

In further investigations into the relationships among self-efficacy, aesthetic education, and psychological development, scholars' perspectives have shown a certain degree of complementarity while also gradually revealing limitations in research boundaries and theoretical focus [4]. From a mental health perspective, Jin and Ye (2022) [6] pointed out that the positive effects of fine arts education on university students' psychological well-being do not occur directly, but are jointly moderated by self-efficacy and creativity. This conclusion aligns closely, at the level of underlying mechanisms, with the findings of Ye et al. (2025), who proposed that self-efficacy plays a mediating role between aesthetic education and psychological well-being. Both studies emphasize the pivotal bridging function of self-efficacy between aesthetic education and psychological outcomes. However, Su and Adenan (2025) [17] placed greater emphasis on the effects of arts education

on academic performance and emotional attitudes. Although their findings support the importance of self-efficacy in educational contexts, discussion of aesthetic ability as a core outcome variable remains relatively limited. In contrast to studies centered on psychological mechanisms, Wang (2022) [18], from the perspective of educational reform and institutional development, stressed the importance of integrating psychological education concepts into higher education arts curricula. While this work offers valuable practical insights, its explanation of how self-efficacy specifically contributes to the development of aesthetic ability remains relatively broad. Wu et al. (2025) [19] further introduced a chain mediation model that incorporated self-efficacy alongside learning adaptability, thereby theoretically extending research on artistic competence and psychological qualities; nevertheless, the increased complexity of the model may, to some extent, weaken the clarity of explanations regarding the pathways of individual psychological variables. Overall, although existing studies widely acknowledge the important role of self-efficacy in arts education and individual development, inconsistencies persist in terms of variable selection, theoretical emphasis, and research design. In particular, there remains a notable lack of empirical research that systematically examines the relationship between self-efficacy and aesthetic ability within contexts of peer support.

Based on the consensus and divergences identified in the above literature review, the present study seeks to further deepen understanding of the mechanisms linking peer support, self-efficacy, and aesthetic ability. Specifically, focusing on university students in higher education institutions in Hebei Province, this study first systematically examines the current levels and structural characteristics of peer support, self-efficacy, and aesthetic ability. It then analyzes the direct relationship between peer support and aesthetic ability and further tests the mediating role of self-efficacy in this relationship. By integrating perspectives from social support theory with individual psychological mechanisms, this study aims to address the tendency of existing research to overemphasize learning or career outcomes while relatively neglecting the development of aesthetic ability, thereby providing more targeted theoretical foundations and empirical evidence for the coordinated construction of aesthetic education and student support systems in higher education institutions.

## 3. Methodology

This study employed a quantitative research design, using a questionnaire survey as the primary method and supplemented by statistical analyses, to systematically examine the relationships among peer support, self-efficacy, and aesthetic ability among university students. The research participants were undergraduate students enrolled in selected universities in Hebei Province, with the overall population drawn from four undergraduate institutions. To ensure sample representativeness and the external validity of the findings, a stratified random sampling strategy was adopted. Specifically, the sampling process was first stratified according to university type (comprehensive universities, normal universities, art institutions, and independent colleges) and geographic distribution. Subsequently, universities were randomly selected within each stratum, and students were further sampled based on academic year and field of study. The required sample size was calculated using formulas proposed by Cochran (1977) and Israel (1992), with a 95%

confidence level and a margin of error of 0.05. As a result, a total of 385 questionnaires were determined as the target sample size and were evenly distributed across different types of institutions. The questionnaires were administered offline in teaching buildings, libraries, and self-study areas, with anonymity and informed consent emphasized to enhance data authenticity and response quality.

Regarding research instruments, a structured questionnaire comprising three core scales was employed. The aesthetic ability scale was adapted from Wang (2021) and measured a total of 45 items across three dimensions: aesthetic perception (Items 1–15), aesthetic appreciation (Items 16–30), and aesthetic creativity (Items 31–45). Self-efficacy was assessed using the General Self-Efficacy Scale (GSES) developed by Schwarzer (1994, 1995), which was contextually modified to align with aesthetic-related tasks and consisted of 10 items (Items 1–10). The peer support scale was developed with reference to prior studies by Wood (2022), Patterson (2018), and Chen (2022), and included 22 items across four dimensions: emotional support (Items 1–6), behavioral modeling (Items 7–11), informational support and advice (Items 12–17), and companionship and supervision (Items 18–22). All scales employed a five-point Likert response format. Following data collection, questionnaires were screened for validity, and statistical analyses were conducted to ensure the scientific rigor, reliability, and interpretive validity of the research findings.

