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Music Competence among Preschool Education Students in Hebei Province, China: Implications for Teacher Preparation

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Abstract
Music constitutes an important component of early childhood education and development. The music competence of preschool teachers is relevant not only to their participation and performance in musical activities but also to their ability to organize, design, and implement music activities in early childhood educational settings. Therefore, understanding the music competence of preschool education students is important for improving preschool teacher preparation. This study aimed to examine the overall level of music competence among preschool education students, identify variations across specific areas of music competence, and explore the implications of these findings for preschool teacher preparation. A quantitative cross-sectional research design was employed, involving preschool education students in Hebei Province, China. A total of 380 valid questionnaires were obtained. Music competence was measured using a 12-item scale rated on a seven-point Likert scale. Descriptive statistics, including means and standard deviations, were used to examine students' responses to individual music competence items, and the internal consistency of the scale was also assessed. The results indicated that the Music Competence Scale demonstrated high internal consistency (Cronbach's $\alpha = .937$), with mean scores across the 12 items ranging from 4.839 to 5.163, indicating generally positive self-assessments of music competence. The highest-rated abilities were singing accurately along with a recording ($M = 5.163$), identifying musical genres ($M = 5.147$), and describing emotions evoked by music ($M = 5.113$). In contrast, identifying whether singing or playing was out of time with the beat ($M = 4.839$) and independently singing a new song after hearing it two or three times ($M = 4.842$) received relatively lower ratings. Participants also reported relatively positive levels of competence in areas directly related to early childhood music education, including designing gamified music activities appropriate for children of different ages and using simple musical instruments to facilitate children's understanding of rhythm and beat. The findings suggest that music competence among preschool education students extends beyond musical performance skills and encompasses multiple aspects, including musical perception, musical memory and reproduction, musical expression, musical participation, and the pedagogical application of music. Accordingly, music courses in preschool teacher education should not focus solely on developing students' individual musical skills but should also strengthen rhythmic perception, musical reproduction, music activity design, and the pedagogical application of music, thereby supporting students in translating their personal music competence into professional practice appropriate for early childhood educational settings.

Keywords: Music competence; Preschool education students; Preschool teacher preparation.

I. Introduction

Music holds significant educational value in early childhood education and serves as an important medium through which young children engage in learning, express emotions, and participate in social interactions. Unlike instructional activities that primarily focus on the transmission of knowledge, musical activities typically integrate multiple forms of engagement, including singing, rhythm, movement, listening, and creative expression, thereby providing children with participatory and experiential learning opportunities. In recent years, research in early childhood education has increasingly examined the application of music and movement activities in educational settings. Music and movement have been identified as important components of children's play and socialization and can therefore serve as valuable pedagogical tools in early childhood education (Savage et al., 2025).

Within early childhood educational settings, teachers play a central role in implementing musical activities. Preschool teachers are expected not only to organize activities such as singing, rhythm exercises, movement, and musical games in accordance with

curriculum requirements but also to select and adapt appropriate musical content according to children's age, interests, and developmental levels. Consequently, teachers' musical knowledge and skills may influence their capacity to conduct music-related teaching activities effectively. Bautista et al. (2024) noted that, across many educational systems, the music education received by preschool teachers during initial teacher education and professional development remains limited, potentially leaving some teachers insufficiently prepared to meet the demands of music teaching within early childhood curricula. Music education, therefore, should not be regarded merely as an supplementary component of preschool teacher education but rather as an important element of future teachers' professional preparation.

Against this background, music competence represents an important concept for understanding the musical preparation of preschool education students. For prospective preschool teachers, music competence should not simply be equated with the level of professional performance expected of music majors; rather, it should encompass a range of knowledge, skills, and participatory capacities relevant to early childhood educational practice. These may include musical perception, pitch and rhythmic discrimination, singing, musical memory, musical expression, participation in musical activities, and the active acquisition of music-related information. More importantly, preschool education students need to be able to translate their musical knowledge and skills into educational activities appropriate for young children. Accordingly, examining the music competence of preschool education students requires moving beyond a narrow focus on musical performance skills toward a more comprehensive understanding of their musical capabilities.

For preschool education students, the educational significance of music competence is particularly evident in the connection between musical competence and pedagogical application. Future preschool teachers need not only to sing, listen to, and understand music themselves but also to use music to facilitate children's participation and learning. For example, teachers may need to design musical games appropriate for children of different ages, use simple musical instruments to help children understand rhythm and beat, and organize children's participation in group singing or instrumental activities. The integration of personal music competence with the pedagogical application of music is therefore an important component of preschool teachers' professional preparation. Kong (2025) demonstrated that pre-service kindergarten teachers' perceptions of their musical competence and music pedagogical skills are closely related to their professional preparation for music teaching. Training approaches that integrate musical content knowledge with pedagogical knowledge may facilitate pre-service teachers' understanding of music teaching and support their professional development.

