

The Impact of Teacher Professionalism and School Resources on Students Vocal Performance Ability through the Mediating Role of Self Efficacy among College Students in Chengdu China

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ABSTRACT:

This study focuses on the broader context of Chengdu's development as an international music capital and aims to analyze the underlying mechanisms driving the improvement of performance skills among college students majoring in vocal music. By constructing a path model linking environmental factors to individual psychological variables, the study conducted a questionnaire survey of vocal music students at multiple universities in Chengdu and performed rigorous statistical analyses using structural equation modeling (SEM). The findings reveal that both teachers' professional competence and institutional resources exert significant positive predictive effects on vocal performance ability, with the direct influence of institutional resources being particularly pronounced. More crucially, the study confirms that self-efficacy plays a significant partial mediating role between external environmental factors and artistic performance. This suggests that external teaching support and material resources do not directly produce artistic outcomes; rather, they first reshape individuals' professional confidence and expectations of control, thereby achieving a multidimensional enhancement of performance quality.

The findings provide practical guidance for vocal music teaching reform in Chengdu's higher education institutions. It is recommended that educational administrators shift from a focus on mere resource accumulation to context-specific psychological empowerment. By optimizing stage performance platforms and strengthening teachers' psychological guidance functions, a comprehensive confidence-building mechanism can be established, thereby providing robust local

evidence for the application of social cognitive theory in the field of arts education.

Keywords: Teacher Professionalism, School Resources, Self Efficacy, Students Vocal Performance Ability, Music College Students.

1. Introduction

Research context

Against the backdrop of increasingly fierce global cultural competition, Chengdu, a historic hub of the arts in China, is actively advancing its strategic goal of becoming an international music capital. This ambitious vision requires modern infrastructure and a steady supply of highly skilled vocal performers (Concina, 2023). Vocal performance ability, as the core objective of vocal arts education, is a comprehensive manifestation that integrates singing technique, stage presence, artistic creativity, and cultural understanding (Wang, 2023). The cultivation of this ability is crucial to students' individual professional competitiveness and artistic achievement, and also serves as a vital vehicle for promoting cultural heritage and innovation in Sichuan Province and across the nation. Currently, vocal music programs within Chengdu's higher education system are at a critical stage of development, bearing the important mission of contributing to the nation's cultural soft power through aesthetic education.

Problem statement and objective

Although the scale of music education in Chengdu continues to expand, it still faces structural bottlenecks in shaping its core competitiveness. First, there is an imbalance in the supply of teachers, both in terms of quantity and quality, in teaching practice, and some pedagogical concepts have failed to keep pace with the times. The curriculum often relies too heavily on a single performance style, failing to fully integrate diverse cultural elements such as pop, folk, and opera, which limits students' adaptability to the market and their artistic horizons. Second, with the deepening development of digitalization and globalization, the traditional oral and heart-to-heart teaching model has been challenged by emerging learning methods (Beibei, 2022).

A more pressing issue lies in the fact that existing research often attributes skill improvement to

improvements in external conditions or intensified technical training, while overlooking the central driving role of students' intrinsic psychological motivation. This fragmented perspective makes it difficult for educators to accurately identify the optimal leverage points for enhancing students' performance abilities. Particularly within the unique regional cultural and policy context of Chengdu, how to systematically integrate external environmental variables and activate students' intrinsic beliefs remains an unresolved academic challenge (Hong & Smithitam, 2024).

Based on social cognitive theory, self-efficacy is regarded as the key psychological variable linking the external environment to an individual's ultimate achievement. This study aims to explore how teacher professionalism, school resources, family interference, and sociocultural factors interact to influence students' self-efficacy and, ultimately, their vocal performance abilities. By constructing and validating this mediational model, this study will not only reveal the underlying logic of vocal talent cultivation in Chengdu's higher education institutions but also provide education administrators with evidence-based improvement strategies, thereby helping to translate the policy vision of building Chengdu into an International Music Capital into tangible educational outcomes.

