

# The effects of parental involvement and support on elementary school music education in Nanjing, China: A study based on the theory of the zone of proximal development

## *Nanjing, Çin'de ilköğretim müzik eğitiminde ebeveyn katılımı ve desteğinin etkileri: Yakınsak gelişim alanı teorisi üzerine bir çalışma*

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### ABSTRACT

In recent years, the role of parents in elementary education has received increasing attention, especially in music education. Based on Vygotsky's theory of ZPD, this study aims to assess how parental involvement and support influence the music education outcomes of elementary school students in Nanjing. It explores the effects of parental involvement on the music achievement and interest of elementary school students in Nanjing and attempts to reveal the underlying mechanisms of parental support. Data from 150 parent and student participation questionnaires were collected through a questionnaire format. The parent questionnaire assessed the frequency and form of their participation in music education, while the student questionnaire assessed interest in music and their perceived level of parental support. Combining descriptive statistics, correlation and moderated effects analyses, and analysis of variance, the results showed that active parental involvement was significantly and positively associated with student achievement and interest in music learning. Parents' active involvement in their children's music learning resources can go a long way in stimulating their children's interest in music learning. The study suggests that active parental involvement can significantly improve music education outcomes for elementary school students. This finding provides strong support for the practice of parental involvement in music education and relevant recommendations for educational policymakers to further promote home-school collaboration in music education. This study contributes to the enrichment of the regionality and diversity of international music education research by providing specific data from the Nanjing region, which provides an important reference value for subsequent research and policy development.

**Keywords:** parental involvement, elementary school music education, Nanjing, zone of proximal development

### ÖZ

Son yıllarda, ilköğretimde ebeveynlerin rolü giderek daha fazla dikkat çekmektedir; özellikle müzik eğitimi bağlamında. Vygotsky'nin Yakınsak Gelişim Alanı (ZPD) teorisine dayanan bu çalışma, ebeveyn katılımı ve desteğinin Nanjing'deki ilkököl öğrencilerinin müzik eğitimi sonuçları üzerindeki etkilerini değerlendirmeyi amaçlamaktadır. Çalışma, ebeveyn katılımının öğrencilerin müzik başarısı ve müziğe olan ilgisi üzerindeki etkilerini incelemekte ve ebeveyn desteğinin temel mekanizmalarını ortaya koymayı hedeflemektedir. Araştırmada, 150 ebeveyn ve öğrencinin katılım sağladığı anket verileri

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toplanmıştır. Ebeveyn anketi, müzik eğitimine katılım sıklık ve biçimlerini değerlendirirken; öğrenci anketi müziğe olan ilgiyi ve ebeveyn desteğinin algılanan düzeyini ölçmüştür. Betimsel istatistikler, korelasyon ve düzenleyici etki analizleri ile varyans analizi birleştirilerek yapılan analizler, ebeveynlerin aktif katılımının öğrenci başarısı ve müzik öğrenimine ilgisi ile anlamlı ve pozitif ilişkili olduğunu göstermiştir. Ebeveynlerin çocuklarının müzik öğrenme kaynaklarına aktif katılımı, çocukların müzik öğrenimine olan ilgilerini artırmada önemli bir rol oynamaktadır. Çalışma, aktif ebeveyn katılımının ilkökul öğrencilerinin müzik eğitim sonuçlarını önemli ölçüde iyileştirebileceğini önermektedir. Bu bulgu, müzik eğitiminde ebeveyn katılımının uygulanabilirliğini güçlü bir şekilde desteklemekte ve eğitim politikası yapıcılarına müzik eğitiminde ev-okul iş birliğini daha fazla teşvik etmeleri için öneriler sunmaktadır. Ayrıca, çalışma, Nanjing bölgesine özgü veriler sağlayarak uluslararası müzik eğitimi araştırmalarının bölgesellik ve çeşitliliğinin zenginleştirilmesine katkıda bulunmakta ve sonraki araştırmalar ile politika geliştirme için önemli bir referans değeri sunmaktadır.

**Anahtar kelimeler:** ebeveyn katılımı, ilkökul müzik eğitimi, Nanjing, yakınsak gelişim alanı

## 1. INTRODUCTION

In the field of music education, many contextual factors influence children's musical development, but given the extensive research available, there is no reason to doubt the importance of parental influence on a child's musical development (McPherson, 2009). The more parents are involved in their child's learning, the more motivated the child is to do well in school with parental guidance, which helps the child to enhance self-regulated learning, which can lead to improved performance (Cheung & Pomerantz, 2012). Vygotsky's theory of the zone of proximal development provides a solid theoretical foundation for understanding this influence. In the rapid development of music education in China, Jiangsu Province has been particularly fruitful in music education with many brilliant achievements, which have had a profound impact on the nation's music education and made outstanding contributions (Yong, 2020). Utilizing these theoretical frameworks, this study aims to explore how parental involvement and support affect the music education of elementary school students in Nanjing, thereby revealing the role of parents in music education and their specific impact on students' learning outcomes. According to Vygotsky, learning occurs in social interactions, and an individual's development is strongly influenced by his or her social environment. His theory of the zone of proximal development states that learning should be located in the zone between a student's current abilities and potential level of development. In the context of parental involvement, this theory specifically emphasizes how parents can help their children reach their potential by providing appropriate support and resources (Vygotsky, 1978). The scaffolding theory further clarifies how parents can help their children in the educational process by providing guidance and support to help them accomplish tasks they could not do alone. Based on Vygotsky's Zone of Proximal Development (ZPD) theory, this study aimed to explore the mechanism of parental involvement in the music learning of elementary school students in Nanjing, focusing on analyzing how parental support affects students' music learning achievement and interest level. By means of questionnaires, this study collected valid data from 150 elementary school students and their parents in Nanjing, China. The parent questionnaire assessed the frequency, form, and support of their participation in music education, while the student questionnaire focused on their interest in music learning, perception of parental support, and academic performance. In data analysis, descriptive statistics, correlation analysis, multivariate moderated effects analysis, and one-way ANOVA were used to comprehensively reveal the potential mechanisms of parental support on students' music learning. The results of the study indicated that active parental involvement was significantly associated with students' musical interests. Specifically, those parents who created a music-rich learning environment at home and regularly participated in their children's music activities had children who not only showed higher music interest but also achieved better results in school music examinations. In addition, parental involvement behaviors had a positive effect on students' sustained engagement in music learning, especially if the students showed a strong interest in music, and the effect of parental support was more significant.