However, existing research indicates that preschool teachers continue to face challenges in their preparation for music education. On the one hand, some prospective teachers may lack systematic prior music learning experiences; on the other hand, recognizing the educational value of music does not necessarily mean that teachers are able to organize musical activities confidently and effectively. Savage et al. (2025) found that although early childhood teachers generally recognized the value of music and movement activities, their confidence in implementing such activities varied, while targeted professional learning and practical support could strengthen their capacity to implement music activities. Preschool teacher preparation should therefore extend beyond determining whether students have simply "studied music" and should instead consider the specific musical competencies they possess and the extent to which these competencies correspond to the demands of future early childhood educational practice.

This issue is equally relevant in the Chinese context. Kong and Xiong (2025), in their study of pre-service kindergarten teachers in China, identified confidence and beliefs about music education as important factors in understanding prospective teachers' preparation for music teaching. Their findings also highlighted aspects of music education preparation that warrant further attention among prospective kindergarten teachers without specialized music backgrounds. At the same time, recent research on music education training for kindergarten teachers has emphasized the need to integrate musical content knowledge, pedagogical knowledge, and authentic teaching contexts rather than treating musical skills and pedagogical practice as separate components (Kong, 2025). These studies provide an important foundation for understanding preschool teachers' preparation for music education while also indicating a need for closer examination of the specific music competence profiles of preschool education students.

Although research on preschool teachers' preparation for music education, music teaching confidence, and professional training has increased in recent years, existing studies have tended to focus on teachers' attitudes toward music teaching, confidence, training experiences, and instructional practices. Comparatively less attention has been devoted to

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examining preschool education students' performance across specific areas of music competence. In particular, the music competence required of prospective preschool teachers is unlikely to constitute a single performance-based ability; rather, it may encompass musical perception, musical memory and reproduction, musical expression, musical participation, and the pedagogical application of music in early childhood settings. Examining preschool education students at the level of specific music competence items may therefore provide a more nuanced understanding of the musical strengths and areas for development of future preschool teachers and offer empirical evidence for the design of teacher education curricula. Such an approach may also complement existing research that has primarily examined music education from the perspectives of teacher training, confidence, and instructional preparedness (Bautista et al., 2024; Kong & Xiong, 2025).

Based on this background, the present study focuses on the music competence of preschool education students in Hebei Province, China. It aims to examine students' self-reported performance across different areas of music competence and to explore the implications of these patterns for preschool teacher preparation. Specifically, the study analyzes 12 music competence items to examine students' relative performance in musical perception, musical performance, musical expression, musical participation, and the pedagogical application of music, while identifying areas that may require greater attention in teacher preparation. Accordingly, the following research questions were formulated:

RQ1: What patterns characterize preschool education students' self-reported performance across different music competence items?

RQ2: Which areas of music competence may require greater attention in preschool teacher preparation?

By addressing these research questions, the study seeks to provide empirical evidence to inform the design of music courses and the development of professional competencies in preschool teacher education. Particular attention is given to the potential connection between students' personal music competence and its application in early childhood music education. In doing so, the study emphasizes that music education within preschool teacher preparation should extend beyond general musical skills training and support prospective teachers in developing integrated musical competencies that can be effectively applied in early childhood educational settings (Kong, 2025; Savage et al., 2025).

II. Literature Review

Music education is an important component of early childhood education, and teachers play a central role in transforming musical activities into meaningful learning experiences for young children. Musical activities in preschool settings commonly include singing, rhythm, movement, listening, musical games, and the use of simple musical instruments. These activities require not only children's active participation but also teachers' appropriate organization, demonstration, and guidance. Recent research has shown that music and movement constitute important elements of children's play and social interaction and can serve as valuable pedagogical tools in early childhood education. However, teachers' competence and confidence in implementing musical activities may be influenced by their opportunities for professional learning and their previous experiences with music education (Savage et al., 2025). Similarly, Bautista et al. (2024) noted that preschool teachers in many educational systems receive limited preparation in music education during both pre-service education and professional development, and such preparation may be insufficient to meet the demands of music teaching within early childhood curricula. Accordingly, whether prospective preschool teachers possess appropriate music competence represents an important consideration in their professional preparation.