Theoretical Foundation

The core theoretical framework of this study is based on Walberg's (1984) theory of educational production, which posits that student learning outcomes are driven by nine core elements across three dimensions: ability, instruction, and environment. To more accurately capture the unique characteristics of vocal music education, this study has deeply integrated and expanded this framework: within the ability dimension, the concept of self-efficacy from Bandura's social cognitive theory has been introduced, serving as a key psychological mediator linking external stimuli and internal motivation; within the instructional dimension, by integrating Muscle-Air-Tissue (MAT)

theory, traditional artistic guidance has been refined into a scientific, professional pedagogy grounded in the principles of breath management and vocal fold anatomy and physiology.

In constructing the environmental dimension, this study employs sociocultural theory to broaden the educational context to a wider social support system. School resources, macro-sociocultural factors, and micro-family disturbances are defined as cultural mediators influencing learning outcomes; these factors not only directly impact students' professional growth but also influence individuals' psychological perceptions by shaping social support networks. Through this interdisciplinary theoretical integration, the model establishes a complete logical chain that extends from teaching inputs grounded in physiological science, through the mediating effects of the sociocultural environment, to the transformation of individual psychological efficacy, ultimately leading to the enhancement of vocal performance ability. This provides systematic theoretical support for analyzing the complex process of vocal pedagogy.

Vocal Performance Abilities

Vocal performance integrates song interpretation with stage presence, requiring singers to master proficient vocal techniques and a pleasing tone while also possessing strong stage presence (Sun, 2024). Qin & Jia (2024) notes that vocal performance art is a comprehensive discipline integrating imagination, creativity, and expressiveness. It requires performers to follow the composer's original intent while engaging in personal reinterpretation, achieving a unity of creativity and authenticity.

Teacher Professionalism

Teacher professionalism describes the manner in which educators must conduct their work through activities, behaviors, and outcomes during teaching and learning processes. Skilled teachers can adapt to societal changes. Each country possesses distinct professional standards. Australia employs three domains: professional knowledge, professional practice, and professional engagement. In Ontario, Canada, professional standards for teachers utilize three criteria: ethical standards for the teaching profession, practice standards for the teaching profession, and a professional learning framework for the teaching profession (Munandar et al., 2020).

School resources

The social atmosphere within the school and students' subjective experiences in the school environment, along with all factors relevant to student interests, may constitute school resources. Based on their form of manifestation, school resources can be categorized into tangible and intangible types. Tangible resources encompass human, financial, and material resources such as teachers, funding, school buildings, laboratories, and classrooms. Intangible resources refer to elements like school culture, institutional frameworks, and interpersonal relationships (Tian et al., 2022).

Self-efficacy

Schunk & DiBenedetto (2021) define self-efficacy as an individual's perceived ability to learn or perform a behavior at a specified level. Both theory and research support the view that self-efficacy is a crucial motivational construct influencing choice, effort, persistence, and achievement. According to Bandura's social cognitive theory, self-efficacy is a personal construct that influences behavior and social/environmental variables while also being shaped by them.