## 4. Results and Discussion

### 4.1. Descriptive Statistical Analysis

To obtain a comprehensive understanding of the overall levels and distributional characteristics of peer support, self-efficacy, and aesthetic ability among university students in Hebei Province, descriptive statistical analyses were first conducted for the three core variables. Specifically, the mean (M), standard deviation (SD), skewness, and kurtosis were calculated to examine the central tendency, dispersion, and distributional properties of the data. The results are presented in Table 1.

**Table 1.** Results of Descriptive Statistical Analysis

Variable	Number of Items	M	SD	Skewness	Kurtosis
Peer Support	22	3.621	0.582	-0.415	0.361
Self-efficacy	10	3.553	0.613	-0.282	0.193
Aesthetic Ability	45	3.684	0.526	-0.336	0.272

As shown in Table 1, the mean score for peer support was 3.621, indicating that the participating students generally perceived a moderately high level of peer support. This result suggests that most students were able to obtain a certain degree of emotional support, behavioral modeling, informational support and advice, and companionship and supervision from their peers in academic and campus life. The mean score for self-efficacy was 3.553, reflecting that university students overall possessed relatively positive beliefs in their own capabilities, although there remains room for further enhancement. Among the three variables, aesthetic ability exhibited the highest mean score (M = 3.684), suggesting that students demonstrated generally positive

performance in terms of aesthetic perception, aesthetic appreciation, and aesthetic creativity. The standard deviations for the three variables ranged from 0.526 to 0.613, indicating acceptable levels of individual variability without the presence of extreme dispersion. All skewness values were negative and had absolute values below 1, suggesting a slight left-skewed distribution while remaining close to normality. Similarly, all kurtosis values were below 1, indicating relatively flat distributions without pronounced peaks or heavy tails. Collectively, these results demonstrate that the sample data met the assumptions of normality required for subsequent statistical analyses.

### 4.2. Correlation Analysis

Based on the descriptive statistics, Pearson product-moment correlation analysis was further conducted to examine whether significant relationships exist among peer support, self-efficacy, and aesthetic ability. The linear correlations among the three variables were tested, and the results are presented in Table 2.

**Table 2.** Results of Correlation Analysis

Variable	Peer Support	Self-efficacy	Aesthetic Ability
Peer Support	1		
Self-efficacy	.352**	1	
Aesthetic Ability	.246**	.358**	1

Note: \*\*  $p < .001$ .

As shown in Table 2, the correlation analysis revealed a significant positive relationship between peer support and self-efficacy ( $r = 0.352, p < .001$ ), indicating that university students who perceived higher levels of peer support tended to report stronger self-efficacy. A significant positive correlation was also found between peer support and aesthetic ability ( $r = 0.246, p < .001$ ), suggesting that a supportive peer interaction environment is conducive to the development of aesthetic ability. Among the three variables, the strongest correlation was observed between self-efficacy and aesthetic ability ( $r = 0.358, p < .001$ ), highlighting the important role of individuals' confidence in their own capabilities in the formation of aesthetic ability. All correlation coefficients were statistically significant, demonstrating meaningful associations among the variables while remaining at moderate levels that do not indicate multicollinearity. These findings provide the necessary statistical foundation for the subsequent construction and testing of mediation models. Overall, the results suggest that peer support influences ability development through its effects on individuals' psychological cognitive variables, and that aesthetic ability does not develop in isolation but is embedded within processes of social interaction and psychological mechanisms.

### 4.3. Regression Analysis and Mediation Effect Analysis

After confirming the existence of significant correlations among the variables, regression analysis and the Bootstrap method were further employed to examine whether self-efficacy mediates the relationship between peer support and aesthetic ability, thereby revealing the underlying mechanisms linking the three variables. The results of the regression analyses among the three variables are presented in Table 3.

**Table 3.** Results of Regression Analysis

Regression Path	$\beta$	t	p
Peer Support → Aesthetic Ability (Total Effect)	0.476	10.217	< .001
Peer Support → Self-efficacy	0.523	12.476	< .001
Self-efficacy → Aesthetic Ability	0.437	9.862	< .001
Peer Support → Aesthetic Ability (Controlling for Self-Efficacy)	0.247	5.183	< .001

As shown in Table 3, the regression results indicate that peer support has a significant positive predictive effect on aesthetic ability, with a standardized regression coefficient of 0.476. This finding suggests that higher levels of peer support are associated with higher levels of aesthetic ability among university students. Without the inclusion of the mediating variable, peer support demonstrates strong explanatory power for aesthetic ability. Moreover, peer support significantly predicts self-efficacy, with a regression coefficient of 0.523 and a relatively large t value, indicating that peer support is an important external factor influencing university students' self-efficacy. Self-efficacy also shows a significant positive predictive effect on aesthetic ability ( $\beta = 0.437$ ), highlighting the crucial role of individuals' beliefs in their own capabilities in the development of aesthetic ability. When self-efficacy is entered into the regression model, the regression coefficient of peer support on aesthetic ability decreases to 0.247 but remains statistically significant. This pattern indicates that self-efficacy plays a partial mediating role in the relationship between peer support and aesthetic ability. The observed changes in regression coefficients are consistent with the theoretical criteria for mediation testing. All regression paths reach statistical significance, suggesting that the model estimates are stable and reliable. Overall, the regression analysis results support the hypothesized causal relationships among peer support, self-efficacy, and aesthetic ability.