Against this background, music competence can be regarded as an important concept for understanding the musical preparation of preschool education students. For prospective preschool teachers, music competence should not be equated simply with the professional performance proficiency expected of music majors; rather, it should be understood as an integrated set of competencies relevant to their future educational practice. These competencies include fundamental musical perception and discrimination, such as pitch, rhythm, and musical genre identification, as well as singing, musical memory, musical expression, and participation in musical activities. More importantly, preschool education students need to be able to apply their musical knowledge and skills within educational contexts involving young children. Kong (2025) indicated that the musical preparation of kindergarten teachers involves not only musical content knowledge but also the ability to transform such knowledge into developmentally appropriate learning activities for children. Therefore, the integration of musical content knowledge and music pedagogy is particularly important for the professional development of prospective teachers.

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From the perspective of preschool teacher education, the music competence required of future teachers is inherently multidimensional. On the one hand, teachers need fundamental musical skills, including accurate singing, rhythmic perception, musical memory, and attentive listening, which support musical demonstration and the organization of basic musical activities. On the other hand, teachers also require capacities for musical expression and participation so that they can engage actively in children's singing, movement, and group musical activities. In addition, prospective teachers need to develop the ability to apply music within early childhood teaching, such as designing age-appropriate musical activities, using simple instruments to facilitate children's understanding of rhythm and beat, and adapting musical activities according to children's needs. In a study involving 467 pre-service kindergarten teachers in China, Kong and Xiong (2025) found variations in participants' confidence across different music teaching activities, with lower confidence particularly evident in activities requiring specialized musical knowledge and creativity. These findings suggest that the musical preparation of pre-service teachers should not be regarded as a single, uniform construct, as different areas of music competence may present distinct developmental needs.

Consequently, teacher preparation represents a critical stage in the development of music competence among preschool education students. The purpose of teacher education should extend beyond simply enabling students to "learn music"; it should also support them in developing musical competencies that can be effectively applied in early childhood educational practice. Existing research indicates that targeted music training can strengthen prospective teachers' capacity for music teaching and facilitate the integration of musical knowledge with pedagogical practice. For example, Kong (2025) employed a music education training approach integrating Shulman's pedagogical content knowledge with the pedagogical reasoning and action model, emphasizing experiential learning as a means of connecting musical content knowledge with teaching practice. Similarly, Savage et al. (2025) found that professional learning features such as active participation, demonstration resources, ongoing guidance, and opportunities for practice could strengthen early childhood teachers' confidence in implementing music and movement activities, particularly among teachers with limited formal music training. Teacher education programs should therefore provide not only musical skills training but also meaningful opportunities for students to apply music within authentic or practice-oriented early childhood educational contexts.

Although research on preschool teachers' preparation for music education, confidence in music teaching, and professional training has increased in recent years, existing studies have tended to focus on teachers' training experiences, teaching confidence, and beliefs about music education, while comparatively less attention has been devoted to the performance profiles of preschool education students across specific areas of music competence. In the Chinese context, Kong and Xiong (2025) have demonstrated that pre-service kindergarten teachers exhibit varying levels of confidence across different music teaching activities; however, further investigation of students' relative strengths and areas for development through specific music competence items remains warranted. Therefore, the present study focuses on preschool education students in Hebei Province, China, and examines their self-reported performance across 12 music competence items covering musical perception, musical performance, musical expression, musical participation, and the pedagogical application of music. Through this item-level analysis, the study seeks to provide more specific empirical evidence for the design of music curricula in preschool teacher education and for the development of prospective teachers' music competence.

III. Methodology

This study employed a quantitative cross-sectional research design to examine the music competence of preschool education students in Hebei Province, China. The participants were students enrolled in preschool education programs in Hebei Province, and a total of 380 valid questionnaires were obtained. This population was selected because preschool education students represent an important group of prospective early childhood teachers, and their music competence is relevant to their professional preparation for implementing music activities in future early childhood educational settings. Recent research on pre-service kindergarten teachers has also indicated that prospective teachers may vary considerably in their preparedness and confidence regarding music teaching, highlighting the need for further investigation of their specific areas of music competence (Kong & Xiong, 2025).

Data were collected using a structured questionnaire. The Music Competence section consisted of 12 items measured on a seven-point Likert scale ranging from 1 (Strongly Disagree) to 7 (Strongly Agree). The items addressed various aspects of music competence, including musical

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perception and discrimination, musical performance, musical memory, musical expression, musical participation, and the pedagogical application of music. Specifically, the items assessed abilities such as evaluating singing and pitch accuracy, singing accurately along with a recording, identifying rhythm and musical genres, singing from memory, expressing emotions evoked by music, designing musical activities for young children, and using simple musical instruments to facilitate children's understanding of rhythm and beat. This measurement approach is consistent with recent research emphasizing the multifaceted nature of music competence in preschool teacher education, whereby prospective teachers' musical preparation involves not only personal musical knowledge and skills but also the ability to apply such knowledge within early childhood teaching contexts (Kong, 2025).