Hypothesis Development

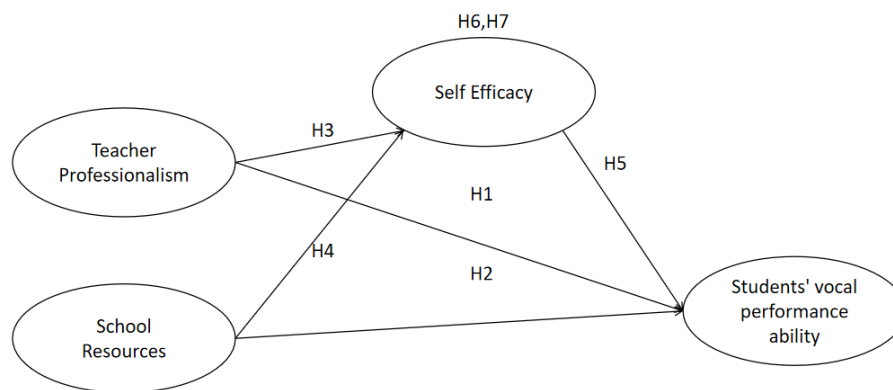


Figure 1: Research Framework

Teacher professionalism and students' vocal performance ability

Teachers' professional competence is regarded as the core driver of effectiveness in vocal music instruction. Qian (2019) explicitly states that comprehensively improving teaching quality is key to enhancing students' vocal performance abilities, with teachers' professional ethics, overall competence, and classroom management skills providing fundamental guarantees for implementation. This professionalism is reflected not only in general qualities but also through the application of specific, scientifically grounded teaching tools. Weaver (2019) confirmed the significant impact of Stanislavski's Circle of Attention on technical expression, while Morales et al. (2023) and Tian (2023), through interdisciplinary innovations in mental imagery and metabolomics respectively, demonstrated how the scientific nature of teaching methods accelerates the internalization of skills. Furthermore, Szczepek (2021) emphasizes that outstanding teachers possess the ability to transform abstract artistic concepts into embodied experiences, which constitutes the most critical factor influencing performance quality. Based on this, this study proposes:

H1: Teacher professionalism has a significant positive influence on students' vocal performance ability.

Teacher professionalism and students' vocal performance ability

At the same time, the physical and institutional environments provided by the school offer direct support for the development of vocal skills. De

Castro & Schutz (2020) empirical research warns that deficiencies in the physical environment, such as acoustic design or air quality, can directly inhibit artistic performance by impairing singers' physiological functions. Zhang (2022) further point out that a comprehensive network of resources, including practice rooms, professional concert halls, recording studios, and interdisciplinary modular courses, is a necessary condition for supporting students' transition from isolated technical skills to integrated artistic expression. Based on this, this study proposes:

H2: School resources have a significant positive influence on students' vocal performance ability.

The formation path of self-efficacy: The driving role of the external environment

Self-efficacy, defined as an individual's belief in their ability to perform specific tasks, is strongly shaped by information from the external environment. In the context of teacher-student interaction, Fletcher et al. (2024) research reveals the psychological mechanisms underlying the "empathic teaching approach," which involves fostering students' intrinsic motivation by establishing mutual trust and a supportive environment, thereby directly enhancing their self-efficacy. Professional feedback provided by teachers, acting as a powerful form of social persuasion, can effectively adjust students' self-perceptions, thereby strengthening their professional confidence.

At the school environment level, the abundance and sophistication of resources can similarly be transformed into psychological momentum. Cutting-edge research by Long (2022) and Zhang

(2023), among others, indicates that AI-assisted analysis and big data recommendation platforms can provide students with immediate professional feedback, significantly enhancing their self-efficacy by creating successful “Mastery Experiences.” Concurrently, Zaghoul (2023) confirmed that stage-oriented practice platforms and educational theater resources can optimize students’ emotional states, reinforcing their beliefs in self-efficacy from both physiological and emotional dimensions. Based on this, this study proposes:

H3: Teacher professionalism has a significant positive influence on Self-efficacy.

H4: School resources have a significant positive influence on Self-efficacy.

The Mediating Role of Self-efficacy and the Psychological Bridge Effect

Self-efficacy is a key predictor of success in vocal music. Studies by Tan and Asavisanu (2023) have jointly confirmed that high levels of self-efficacy enable students to gain a sense of control over their musical development, thereby enhancing their independence and initiative in learning, which directly drives significant improvements in vocal performance. Furthermore, the embodied nature of vocal training means that students’ evaluations of their physiological sensations and emotional fluctuations serve as the most direct basis for assessing their own abilities. Based on this, this study proposes:

H5: Self-efficacy has a significant positive influence on students’ vocal performance ability.

Within the complex system of vocal music education, self-efficacy is widely regarded as a core psychological variable for predicting performance success. It refers to general self-confidence, but rather to a student’s firm belief in their ability to succeed in specific vocal tasks. Research by Lewis (2018) and Tan and Asavisanu (2023) consistently confirms that high self-efficacy empowers students to take control of their own musical development, thereby significantly enhancing their independence and initiative in learning, which directly translates into tangible improvements in vocal performance ability. In the specialized field of vocal arts, the development of self-efficacy exhibits distinct embodied characteristics. Lewis and Hendricks (2022) note that vocal students’ cognitive

evaluations of their physiological sensations and emotional states serve as the most direct and influential basis for judging their own competence.