This study further found that parents' musical background had a significant effect on certain supportive behaviors (e.g., encouraging their children to overcome learning difficulties and caring about their performance in music class), but did not reflect a significant role in providing resources or paying for expenses. These findings not only enrich the understanding of the mechanism of the role of parental involvement in music education but also provide practical references for enhancing home-school cooperation strategies and optimizing students' music learning experience.

## 1.1. Literature review

Among the existing studies, researchers mostly recognize that parental involvement has a positive impact on children's music education, and most of them focus on three main perspectives:

1. Family Background (including parental occupation, economic capital, and cultural capital). Szűcs argues that although there is no clear link between the family's economic status and arts learning, better economic status for children who study music is still visible (Szűcs, 2022). Parental cultural capital increases the frequency and strategies of parental support for students' instrumental learning, which in turn may enhance students' instrumental learning motivation (Kong, 2020). In addition to this, the education and occupation of parents/caregivers are also related to students' arts participation (Mansour et al., 2016) Only socially powerful groups can determine knowledge and learning (Ye, 2018).

2. Parental Involvement Sessions: Bugeja studied parental involvement in the music education of violin students, and in all methods, both students and their parents could benefit from proactive parental involvement in music learning (Bugeja, 2009). The study confirms that there is a correlation between a child's willingness to learn music and parental proactivity. Some parents tend to be more actively involved in their child's private music education when the child expresses a willingness to learn music (Cui, 2023). However, there are also parts that need to be corrected in response to the broader realities of the parental involvement session; the greater the level of parental involvement, the greater the degree of self-regulation of the student in their music practice (Kesawa & Primana, 2017). Parents should neither be able to act as a the name of "agency" to disengage from their children's learning, nor should they disempower their children in the name of "inclusion" (Creech, 2010). Parents should be aware that demanding too much/too little from their children may negatively affect their self-esteem (Fung, 2018). Therefore, scientific guidance and helpful advice on the aspects of parental involvement in children's music education appear to be particularly important, Youm demonstrated the need to educate parents of young children in relation to all aspects of children's music education through in-depth interviews, observations, written questionnaires, home music materials and researcher diaries in the results of his study (Youm, 2013). Of course, some of the research conclusions have also yielded contrary results, for example, Margiotta argued that parental support did not seem to affect a child's overall grades, interest level, and enjoyment of practice and lessons. Students' performance is only moderately affected by their natural musical ability but is strongly influenced by the student's effort (Margiotta, 2011) In addition to evaluations of the impact of parental involvement, there are also studies focusing on groups of mothers in symbiotic relationship between mother and child in the mother's musical development of the child has led to the development of very positive self-images of the boy as a musician (Davidson & Borthwick, 2002)

3. The Trinity Between Parents, Teachers, and Students: Evidence suggests that positive teacher-student relationships and parental involvement in recess practice predict students' enjoyment of music and musical progress (Upitis et al., 2017). Positive and trusting three-way relationships between students, teachers, and parents are essential (Oliveira et al., 2021). Parents often play multiple roles, such as family supervisor, supporter, provider, role model parents play multiple roles such as family supervisor, supporter, provider, role model, educational partner, and consumer, whereas teachers may play the role of professional musician, educator, educational partner, and role model (Ang et al., 2020). Although most teachers can recognize the benefits of parental involvement, the teacher community's perceptions and reflections of parental involvement in children's music education vary. Research in music education suggests that parental involvement facilitates instrumental progress. However, few music teachers actively encourage this behavior (Macmillan, 2004). and there is not complete agreement between teachers and parents. For example, some negative parents do not support children's music education activities due to concerns about the future of music careers. Music teachers should consider a variety of parent education activities to demonstrate the many advantages of learning music (Leung & McPherson, 2011) .In addition, the gap in the level of teacher qualifications of music teachers may also be a contributing factor to the conflict, and the current "knowledge-centered curriculum" may need to be adjusted towards a "socially-centered" and "student-centered" approach in order to strike a balance (Yu & Leung, 2019).Even in nontraditional online music education activities, teachers and parents diverge, and while most teachers are satisfied with online instruction, students and parents prefer face-to-face instruction on the grounds that it is more productive and beneficial (Daugvilaite, 2021) This coincides with Huber's findings, where students perceive that The "best way" for parents to help also involves activities that are easier to do in a classroom setting (Huber, 2019) Therefore, teachers, as one of the important roles of parental involvement in music education, should be rational and objective in recognizing and assigning the level and manner of parental involvement. It is important for school music teachers, instrumental music teachers, and parents to realize that parental involvement supports students' instrumental music learning,

behaviors, and attitudes (Ho, 2011) In a study that focused on the Chinese region, the majority of the researchers acknowledged the positive attitudes of Chinese parents in their involvement in children's music education. Chinese parents observe their children's piano lessons more frequently. The role of parental involvement cannot be underestimated. Parents are more actively involved by observing their children's lessons rather than simply sending their children to piano lessons (Comeau et al., 2015) In terms of the comparison between Chinese and foreign parents, the majority of Chinese parents were actively involved in their children's education, with Guilin parents demonstrating greater commitment than Tampa parents. However, Tampa parents provided more cognitive and emotional support during their children's extracurricular music learning than Guilin parents (Cui & Xie, 2024) In fact, most Chinese parents were proactively involved in their children's private music lessons (Cui, 2023) Not only that, but some conclusions contrary to our expectations have been drawn from many studies that, despite the intense competition in Chinese society, the most parents still tend to encourage their children to learn music for intrinsic motivations (e.g., improving musical and other skills, developing social skills, enjoyment) rather than for extrinsic motivators (Liu et al., 2015)