Data were analyzed using IBM SPSS Statistics. First, Cronbach's alpha was calculated to assess the internal consistency of the 12 Music Competence items. Descriptive statistics, including the mean (M) and standard deviation (SD), were then computed to examine students' self-reported levels of competence across the individual items. Comparisons of item-level mean scores were used to identify areas in which students reported relatively stronger or weaker music competence and to interpret these patterns from the perspective of preschool teacher preparation. An item-level descriptive approach also allows music competence to be examined as a profile of specific abilities rather than being reduced to a single overall score, which is particularly relevant given previous evidence that pre-service early childhood teachers may differ in their confidence and preparedness across various types of musical activities (Kong & Xiong, 2025; Savage et al., 2025).

IV. Result and Discussion

A total of 380 preschool education students participated in this study, including 356 females (93.68%) and 24 males (6.32%). The participants were predominantly 19 and 20 years old, accounting for 48.42% and 42.37% of the sample, respectively. Regarding their musical learning background, only 76 students (20.00%) reported having prior music learning or training experience, whereas 304 students (80.00%) reported no such experience. This characteristic indicates that the sample consisted primarily of prospective preschool teachers without a specialized music background. Accordingly, their music competence is more appropriately interpreted from the perspective of generalist preschool teacher preparation rather than evaluated against the performance standards typically expected of music majors. Recent research on generalist early childhood teachers has similarly indicated that these teachers often have limited systematic music training or music preparation during initial teacher education, while teacher education and professional learning opportunities play an important role in supporting their future music teaching practice. Drawing on 249 studies across 38 countries, Nguyen et al. (2025) further demonstrated that music teaching among generalist early childhood and primary teachers is influenced by multiple factors, including prior musical experience, initial teacher education, professional development, and practical teaching support.

Table 1.
Demographic Characteristics of Participants (N = 380)

Variable	Category	Frequency	Percentage
Gender	Male	24	6.32%
	Female	356	93.68%
Age	18 years	15	3.95%
	19 years	184	48.42%
	20 years	161	42.37%
	21 years	20	5.26%
Prior music learning/training	Yes	76	20.00%
	No	304	80.00%

In terms of measurement quality, the 12 Music Competence items demonstrated high internal consistency, with a Cronbach's α of .937, a Composite Reliability (CR) of .938, and an Average Variance

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Extracted (AVE) of .557. The participants' overall mean score for Music Competence was 5.002 (SD = 1.216). Given that the questionnaire employed a seven-point Likert scale, this result indicates that the students generally reported relatively positive perceptions of their own music competence. However, it should be emphasized that the present study measured self-reported music competence; therefore, the findings reflect participants' subjective evaluations of their own abilities rather than their performance on objective assessments of musical proficiency. Previous research has similarly highlighted the importance of distinguishing among teachers' self-perceptions, actual musical skills, and pedagogical competence when examining music competence in preschool education, as music competence may encompass multiple dimensions, including knowledge, skills, attitudes, and pedagogical application (Szczyrba-Poroszewska & Lasota, 2023).

Table 2
Descriptive Statistics of Music Competence Items (N = 380)

Item	Music Competence Item	M	SD	Rank
MC1	Ability to judge singing proficiency	4.932	1.565	10
MC2	Ability to sing accurately along with a recording	5.163	1.578	1
MC3	Ability to identify rhythmic inaccuracies in singing or playing	4.839	1.650	12
MC4	Ability to identify pitch inaccuracies in singing or playing	4.968	1.556	6
MC5	Ability to identify musical genres	5.147	1.548	2
MC6	Ability to sing or play music from memory	4.953	1.620	8
MC7	Ability to sing a new song independently after hearing it two or three times	4.842	1.626	11
MC8	Ability to describe emotions evoked by music	5.113	1.550	3
MC9	Active engagement in seeking music-related information	4.966	1.564	7
MC10	Ability to design gamified music activities for children of different ages	5.068	1.534	5
MC11	Ability to use simple musical instruments to facilitate children's understanding of rhythm and beat	5.089	1.509	4
MC12	Ability to participate comfortably in group musical activities	4.947	1.606	9