At a deeper level, self-efficacy serves as an irreplaceable psychological bridge between external environmental inputs and individual behavioral performance. Royo’s (2014) longitudinal study indicates that while early factors such as family background exert an initial influence, students’ efficacy beliefs during their university years are primarily constructed and refined dynamically within specific teaching, rehearsal, and performance contexts. Professional guidance from teachers essentially provides students with high-quality social persuasion and vicarious experiences. The resource platforms offered by schools create critical Mastery Experiences through immediate feedback, such as the AI-assisted analysis and multisensory interactive systems mentioned by Long (2022).

This implies that neither the professionalism of teachers nor the resource investment by schools can function effectively without first engaging the psychological cognitive process. Optimization of the external environment must first influence Bandura’s four sources of information, transforming them into students’ internal beliefs in their own efficacy, before ultimately determining the upper limit of their performance capabilities. Research by Zaghoul (2023) and others also confirms that stage-oriented practice platforms reshape students’ beliefs in their own efficacy precisely by optimizing their emotional states. Based on this logical chain, from environmental input to psychological mediation to capability output, this study proposes:

H6: Self-efficacy significantly mediates the relationship between Teacher professionalism and students’ vocal performance ability.

H7: Self-efficacy significantly mediates the relationship between school resources and students’ vocal performance ability.

2. Methodology

Design

This study employed a quantitative research design, collecting cross-sectional data through questionnaires and applying structural equation modeling for empirical analysis.

Participants/Sample

The study population consisted of 5,388 vocal performance majors from 10 undergraduate institutions in Chengdu, Sichuan Province. Using non-proportional stratified random sampling, 485 questionnaires were distributed, 389 were returned, and 376 were deemed valid.

Instruments

Research instruments were adapted and refined from established scales, with all variables measured on a five-point Likert scale. The questionnaire assessed teacher professionalism, school resources, family interference, sociocultural influences, self-efficacy, and vocal performance ability (including breath control, vocal flexibility, and stage presence).

Procedure

The study first defined the population and sampling strategy, then distributed questionnaires online. Returned responses were screened, invalid cases removed, and a valid dataset established.

Data Analysis

Descriptive statistics and reliability tests (Cronbach's α) were conducted using SPSS. Confirmatory factor analysis was performed with AMOS to validate the measurement model. Structural equation modeling was applied to examine the direct effects of teacher professionalism and school resources on vocal performance ability, while Bootstrapping was used to test the mediating role of self-efficacy.

3. Results

Demographic Characteristic

The final valid sample for this study consisted of 376 undergraduate vocal performance students in Chengdu. In terms of gender distribution, female respondents accounted for 62.5% ($n=235$), significantly higher than the 37.5% ($n=141$) of male respondents. This distribution aligns with the current enrollment trend in China's higher education music performance programs, where female students constitute the majority. In terms of vocal style distribution, students specializing in bel canto were the most prevalent in the sample (44.1%), followed by those in traditional Chinese vocal style (37.2%), while the group specializing in pop vocal style was the smallest, accounting for 18.6%. This indicates that, at the institutions surveyed, traditional vocal disciplines remain the core focus of the curriculum. Furthermore, economic data analysis reveals that the vast majority of students come from middle to high income families, with over 92% of respondents reporting a household monthly income of 5,000 yuan or more. This financial background aligns with the resource-intensive nature of vocal training, as studying this discipline typically requires significant financial investment in private lessons, instrument purchases, and performance attire. Overall, this sample is highly representative of the vocal performance student population in this region.

Table 1: Demographic Characteristic

Category	Item	Frequency	Percent (%)
Gender	Male	141	37.5
	Female	235	62.5
Singing Style	Ethnic Singing	140	37.2
	Bel Canto	166	44.1
	Popular Singing	70	18.6
Family Monthly Income	3,001–5,000 RMB	13	3.5
	More than 5,000 RMB		186
	More than 10,000 RMB		162
	More than 50,000 RMB		14
	More than 100,000 RMB		1
Total			376

Reliability Analysis

This study rigorously tested the internal consistency of the scale using Cronbach's alpha. According to statistical standards in the social sciences, an alpha coefficient above 0.70 is considered to indicate acceptable reliability, while a coefficient above 0.80 indicates excellent stability and reliability. The reliability coefficients for the four core variables examined in this study (TP, SR, SE, VP) ranged from 0.854 to 0.916, far exceeding the thresholds generally accepted in academia. This indicates that the items in the questionnaire accurately and consistently reflect the underlying constructs they measure, laying a solid statistical foundation for subsequent structural equation modeling (SEM) analysis.