## 1.2 Research contribution

This study addresses a notable gap in the literature on primary school music education within the Chinese context, particularly in Nanjing, by introducing a region-specific and culturally grounded perspective to international music education research. While parental involvement has been widely examined in predominantly Western contexts, relatively limited attention has been paid to the mechanisms of parental support in China, especially within the domain of music education.

Grounded in Vygotsky's theory of the zone of proximal development (ZPD), this study seeks to extend the application of this theoretical framework by examining how parental involvement and support may function as scaffolding processes that facilitate children's musical learning. In doing so, it contributes to a more nuanced understanding of how social interaction within the family context can shape students' learning potential, interest, and achievement in music education.

First, this study offers a theoretically informed perspective on the role of parents in children's music learning by conceptualizing parental involvement as a multidimensional construct, encompassing home music environment, forms of engagement, and supportive behaviors. It aims to clarify the potential mechanisms through which these factors may influence students' musical development.

Second, this research contributes to the ongoing discourse on home-school collaboration by situating parental involvement within a tripartite framework that includes parents, teachers, and students. By emphasizing the interplay among these stakeholders, the study provides a conceptual basis for rethinking collaborative models in music education.

Third, from a practical standpoint, this study highlights the potential implications of family-based support systems for music education. It provides an analytical foundation for exploring how variations in parental background, involvement styles, and support strategies may inform the design of targeted educational interventions and family-oriented support initiatives.

Finally, by focusing on empirical data from the Nanjing region, this study contributes to enhancing the regional diversity of international music education research and offers a contextually grounded reference for future cross-cultural investigations and policy discussions.

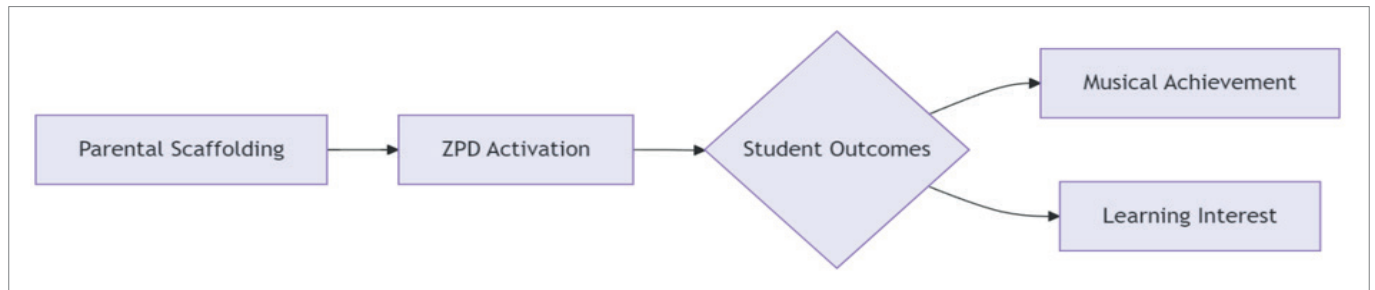
## 1.3. Theoretical framework

Zone of Proximal Development:

Vygotsky's Zone of Proximal Development (ZPD) theory emphasizes the potential level of development that a learner can achieve with external support, reflecting the critical role of social interaction in cognitive development. In music learning, where students are often required to perform complex tasks beyond their current abilities, parental support, such as supervising practice, providing feedback, and creating a learning environment, can help students enter the ZPD and achieve higher levels of achievement. This external support is particularly important because it not only influences skill acquisition but also plays a role in stimulating interest and fostering creativity.

**Figure 1**

Conceptual framework illustrating the relationships between parental involvement, students' music interest, and music achievement



Parental involvement functions as a critical external resource within students' zone of proximal development (ZPD), manifested through practices such as structuring learning activities, providing musical resources, and engaging with students' classroom performance. These forms of support can facilitate students' ability to overcome learning challenges while fostering motivation, interest, and confidence in music learning. For instance, sustained parental engagement may help reduce frustration and create a more supportive and effective learning environment.

From a theoretical perspective, such involvement can be understood as a form of scaffolding that extends students' potential levels of development. Within this framework, the present study examines the relationship between parental involvement and two key dimensions of music learning: students' interest and academic achievement. Specifically, it considers how different forms of parental support may be associated with variations in these outcomes.

By situating parental involvement within the ZPD framework, this study provides a conceptual basis for analyzing how family-based support contributes to students' musical development and learning potential. The conceptual model of this study is presented in Figure 1

## 2. METHODOLOGY

### 2.1. Research Design

Based on Vygotsky's theory of the zone of proximal development, this study utilized quantitative research methods to explore the impact of parental involvement and support on elementary school music education in Nanjing, China. Data were collected through quantitative research to analyze the relationship between parental involvement, support, and elementary school students' performance and interest in music, and to verify the influence of parental background on parental involvement and support behaviors. The study design aimed to provide empirical evidence to elucidate the underlying mechanisms between parental behavior and elementary school students' music learning, and to inform music education practice and policy development.