Based on the regression analyses confirming significant predictive relationships among the variables, the Bootstrap method was further employed to test the mediating role of self-efficacy in the relationship between peer support and aesthetic ability. The specific results of the mediation analysis are presented in Table 4.

**Table 4.** Bootstrap Mediation Effect Test

Effect Type	Effect Size	Boot SE	95% CI
Indirect Effect (Peer Support → Self-efficacy → Aesthetic Ability)	0.229	0.043	[0.156, 0.316]
Direct Effect	0.247	0.053	[0.147, 0.359]
Total Effect	0.476	0.056	[0.369, 0.568]

The Bootstrap mediation analysis results presented in Table 4 further confirm the mediating role of self-efficacy. The indirect effect has an effect size of 0.229, and its 95% confidence interval [0.156, 0.316] does not include zero, indicating that the mediation effect is statistically significant. This finding suggests that peer support can indirectly promote the development of university students' aesthetic ability by enhancing their self-efficacy. The direct effect has an effect size of 0.247, with a confidence interval that also excludes zero, indicating that peer support continues to exert a direct influence on aesthetic ability even after controlling for self-efficacy. The total effect is 0.476, demonstrating that peer

support has a substantial overall impact on aesthetic ability. An examination of the effect decomposition shows that the indirect effect accounts for a meaningful proportion of the total effect, highlighting the critical role of psychological mechanisms in the process through which social support exerts its influence. By relying on repeated resampling, the Bootstrap method enhances the robustness of the mediation test and avoids the normality assumptions required by traditional Sobel tests. Overall, the results indicate that self-efficacy serves as an important psychological bridge linking peer support and aesthetic ability, providing strong empirical support for the research hypotheses of this study.

## 5. Summary of Results

The findings of this study indicate that university students in higher education institutions across Hebei Province demonstrate moderately high levels of peer support, self-efficacy, and aesthetic ability, reflecting that the current higher education environment is, to some extent, capable of providing students with relatively positive conditions for social interaction and psychological development. Descriptive statistical analyses further reveal that students exhibit stable and positive developmental trends in perceived peer support, self-efficacy, and aesthetic ability, suggesting that universities have achieved initial success in fostering supportive peer interaction environments, implementing aesthetic education practices, and developing psychological support systems. As noted by Chang and Jaisook (2021), university students' levels of aesthetic experience are often significantly influenced by educational environments and campus cultural climates, which provides important contextual support for understanding the moderately high overall level of aesthetic ability observed in this study. Meanwhile, research by Austin (2024) demonstrates that positive and meaningful artistic and learning environments contribute to the enhancement of students' self-efficacy, a finding that closely aligns with the relatively high level of self-efficacy identified in the present study. Furthermore, Su and Adenan (2025) pointed out that when arts education and psychological support operate synergistically within higher education contexts, students are more likely to develop positive efficacy beliefs and emotional attitudes, thereby promoting their overall development. With regard to aesthetic ability, Lyu et al. (2023) found that Chinese university students generally exhibit favorable levels of aesthetic needs and aesthetic perception, although certain individual differences remain, which is consistent with the reasonable dispersion observed in the distribution of variables in this study. In addition, from a mental health perspective, Ye et al. (2025) emphasized that the effects of aesthetic education on university students' positive psychological qualities are relatively stable at the aggregate level but vary across individuals, further corroborating the conclusion of this study that "overall levels are relatively high while individual differences coexist." Taken together, the findings of this study not only depict the general developmental status of peer support, self-efficacy, and aesthetic ability among university students in Hebei Province, but also highlight the important supportive role of higher education environments in students' psychological and aesthetic development, thereby laying a solid foundation for subsequent analyses of variable relationships and underlying mechanisms.