Among the measurement dimensions, self-efficacy (SE) demonstrated the highest reliability, reaching 0.916, reflecting the exceptional consistency of the scale's item design in assessing students' sense of control over their own vocal music learning. At the same time, the coefficients for teacher professionalism (0.866), school resources (0.876), and vocal performance ability (0.854) all fell within the ideal range. Combined with the validation of the scale's validity in relevant literature, the above data strongly demonstrate that the measurement tool adopted in this study is well-suited for the population of vocal music students in higher education institutions in Chengdu and can effectively capture subtle fluctuations between external environmental factors and individual psychological variables.

Table 2: Reliability Analysis of the Variables

Variable	Code	Cronbach's Alpha	N of Items
Teacher Professionalism	TP	.866	8
School Resources	SR	.876	8
Self-Efficacy	SE	.916	6
Vocal Performance Ability	VP	.877	7

4.3 Measurement model

In this study, confirmatory factor analysis (CFA) was conducted on the measurement model using AMOS software, and several key indicators were selected to assess the fit between the observed data and the theoretical model.

First, the chi-square-to-degrees-of-freedom ratio (χ^2/df) was 1.265, which is significantly lower than the commonly accepted threshold of 3.0 in the academic community, indicating that the model has good parsimony and a solid foundation for fit. Second, regarding absolute fit indices, both GFI (0.922) and AGFI (0.909) exceeded the recommended threshold of 0.90, demonstrating

that the model effectively explains the variance in the observed data. Most notably, the RMSEA (Root Mean Square Error of Approximation) is only 0.027. In structural equation modeling, an RMSEA below 0.05 is generally considered a sign of excellent model fit, indicating that the model has minimal residuals while accounting for complexity. Furthermore, the NFI (0.920), a value-added fit statistic, has also reached an ideal level. In summary, all fit indices meet or exceed statistical requirements, indicating a high degree of alignment between the measurement model constructed in this study and the actual survey data. This allows for subsequent path analysis and hypothesis testing.