### 2.2. Sample and Selection

A total of 180 questionnaires were distributed to parents of primary school students in Nanjing using a random sampling approach. Of these, 158 questionnaires were returned, resulting in a response rate of 87.8%. After excluding incomplete or invalid responses, 150 valid questionnaires were retained for the final analysis.

Two-stage cluster random sampling was used in this study:

- (1) From the list of public primary schools filed by the Nanjing Municipal Education Bureau, 8 schools were selected using a random number generator.
- (2) In each selected school, 3 grades are randomly selected, and questionnaires are distributed to parents of students in all classes in that grade.

The sample covered parents of different genders, ages, academic qualifications, and music education backgrounds to ensure the study was representative. Among the samples, 42.7% were male parents and 57.3% were female parents; a higher proportion of parents aged 26-45 accounted for 68.7%; 60.7% were parents with a bachelor's degree or above; and 34.7% were parents with a music education background. In addition, the students covered elementary school grades 1 to 6, with a balanced distribution of grades, making it easy to analyze the differences in parental involvement behaviors of students in different grades.

### 2.3. Questionnaire design

The questionnaire was developed through a multi-stage procedure to ensure its content validity and contextual relevance. First, an initial pool of items was generated based on established scales in the literature on parental involvement and music education, as well as the theoretical framework of Vygotsky's zone of proximal development (ZPD). Relevant studies were reviewed to identify commonly used constructs and measurement approaches, and items were adapted to fit the context of primary school music education in China.

Second, the preliminary questionnaire was evaluated by a panel of experts consisting of two music education scholars and one educational psychology researcher. The experts reviewed the items in terms of clarity, relevance, and cultural appropriateness. Based on their feedback, several items were revised or removed to improve the overall coherence and content validity of the instrument.

Third, a pilot study was conducted with a small sample of parents ( $n = 20$ ) to assess the clarity and comprehensibility of the questionnaire. Minor wording adjustments were made based on participants' feedback to ensure that all items were easily understood and contextually appropriate.

The final questionnaire consisted of four key constructs: parental involvement, parental support, music learning achievement, and music learning interest. Each construct was measured using multiple items on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree).

Parental involvement was operationalized as the frequency and depth of parents' engagement in their child's music education, including activities such as attending parent-teacher meetings and communicating with teachers. Parental support assessed both material and emotional support, such as providing learning resources and encouraging participation in music-related activities. Music learning achievement was measured through a combination of parental evaluations and students' performance in music classes. Music learning interest captured students' motivation, engagement, and enthusiasm for music learning.

**Table 1**

*Reliability statistics of the measurement scales*

Statistic	Value	N of Items
Cronbach's Alpha	.917	17

The measurement instrument demonstrated excellent internal consistency, with a Cronbach's alpha coefficient of .917, substantially exceeding the recommended threshold of .70 for research instruments. This high reliability index indicates strong inter-relatedness among the 17 items comprising the scale. The reliability of the scales is presented in Table 1

**Table 2**

*Validity analysis results*

Test	Statistic	df	Sig.
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.731		
Bartlett's Test of Sphericity	379.025	105	.000

The measurement instrument's structural validity was examined through exploratory factor analysis. Diagnostic measures confirmed the data's suitability for dimensionality reduction: the Kaiser-Meyer-Olkin (KMO) index of .731 exceeded the recommended .70 threshold for adequate sampling adequacy, indicating

sufficient common variance among variables. Complementing this, Bartlett's test of sphericity yielded statistically significant results ( $\chi^2(105) = 379.025, p < .001$ ), rejecting the null hypothesis of uncorrelated variables in the population covariance matrix. These joint indicators establish the fundamental psychometric prerequisites for meaningful factor extraction and interpretation of underlying constructs. The Validity Analysis Results is presented in Table 2

## 2.4. Data Collection and Processing

The questionnaires were randomly distributed through a combination of online and offline methods to ensure the diversity and validity of the sample sources. After data collection was completed, SPSS26.0 statistical software was used to analyze the data. First, the basic situation of the sample was analyzed through descriptive statistics; second, correlation analysis was used to explore the relationship between key variables; then, moderating effect analysis was used to verify the moderating effect of parental involvement styles on the relationship between music learning achievement and interest; finally, one-way ANOVA was used to test the influence of parental background on involvement and supportive behaviors.

### This study is organized around the following four hypotheses

Hypothesis 1: The level of parental involvement is positively related to elementary school students' music learning achievement.

Hypothesis 2: The level of parental support is positively related to elementary school students' interest in music learning.

Hypothesis 3: There is a moderating effect of parental involvement (e.g., attending parent-teacher conferences, communicating with teachers, etc.) between elementary school students' music learning achievement and interest.

Hypothesis 4: Parents' background in music education is related to their level of involvement and support.

Based on Vygotsky's theory of the zone of proximal development, this study hypothesized that parental involvement and supportive behaviors would provide students with learning support beyond their current level of competence, which in turn would promote students' music learning achievement and interest. Through statistical methods such as stratified regression analysis and analysis of variance, this study aims to test the above hypotheses and explore their theoretical implications.

## 2.5. Ethical Considerations

This study strictly follows the relevant provisions of the Boston Convention, and no ethical justification is required based on the following reasons:

1. Non-special population: the study subjects are parents of ordinary elementary school students in Nanjing, the questionnaires are voluntary, and do not involve the direct participation of minors or private content
2. Anonymity and data protection: the questionnaires are in an anonymous form, and the data are only used for academic analysis and do not involve the disclosure of personal identity, which is in line with the requirements of data privacy protection.
3. No intervention or risk:

This study is an observational survey without any intervention experiments, and there is no direct or indirect risk to the respondents.