The correlation analysis results indicate that all three variables are significantly and positively related to one

another. Peer support is not only significantly associated with self-efficacy but also shows a stable positive relationship with aesthetic ability, while the association between self-efficacy and aesthetic ability is the strongest among the three. These findings suggest that university students who perceive higher levels of peer support are more likely to develop positive beliefs in their own capabilities and, on this basis, demonstrate higher levels of aesthetic perception, aesthetic appreciation, and aesthetic creativity. This result is highly consistent with the findings of Hou et al. (2025), who identified peer support as an important social factor in enhancing university students' self-efficacy. Meanwhile, Orejudo et al. (2021), in the context of music learning, found that social support can promote the development of ability performance by strengthening individuals' self-efficacy, thereby providing contextual support for the present findings. Furthermore, Fan and Sun (2025) demonstrated through empirical analysis that self-efficacy is significantly associated with creative ability and learning outcomes, underscoring the central role of individual psychological mechanisms in ability development. In the aesthetic domain, the study by Zeng and Chen (2023) [14] showed a significant positive correlation between university students' aesthetic experiences and creative performance, indicating that the formation of aesthetic ability relies on the synergistic interaction of cognitive, emotional, and psychological belief factors. In addition, Qing and Wahid (2025), from the perspective of peer support, confirmed that a positive peer interaction environment can significantly enhance university students' academic and overall competence. Taken together, the evidence from previous studies and the present findings suggests that peer support, as a critical social contextual factor, jointly influences the development of university students' aesthetic ability through its interaction with psychological variables such as self-efficacy. This study further empirically validates the synergistic effects of social support and individual psychological mechanisms in ability development and provides strong support for the proposed theoretical assumptions.

The results of the regression analyses and the Bootstrap mediation tests jointly indicate that self-efficacy plays a significant partial mediating role in the relationship between peer support and aesthetic ability, thereby revealing a key psychological pathway through which peer support influences university students' aesthetic development. Specifically, peer support not only directly facilitates the development of students' aesthetic ability but also exerts an indirect effect by enhancing their self-efficacy, suggesting a synergistic interaction between external social support and internal psychological mechanisms in the process of ability construction. This finding is highly consistent with the conclusions of Salim et al. (2023) in the field of career adaptability, whose study confirmed the stable mediating function of self-efficacy between peer support and individual developmental outcomes, thus providing an important theoretical reference for the present research. Furthermore, Shao and Kang (2022) proposed that peer relationships influence individuals' learning engagement and developmental levels through the psychological pathway of self-efficacy, an explanatory mechanism that closely aligns with the pathways identified in this study. Meanwhile, Mahfud et al. (2024) emphasized that social support can effectively promote ability development and creative performance only by strengthening individuals' self-efficacy,

highlighting the central role of the mediating variable in the process through which social support exerts its influence. Within the context of arts education, Jin and Ye (2022) found that self-efficacy plays an important moderating and mediating role between external educational factors and psychological outcomes, underscoring the indispensable role of psychological beliefs in the development of art-related abilities. In addition, Zhou et al. (2025), in their research on language learning, similarly demonstrated a significant mediating effect of self-efficacy between emotional support and learning engagement, further reinforcing the generalizability of this psychological mechanism across different educational contexts. Taken together, the present study not only confirms the mediating role of self-efficacy between peer support and aesthetic ability, but also deepens the psychological understanding of the mechanisms underlying university students' aesthetic development, providing important empirical evidence for higher education institutions seeking to strengthen peer support systems and enhance students' psychological efficacy.

## 6. Conclusion

This study focused on university students in higher education institutions in Hebei Province and systematically examined the relationships among peer support, self-efficacy, and aesthetic ability, with particular emphasis on testing the mediating role of self-efficacy. The results indicate that university students in Hebei Province exhibit moderately high levels of peer support, self-efficacy, and aesthetic ability, suggesting that the current higher education environment is, to some extent, capable of providing students with positive peer interaction climates and favorable conditions for psychological development. Further analyses revealed significant positive correlations among peer support, self-efficacy, and aesthetic ability, with the association between self-efficacy and aesthetic ability being the strongest, highlighting the crucial role of individual efficacy beliefs in the construction of aesthetic ability. Regression analyses and Bootstrap mediation tests further confirmed that self-efficacy plays a significant partial mediating role in the relationship between peer support and aesthetic ability, indicating that peer support not only directly influences the development of university students' aesthetic ability but also exerts an indirect effect by enhancing their self-efficacy. This finding reveals, at the mechanistic level, the psychological pathway through which external social support is transformed into internal ability development, thereby deepening the understanding of the formation of university students' aesthetic ability. Overall, this study not only extends the theoretical perspectives on the relationships among peer support, self-efficacy, and aesthetic ability, but also provides empirical evidence and practical implications for higher education institutions in optimizing peer support environments, strengthening the cultivation of psychological efficacy, and promoting the integration of aesthetic education and mental health education. Such contributions are of substantial significance for fostering the comprehensive development of university students. Future research may expand the sample to different regions and cultural contexts and incorporate longitudinal or experimental designs to further explore the dynamic mechanisms through which multiple forms of social support and individual psychological variables influence the development of aesthetic ability.

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