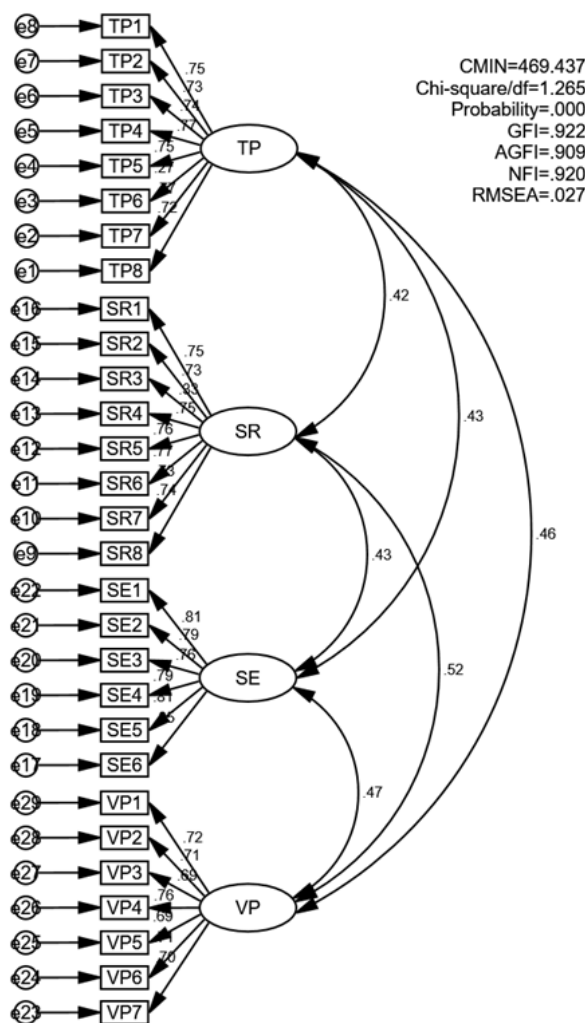


Figure 2: Measurement Model

According to the results of the measurement model validation, Teacher Professionalism (TP), School Resources (SR), Self-Efficacy (SE), and Vocal Performance Ability (VP) all demonstrated excellent convergent validity. First, the standardized factor loadings (λ) for each dimension ranged from 0.69 to 0.83, meeting the academic requirement that loadings should be greater than 0.50 and ideally approach 0.70. Second, the composite reliability (CR) values for all latent variables ranged from 0.881 to 0.910, far exceeding the benchmark standard of 0.70, demonstrating that the scale

possesses extremely high consistency. Finally, the average variance extracted (AVE) for each dimension was above the cutoff point of 0.50. These results indicate that the measurement indicators adopted in this study can accurately capture and explain the variance of the latent variables, laying a solid statistical foundation for subsequent investigations into how vocal music students in Chengdu universities transform teachers' professional competence and school resources into their own performance abilities.

Table 3: Convergence Validity Analysis (CR & AVE)

Variable	Items	λ	CR	AVE
Teacher Professionalism (TP)	TP1-TP8	0.71 ~ 0.77	0.902	0.536
School Resources (SR)	SR1-SR8	0.73 ~ 0.83	0.910	0.558
Self-Efficacy (SE)	SE1-SE6	0.76 ~ 0.81	0.908	0.622
Vocal Performance (VP)	VP1-VP7	0.69 ~ 0.76	0.881	0.514

The study rigorously assessed the independence of latent variables using the Fornell-Larcker criteria. According to the criteria, if the bolded values on the diagonal are all greater than the corresponding correlation coefficients in that row and column, it indicates that the variables are well-distinguished from one another. The results show that the square roots of the Average Variance Explanatory (AVE) for vocal performance ability (.717), self-efficacy (.789), school resources (.747), and teacher professionalism (.732) are all significantly higher than the correlation coefficients between variables

in their respective rows and columns. This statistically confirms that, although the four dimensions defined in this study are closely interrelated in educational practice, they exhibit clear differences in conceptual constructs and measurement indicators and constitute mutually independent constructs. This clear distinction effectively eliminates the interference of multicollinearity among variables, ensuring the robustness and reliability of subsequent mediation effect tests in the path model.

Table 4: Discriminant Validity Result (Fornell-Larcker Criterion)

Variables	VP	SE	SR	TP
VP	.717			
SE	.471	.789		
SR	.524	.433	.747	
TP	.461	.433	.421	.732

Structure Model

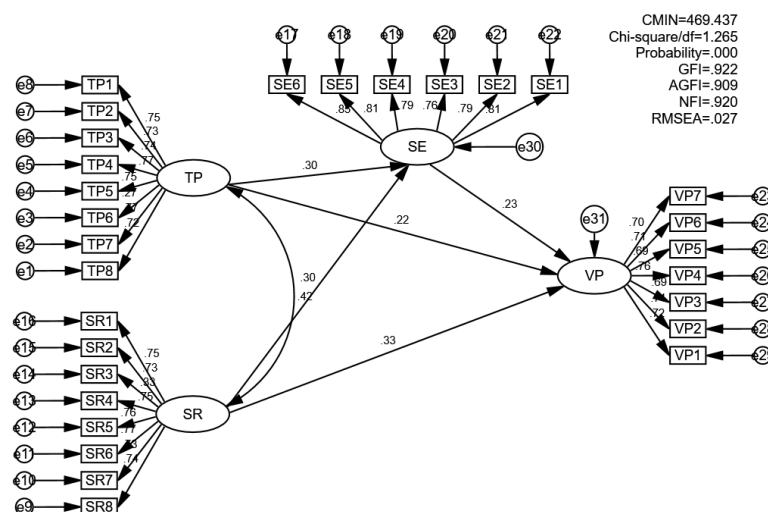


Figure 3: Structure Model

Based on the path analysis results in Table 5, all direct path hypotheses proposed in this study are supported by the data. First, regarding the path through which external environmental factors drive self-efficacy, both teacher professionalism (TP) and school resources (SR) have a significant positive effect on self-efficacy (SE) ($\beta = 0.304$, $P < 0.001$), which confirms H3 and H4. This indicates that high-quality instructional guidance and well-equipped facilities are the core sources for building professional confidence among vocal music students.