4. Fully informed and voluntary: all participants were informed and voluntary, clearly understood the purpose of the study, and the process fully complied with ethical norms.

In conclusion, this study did not involve any ethical controversy and no separate application for ethical certification was required.

**Table 3**

*Demographic characteristics of parents*

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	64	42.7
	Female	86	57.3
Age	20–29	25	16.7
	30–39	43	28.7
	40–49	60	40.0
	50+	22	14.7

**Table 4**

*Educational background of parents*

Variable	Category	Frequency (N)	Percentage (%)
Educational Qualification	Level 1	12	8.0
	Level 2	47	31.3
	Level 3	75	50.0
	Level 4	16	10.7
Music Education Background	Yes	52	34.7
	No	98	65.3

The sample of parents in this study totaled 150, with female parents slightly outnumbering males, accounting for 57.3% and 42.7%, respectively. The age distribution was primarily concentrated in the 26–45 age group, which constituted most of the sample. Other age groups were relatively evenly distributed, with no single group showing clear dominance beyond this range. Table 3 presents the demographic characteristics of the parents. The sample consisted of 42.7% males and 57.3% females, with the largest age group being 40–49 years (40.0%).

The overall education level of parents was relatively high, with more than half (50.0%) holding a bachelor's degree and an additional 10.7% possessing a graduate degree or above. Although the majority of parents (65.3%) did not have a background in music education, they were still involved in their children's music learning through various forms of support. As shown in Table 4, most parents had a Level 3 educational qualification, and approximately one-third had a background in music education.

This sample, characterized by diversity in gender, age, educational background, and music-related experience, provides a comprehensive basis for examining the role of parental involvement in music learning.

**Table 5**

*Distribution of children's grades*

Grade	Frequency (N)	Percentage (%)
Grade 1	29	19.3
Grade 2	22	14.7
Grade 3	22	14.7
Grade 4	38	25.3
Grade 5	20	13.3
Grade 6	19	12.7
<b>Total</b>	<b>150</b>	<b>100.0</b>

As indicated in Table 5, the sample is relatively evenly distributed across grade levels, with a slight concentration in Grade 4. The students who participated in this study covered a range of grades from first to sixth grade, with a balanced distribution: 19.3% of first graders (n=29), 14.7% of second and third graders (n=22), 25.3% of fourth graders (n=38), 13.3% of fifth graders (n=20), and 12.7% of sixth graders (n=19). This grade level distribution provides a rich sample to support the study of music learning at different educational levels.

### 3. RESULTS

As shown in Table 6, most variables have mean scores above 3, indicating relatively positive parental involvement.

**Table 6**

*Descriptive statistics of parental involvement behaviors in music learning*

Item	N	Mean	SD
Regularly help your child practice music assignments	150	3.45	1.24
Help your child develop a music practice plan	150	3.01	1.24
Communicate regularly with the music teacher	150	3.17	1.33
Participate in school music parent-teacher conferences	150	2.81	1.34
Take your child to extracurricular music activities or competitions	150	2.81	1.22
Encourage participation in extracurricular music classes or camps	150	3.32	1.23
Encourage persistence when facing difficulties	150	3.67	1.04
Care about your child's performance in music class	150	3.58	1.11
Provide necessary resources for music learning	150	3.22	1.21
Willing to pay for music lessons	150	3.03	1.30
Child usually scores high in music exams	150	3.19	1.19
Teacher evaluates child's performance as excellent	150	2.83	1.27
Child enjoys practicing music	150	3.23	1.34
Wants to spend more time learning music	150	3.15	1.38
Looks forward to every music lesson	150	3.27	1.26
Music is one of the favorite subjects	150	2.96	1.36

#### 3.1. Level of Parental Involvement

As can be seen in Table 4, the overall level of parental involvement was moderate. For example, parents who regularly helped their child practice music assignments had a mean of 3.45 (standard deviation = 1.24), and those who helped their child develop a music practice plan had a mean of 3.01 (standard deviation = 1.24), both of which reflect moderate levels of involvement. Regular communication with the music teacher had a mean of 3.17 (standard deviation = 1.33), showing some positivity but still moderate overall. Lower involvement behaviors included attending school music parent meetings (mean = 2.81, standard deviation = 1.34) and taking children to extracurricular music activities (mean = 2.81, standard deviation = 1.22).

#### 3.2. Parental support

Parents showed high levels of encouragement in supporting their children's music learning, such as a mean value of 3.67 (standard deviation = 1.04) for encouraging their children to try hard when they encounter difficulties. In contrast, other supportive behaviors such as paying for music lessons (mean = 3.03, standard deviation = 1.30) and providing learning resources (mean = 3.22, standard deviation = 1.21) showed moderate levels of support.

### Student Music Achievement and Interest:

Student performance in music was average overall, with a mean of 3.19 (standard deviation = 1.19) for music test scores and a mean of 2.83 (standard deviation = 1.27) for music teacher evaluations. Students' music interests were moderate to high levels, as evidenced by the mean value of 3.23 (standard deviation = 1.34) for enjoying practicing music and 3.27 (standard deviation = 1.26) for looking forward to every music lesson, both of which indicate that students have some interest in learning music.

### 3.3. Data Distribution Characteristics

Descriptive statistics indicated that most parents were moderately involved and supportive in music learning, and students showed average levels of interest and achievement. In conjunction with Vygotsky's theory of the zone of proximal development, active parental involvement and support may provide important external support for student interest and achievement in music. Subsequent analyses will further explore how parental involvement contributes to academic achievement by influencing interest.

To examine the relationships between various aspects of parental involvement and children's music learning outcomes, Pearson correlation analyses were conducted. The results are summarized in Table 7.