Second, regarding the direct influence on vocal performance ability (VP), the marginal contribution

of school resources ($\beta = 0.331$, $P < 0.001$) was slightly higher than that of teacher professionalism ($\beta = 0.221$, $P < 0.001$), which further supports H1 and H2.

Finally, self-efficacy (SE) exhibited a significant positive predictive effect on vocal performance ability ($\beta = 0.232$, $P < 0.001$), confirming H5. Since both the path from TP and SR to SE and the path from SE to VP met the criteria, this preliminarily demonstrates that self-efficacy indeed plays a key mediating role between the external environment and final performance ability, providing the prerequisite for subsequent testing of the mediating effects of H6 and H7.

Table 5: Path Coefficients and Hypothesis Testing Results

Hypothesis	Pathway	Unstd.	β	S.E.	C.R. (t-value)	P	Result
H3	SE←TP	.414	.304	.080	5.147	***	Supported
H4	SE←SR	.380	.304	.073	5.171	***	Supported
H1	VP←TP	.215	.221	.058	3.731	***	Supported
H2	VP←SR	.295	.331	.055	5.358	***	Supported
H5	VP←SE	.166	.232	.042	3.971	***	Supported

Analysis of Mediating Effects

This study employed the Bootstrap method (with 2,000 repetitions) to test the mediating effect of self-efficacy (SE). In the pathway where teacher professionalism (TP) influences vocal performance ability, the mediation coefficient was 0.069, with a 95% confidence interval [0.031, 0.124] that did not include zero, and $P = .001$. This strongly supports H6, namely that self-efficacy plays a significant mediating role between teacher professionalism and performance ability. Since the direct effect (DeTSV = 0.215) remained significant, this indicates that self-efficacy plays a partial mediating role in this pathway. This suggests that teachers' professional competence not only directly enhances students' performance but also indirectly exerts a positive influence by reinforcing students' efficacy beliefs.

A significant mediating effect was also observed in the influence pathway of school resources (SR). The mediating effect value of self-efficacy (IDeSSV) was 0.063, with a confidence interval [0.029, 0.114] that does not include 0, confirming H7. This pathway also exhibited partial mediation characteristics (direct effect = 0.295, $P=0.001$). This suggests that well-equipped teaching facilities, advanced digital platforms, and ample practical opportunities can be transformed into students' intrinsic professional confidence by creating successful experiences and optimizing their physiological and emotional states, thereby ultimately enhancing the artistic quality of vocal performance. The validation of these two mediation pathways fully reveals the internal logic of how external environmental resources influence artistic output through psychological internalization mechanisms.

Table 6 : Bootstrap Analysis of Direct, Indirect, and Total Effects

Parameter	Estimate	Lower	Upper	P
DeTSV	.215	.109	.342	.001
IDeTSV	.069	.031	.124	.001
TotalETSV	.284	.177	.407	.001
DeSSV	.295	.194	.414	.001
IDeSSV	.063	.029	.114	.001
TotalESSV	.358	.251	.469	.001

4. Discussion

The findings of this study reveal that vocal performance ability is not merely a collection of technical skills, but rather a dynamic process driven by external environments and internalized through psychological mechanisms. Against the backdrop of Chengdu's active efforts to establish itself as an international music capital, major universities in the city have made significant investments in recent years in terms of physical facilities and talent recruitment. The study found that the abundance of institutional resources and the professional caliber of faculty directly determine the upper limits of students' performance capabilities. This influence is tangibly reflected in the current state of music education in Chengdu. As the cultural hub of Southwest China, Chengdu has attracted a large number of outstanding performing artists and educators. The professionalism of these faculty members is evident not only in the technical instruction provided in the classroom but also in the vicarious experience they offer as industry role models. When students observe their teachers' masterful demonstrations, their inner belief in their own capabilities is rapidly activated, translating into a more confident and assured performance state.