**Table 7**

*Correlation matrix of parental involvement and children's music learning*

Variable	RHP	HPC	CCP	PNR	CEP	LFL	CPE
Regularly help your child practice music assignments	1	.036	.071	.117	.023	-.132	-.124
Help your child with music practice plans	.036	1	.097	-.042	.100	-.028	.030
Care about your child's performance in music class	.071	.097	1	.029	-.035	-.013	.031
Provide necessary resources for music learning	.117	-.042	.029	1	.318	-.105	-.020
Children enjoy practicing music and have fun	.023	.100	-.035	.318	1	-.120	-.028

(Note: Column headers abbreviations: RHP = Regularly help your child practice music assignments, HPC = Help your child with music practice plans, CCP = Care about your child's performance in music class, PNR = Provide necessary resources for music learning, CEP = Children enjoy practicing music and have fun, LFL = Looks forward to each music lesson, CPE = Child's performance in music exams is usually high. Values are Pearson correlation coefficients; positive values indicate positive correlation; negative values indicate negative correlation. Significance levels are reported in the text.)

The purpose of this study was to examine the relationship between parental support and elementary school students' interest in music and their academic achievement, with a particular focus on parental involvement in music learning, the level of support, and its impact on students' interest and achievement in music. According to Hypotheses 1 and 2, Hypothesis 1 suggests that parental involvement and support will positively promote students' interest in music, while Hypothesis 2 proposes that parental backing will have a positive impact on students' music achievement. To test these hypotheses, this study analyzed the collected data using Pearson correlation analysis, and the results are presented below.

#### **Hypothesis 1: Parental Involvement and Support Positively Influence Students' Interest in Music**

Among the dimensions of parental support, the correlation coefficient between "frequently helping children practice music assignments" and "children enjoy practicing music and have fun" was 0.117 but did not reach the level of significance ( $p = 0.156$ ). Similarly, the correlation between parents' "helping their children with music practice plans" and students' interest in music (i.e., "children enjoy practicing music and have fun") was positive ( $r = 0.100$ ). Still, it did not reach the level of significance ( $p = 0.225$ ). These results suggest that while there is some positive relationship between parental support and students' interest in music, it failed to be statistically significant.

However, the correlation between "providing necessary resources for music learning" and "children enjoy practicing music and have fun" was  $r = 0.048$  ( $p = 0.563$ ), which did not reach statistical significance. This indicates that no statistically reliable relationship was observed between parental resource provision and students' self-reported enjoyment of music practice in this sample. Consequently, these findings do not support the presence of a meaningful association between these variables within the studied population.

**Hypothesis 2:** Parental support has a significant effect on students' music performance

According to Hypothesis 2, parental involvement and support are expected to influence students' music achievement. The results of the analysis showed a negative correlation ( $r = -0.124$ ) between "frequently helping their children with their music homework" and "their children's grades on music exams are usually high", but the correlation did not reach the level of significance ( $p = 0.129$ ). Similarly, parents' "helping their children with music practice plans" did not show a significant correlation with students' music performance ( $r = 0.030$ ,  $p = 0.713$ ). These results suggest that parental involvement did not significantly affect students' music performance in this study.

Taken together, the correlations between parental support and students' musical interest and achievement in this study indicate that parental support, while having an impact on students' interest, failed to statistically significantly affect students' musical achievement overall. This finding differs from previous findings and may be influenced by factors such as sample size, cultural background, and parental involvement style. Follow-up studies could further explore the long-term effects of different types of parental support on students' music learning.

The results of the correlation analyses in this study provide preliminary evidence of a potential relationship between parental support and students' interest in music but fail to support the hypothesis that parental support significantly influences students' musical performance. Future research could delve deeper into this issue with a broader sample, different analytic methods, and a more refined categorization of parental support.

Hierarchical regression analyses were conducted to test Hypothesis 3, which is the effect of the interaction between parental involvement and student interest on students' music achievement. In the first regression model, we examined only the effect of the independent variable "Parents communicate regularly with the music teacher" on students' music achievement. The results show that the model has  $R^2 = 0.003$  and  $p = 0.497$ , indicating that the effect of regular communication between parents and music teachers on students' music achievement is not significant. As shown in Table 8 Table 9, the regression model examining the impact of regular communication with the music teacher on children's music exam scores explained very little variance ( $R^2 = .003$ ,  $F(1, 148) = .464$ ,  $p = .497$ ), indicating that this predictor was not statistically significant.

**Table 8**

*Regression analysis summary for the effect of regular communication with music teacher on children's music exam scores (N = 150)*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.056	.003	-.004	1.188

**Table 9**

*ANOVA for the effect of regular communication with music teacher on children's music exam scores (N = 150)*

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.655	1	.655	.464	.497
Residual	208.739	148	1.410		
Total	209.393	149			

Predictors: (Constant), regular communication with music teacher

Dependent Variable: Children usually score highly in music exams

**Second Hierarchical regression model (adding an interaction term)**

In the second regression model, we introduced an interaction term between parental involvement and student interest, "Parental Involvement Multiplied by Student Interest," and examined its relationship with student music achievement. The model had an  $R^2 = 0.812$ , indicating that the model explained significantly more about student music achievement, suggesting that the interaction of parental involvement style and student interest was a strong predictor of student achievement.

The ANOVA's  $F = 318.386$ ,  $p < 0.001$ , further confirms the model's overall significant predictive power.

### 3.4. Regression Coefficient Analysis

In the second regression analysis, the coefficient of the constant term was 3.068, which means that in the absence of parental involvement with student interest, the baseline of the child's music achievement was 3.068. Coefficient of regular parental communication with the music teacher ( $B = -0.839$ ): the effect of regular parental communication with the music teacher on the child's music achievement was negative. The negative regression coefficient suggests that the more frequently parents communicate with the music teacher, the lower the child's music achievement is likely to be, which is not a direct fit with Vygotsky's theory, but may be related to the specificity of the sample or how parents communicate with teachers. The coefficient of parental involvement multiplied by student interest ( $B = 0.273$ ): the coefficient of this interaction term was positive and  $t = 25.186$ ,  $p < 0.001$ , suggesting that the interaction between parental involvement and student interest in music had a significant positive effect on children's music achievement (Hypothesis 3 was valid.) Specifically, how parents were involved significantly increased children's musical achievement, especially in the case of children's musical interest, the effect of parental support is more pronounced. Based on the results of the second regression analysis, Hypothesis 3 was supported, i.e., the interaction between parental involvement styles and students' interest had a significant positive effect on students' music achievement. Specifically, parental involvement styles promote student music achievement when students have a high level of interest in music. This result is consistent with Vygotsky's theory of the zone of proximal development, which posits that students' learning outcomes are dependent not only on their abilities but also on the potential level of development they can achieve with external support (e.g., parents and teachers). When parents are involved in a way that positively interacts with their child's interests, the child's potential to learn music is effectively stimulated, thus improving his or her performance. However, the variable of regular parental communication with music teachers did not show a significant effect in the first regression analysis, which may be because this variable did not adequately capture the actual effect of parental involvement, or there may have been other influences that were not controlled for (e.g., other forms of family support, parental knowledge of music, etc.). The strength of parental support, mode of involvement, and educational background significantly moderated the relationship between students' music performance and interest, validating the importance of parents in students' music education. Parental support played a key role within the student's zone of proximal development, helping them to break through cognitive and skill bottlenecks and enhance their learning outcomes. Parents with a background in music education were able to support students' learning more effectively and promote their development in music learning. In summary, parents' involvement in students' music education is not only a supporting role but also an important facilitator of students' cognitive development and learning progress. Parents should provide individualized support based on students' needs to help students achieve higher levels of development within their zone of proximal development.

**Table 10**

*One-way ANOVA for the effects of parental involvement variables on children's music exam performance*

Variable	Source	Sum of Squares	df	Mean Square	F	Sig.
Encourage your child to work hard when he/she encounters difficulties	Between Groups	5.915	1	5.915	5.976	.016
	Within Groups	148.081	148	1.000		
	Total	153.996	149			
Care about your child's performance in music class	Between Groups	7.315	1	7.315	4.125	.044
	Within Groups	262.225	148	1.772		
	Total	269.540	149			
Provide necessary resources for music learning	Between Groups	2.623	1	2.623	1.788	.183
	Within Groups	217.117	148	1.467		
	Total	219.740	149			
Willing to pay for music lessons	Between Groups	2.184	1	2.184	1.305	.255
	Within Groups	247.710	148	1.674		
	Total	249.893	149			

A one-way analysis of variance (ANOVA) was conducted to test Hypothesis 4- the effect of parental musical background on the four behaviors listed above, and a test of variance (Levene's test) was conducted to confirm that the data met the assumption of variance.

Levene's test showed that all Sig. Values were greater than 0.05 and the data met the assumption of variance chi-square.

#### **Encouraging children to work hard when they encounter difficulties:**

There is a significant effect of parental musical background on this behavior ( $F = 5.976$ , Sig. = 0.016). A one-way ANOVA showed that parental musical background had a significant effect on encouraging children to work hard ( $F = 5.976$ ,  $p = .016$ ) and caring about their performance in music class ( $F = 4.125$ ,  $p = .044$ ), but no significant effect on providing learning resources or paying for music lessons ( $F = 1.788-1.305$ ,  $p > .05$ ; see Table 10).

#### **Caring about the child's performance in music class:**

There was a significant effect of parental musical background on this behavior ( $F = 4.125$ , Sig. = 0.044).

#### **Providing necessary resources for music learning:**

No significant difference was found ( $F = 1.788$ , Sig. = 0.183).

#### **Willing to pay for music lessons:**

No significant difference was found ( $F = 1.305$ , Sig. = 0.255).

Parents' musical background was found to have a significant effect on encouraging their children to face difficulties and caring about their children's performance in music lessons, but there was no significant difference in providing learning resources and paying tuition fees. This suggests that parents' musical background plays a role in some educational behaviors but has less impact on other supportive behaviors. (Hypothesis 4 partially established)

## **4. DISCUSSION**

Based on Vygotsky's Zone of Proximal Development (ZPD) theory, this study examined the role of parental involvement in shaping elementary school students' music interest and academic achievement. The findings provide partial support for the proposed hypotheses and contribute to a more nuanced understanding of how parental support operates within the context of music education. Importantly, these results should be interpreted in relation to existing literature in order to situate the study within broader scholarly discourse.

### **1. The relationship between parental support and student interest in music**

The present study found that parental provision of music learning resources was significantly associated with students' interest in music. This finding is consistent with previous research suggesting that a supportive home environment plays a crucial role in fostering children's musical motivation and engagement (McPherson, 2009; Creech, 2010). These studies emphasize that parental support, particularly through facilitating access to musical resources and experiences, can positively influence children's attitudes toward music learning.

However, unlike some prior studies that highlight the importance of direct parental involvement behaviors—such as supervising practice or maintaining communication with teachers (Upitis et al., 2017)—the present study did not find significant associations between these forms of involvement and students' interest. This discrepancy may reflect contextual differences, suggesting that in the Chinese educational setting, the type and quality of parental support may be more influential than the frequency of involvement behaviors. This finding also aligns with research indicating that students' musical engagement is shaped by multiple interacting factors, including instructional context and individual motivation (Cui, 2023).