More crucially, research confirms that self-efficacy plays an indispensable role as a mediator between external resources and final performance outcomes. In higher education in Chengdu, the modern concert halls, recording studios, and frequent stage performance opportunities provided by universities essentially serve as testing grounds where students can accumulate experiences of mastery. In a professional stage environment, students can more authentically experience acoustic reflections and audience feedback; the accumulation of this bodily memory strengthens their psychological resilience far more effectively than monotonous practice in a music room. Conversely, without these resources, students are highly susceptible to negative physiological and emotional self-assessments when faced with the pressures of a real stage, leading to a decline in their performance quality. Therefore, the mediating role of self-efficacy demonstrates that the resource investments and faculty expertise in Chengdu's higher education institutions ultimately achieve the goal of enhancing artistic quality by reshaping students' self-confidence and psychological expectations.

Based on the above findings, this study provides clear practical guidance for vocal music education reform in universities in the Chengdu area. First, there should be a shift in resource optimization from equipment provision to context-based empowerment. Universities in Chengdu should not limit their resource investment to simply increasing the number of practice rooms; instead, they should leverage Chengdu's advantage as a hub for the music industry to create teaching environments that simulate real-world performance conditions. Establishing a digital simulated stage system aligned with market standards will allow students to experience feedback from varying acoustic conditions during daily practice, thereby optimizing their physiological awareness during performances. This optimization of resource allocation aims to precisely reinforce students' self-efficacy by providing immediate, tangible experiences of success.

Second, instructors should transition from being purely technical coaches to serving as dual mentors in both psychological and professional development. Given the profound impact of a teacher's professionalism on student confidence, it is recommended that faculty at Chengdu's higher education institutions incorporate formative assessment and psychological motivation strategies into their teaching. When evaluating student performance, teachers should transform abstract criticism into evidence-based constructive guidance, thereby strengthening students' sources of social validation. Simultaneously, leveraging Chengdu's abundant social performing arts resources, a Teacher-Student on Stage Together initiative should be implemented. Through teachers' personal example and guidance, this program will reduce students' anxiety during transitional periods and help establish stable psychological defense mechanisms.

Finally, a diversified confidence-building mechanism should be established. Reforms should encourage students to step outside the closed educational system and actively participate in local community concerts or urban arts festivals in Chengdu. Such low-pressure, frequent social practice provides students with diverse alternative experiences and a sense of achievement, enabling them to continuously revise negative assumptions about their own abilities through authentic socio-

cultural interactions. Through this positive cycle, from environmental engagement to psychological empowerment and ultimately to the demonstration of abilities, the quality of talent cultivation in vocal music programs at Chengdu's universities can be enhanced, thereby building a reserve of talent with greater psychological resilience and artistic competitiveness as Chengdu advances toward its goal of becoming a City of Music.

5. Conclusion

The core findings of this study clarify the logic underlying the development of vocal expressiveness, demonstrating that performance ability is shaped by both external, objective environmental factors and the individual's subjective psychological state. The research confirms that sustained investment by universities in Chengdu in faculty expertise and institutional resources serves as the physical prerequisite for enhancing students' artistic proficiency, while self-efficacy is the key factor determining whether these external investments can be effectively translated into students' actual abilities. This conclusion validates the applicability of social cognitive theory in the field of arts education, while also providing a basis for decision-making by local governments and university administrators. The success of arts education depends not only on the quality of physical

resources but, more importantly, on the effectiveness of psychological internalization. By establishing a dual cycle of environmental drivers and psychological empowerment, vocal music instruction can transition from traditional empiricism to a more scientific and robust development path.

While the study reveals clear causal relationships, it remains limited in scope and depth. Although the current predictive model explains most of the variance, there are still unobserved variables that may influence performance, such as students' sense of identity with Chengdu's local culture or the sustained level of family support for the arts. Additionally, as this study utilized static cross-sectional data, it was unable to capture the spiraling upward trajectory of students' self-efficacy beliefs over the course of their four-year college careers. Future research should consider incorporating longitudinal time-series analysis or even conducting cross-regional comparative experiments to examine whether the mechanisms through which the environment influences psychological well-being and performance exhibit universal consistency across cities with varying densities of cultural resources. Such sustained, in-depth exploration will help us paint a more precise and comprehensive picture of the development of vocal talent.

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