### **2. Interaction of parental support, interest, and student achievement**

Although this study did not identify a direct significant relationship between parental support and students' music achievement, the moderated regression results indicated that parental involvement significantly enhanced achievement when students exhibited high levels of interest. This finding is consistent with research suggesting that parental involvement often influences academic outcomes indirectly through motivational pathways (Cheung & Pomerantz, 2012).

From a theoretical perspective, this result strongly supports the central premise of ZPD theory, which posits that learning is optimized when external support is aligned with the learner's developmental readiness. In this context, students' interest can be understood as a key condition that enables parental support to function effectively as scaffolding. This interpretation is also supported by prior studies highlighting the importance of intrinsic motivation in sustaining engagement and improving learning outcomes in music education (Liu et al., 2015).

### 3. Influence of parents' musical backgrounds

The findings related to parents' musical backgrounds partially align with previous research indicating that parents with musical experience are better equipped to support their children's musical development (Davidson & Borthwick, 2002). In the present study, such parents were more likely to provide emotional encouragement and show concern for their children's learning processes.

However, no significant differences were found in terms of material support, such as providing learning resources or paying for lessons. This result contrasts with studies suggesting that parental cultural capital may influence the level of support provided in music education (Kong, 2020). One possible explanation is that material support may be more strongly associated with socioeconomic status rather than musical expertise. This suggests that the impact of parental background is multidimensional and varies depending on the type of support considered.

### 4. Implications for ZPD theory and home–school collaboration

Overall, the findings provide empirical support for the applicability of ZPD theory in the context of music education. In particular, the interaction between parental involvement and student interest demonstrates how external support can effectively extend students' learning potential when it is aligned with their motivational state.

At the same time, the negative association between parent–teacher communication and student achievement diverges from previous research, which generally emphasizes the benefits of home–school collaboration (Oliveira et al., 2021; Ho, 2011). This unexpected result suggests that the quality and appropriateness of communication, rather than its frequency, may be the determining factor in its effectiveness. It also raises the possibility that excessive or misaligned parental intervention may hinder students' autonomy and learning outcomes.

#### 4.1. Conclusion of Discussion

Taken together, these findings indicate that parental involvement in music education is a complex and context-dependent process. Rather than exerting a uniform effect, different forms of parental support interact with students' motivation and contextual factors in shaping learning outcomes. By integrating these findings with existing literature and the ZPD framework, this study contributes to a more refined understanding of how family-based support can facilitate students' musical development. Overall, the findings provide empirical support for the applicability of ZPD theory in the context of music education. In particular, the interaction between parental involvement and student interest demonstrates how external support can effectively extend students' learning potential when it is aligned with their motivational state.

At the same time, the negative association between parent–teacher communication and student achievement diverges from previous research, which generally emphasizes the benefits of home–school collaboration (Oliveira et al., 2021; Ho, 2011). This unexpected result suggests that the quality and appropriateness of communication, rather than its frequency, may be the determining factor in its effectiveness. It also raises the possibility that excessive or misaligned parental intervention may hinder students' autonomy and learning outcomes.

## **Limitations and recommendations for future related research**

Although this study provides preliminary evidence for the relationship between parental support and student music learning, several limitations should be acknowledged. First, the sample was restricted to a specific cultural and regional context, which may limit the generalizability of the findings. Future research should expand the sample to examine parental involvement mechanisms across diverse cultural and social settings. Second, the use of cross-sectional data limits the ability to capture the long-term dynamics of parental support on students' music learning. Longitudinal designs are therefore recommended to better understand how parental involvement evolves over time. In addition, further research is needed to refine the conceptualization of parental support and to examine its differential effects across student groups. Finally, the relatively small sample size (n = 150) may have limited statistical power, particularly in detecting interaction effects, and future studies should aim to validate these findings using larger samples.

Beyond these limitations, the findings of this study offer several important implications for policy, educational practice, and family engagement in music education.

At the policy level, the results highlight the importance of integrating family-based support into music education policy frameworks. Educational policymakers may consider developing guidelines or programs that encourage parental involvement in music learning, particularly by promoting access to music resources and supporting parent education initiatives. Policies that strengthen home-school collaboration mechanisms could further enhance the effectiveness of music education.

At the level of educational practice, music educators are encouraged to actively engage parents as partners in the learning process. This may include providing structured guidance to parents on how to support their children's music learning at home, offering regular communication channels, and designing activities that involve both students and parents. Teachers should also be mindful of aligning parental involvement with students' interests to maximize its positive impact on learning outcomes.

At the family level, parents are encouraged to adopt supportive rather than overly controlling involvement strategies. Creating a positive home music environment, encouraging children's interest, and providing appropriate emotional and material support may contribute to more effective and sustainable music learning. Importantly, fostering students' intrinsic interest in music appears to be a key condition under which parental support becomes most effective.

### **Ethical approval**

The study was approved by Nanjing Normal University Ethics Committee (date: 15.10.2025, number: NNU-EC-2025-045).

### **Author contribution**

Study conception and design: JM; data collection: QW, LZ; analysis and interpretation of results: QW, LZ; draft manuscript preparation: QW, LZ. All authors reviewed the results and approved the final version of the article.

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### **Conflict of interest**

The authors declare that there is no conflict of interest.

### **Etik kurul onayı**

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Çalışmanın tasarımı ve konsepti: JM; verilerin toplanması: QW, LZ; sonuçların analizi ve yorumlanması: QW, LZ; çalışmanın yazımı: QW, LZ. Tüm yazarlar sonuçları gözden geçirmiş ve makalenin son halini onaylamıştır.

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