At the item level, students' responses indicated some variation across different areas of music competence. The highest-rated item was MC2, "I am able to hit the right notes when I sing along with a recording" (M = 5.163, SD = 1.578), followed by MC5, "When I hear a piece of music, I can usually identify its genre" (M = 5.147, SD = 1.548), and MC8, "I am able to talk about the emotions that a piece of music evokes for me" (M = 5.113, SD = 1.550). These findings indicate that students reported relatively positive self-perceptions in singing along accurately with a recording, identifying musical genres, and expressing emotional responses to music. The results also suggest that Music Competence among preschool education students encompasses not only technical singing skills but also musical perception, recognition, and emotional expression. In a cross-cultural study involving 398 preschool teachers in Spain and Hong Kong, Bautista et al. (2024) found that musical activities in preschool settings took diverse forms, extending beyond singing and performance to encompass a broader range of musical practices. This further supports the view that music competence in early childhood educational contexts should be understood in relation to multiple forms of musical engagement and practice.

In contrast, MC3, "I can tell when people sing or play out of time with the beat" (M = 4.839, SD = 1.650), and MC7, "After hearing a new song two or three times, I can usually sing it by myself" (M = 4.842, SD = 1.626), received the lowest mean scores. These two items relate primarily to rhythmic perception and auditory memory and independent musical reproduction, respectively. Although both mean scores remained above the theoretical midpoint of 4 on the seven-point scale and therefore should not be interpreted as indicating a lack of competence, they may be regarded as relatively weaker areas warranting further development. The systematic review conducted by del Barrio and Arús (2024) highlighted the close relationships among rhythm, bodily movement, auditory perception, and musical

expression. Their review also emphasized the role of music-and-movement pedagogy in supporting learners' understanding of musical structures through auditory and bodily experiences and underscored the importance of rhythm- and movement-related pedagogical approaches in teacher education. In light of these findings, the relatively lower score for rhythmic discrimination in the present study suggests that preschool teacher preparation could provide additional opportunities for rhythm imitation, aural discrimination, movement-based activities, and integrated music-and-movement practice.

MC10 and MC11 are particularly noteworthy because they are directly related to the pedagogical application of music in future preschool teaching. MC10, "I can design gamified music activities suitable for children of different ages based on the same nursery rhyme," obtained a mean score of 5.068 (SD = 1.534), while MC11, "I can use simple musical instruments, such as small drums and bells, to help children understand musical rhythm and beats," obtained a mean score of 5.089 (SD = 1.509). Both items ranked among the five highest-rated items, indicating that participants held relatively positive perceptions of their ability to apply music within early childhood teaching contexts. Lee (2023), in a study of holistic music education training for preschool teachers, found that connecting musical skills with teaching activities, curriculum design, and children's developmental needs contributed to teachers' preparation for music teaching. Similarly, Trujillo Galea and Juárez Ramos (2024) found that some early childhood teachers engaged in creative musical and sound-based activities even when they lacked systematic training in music or music pedagogy. This further highlights the importance of systematically developing music activity design and creative pedagogical competence within teacher education.

From the broader perspective of teacher preparation, the findings indicate that the musical development of prospective preschool teachers should address both personal musical skills and the pedagogical application of music. On the one hand, relatively weaker areas such as rhythmic perception, auditory memory, and independent musical reproduction could be strengthened through repeated practice, focused listening activities, integrated rhythm-and-movement exercises, and singing practice. On the other hand, the relatively positive results for MC10 and MC11 suggest that teacher education programs could build on students' perceived strengths in pedagogical application by incorporating music activity design, the use of simple instruments, and children's musical games into more systematic practice-based training. Nguyen et al. (2025), in a meta-narrative review, identified modeling, feedback, collaboration, practical experience, and authentic teaching contexts as important forms of support for developing music teaching competence among generalist teachers. Similarly, Savage et al. (2025) found that ongoing guidance, opportunities for practice, and professional learning could enhance early childhood teachers' confidence and capacity to implement music and movement activities.

Overall, the findings reveal a generally positive but not entirely uniform music competence profile among the participating preschool education students. Students reported relatively stronger competence in singing along with a recording, identifying musical genres, and expressing emotional responses to music, whereas rhythmic perception and independent musical reproduction emerged as comparatively weaker areas. At the same time, students reported relatively positive competence in designing musical activities for young children and using simple musical instruments for pedagogical purposes. These findings suggest that music courses within preschool teacher education should not be limited to conventional training in singing, instrumental performance, and music theory. Instead, they should progressively establish a developmental pathway from musical perception and performance to pedagogical application. Recent research on early childhood music activities, music-and-movement pedagogy, and professional music education has similarly emphasized the importance of connecting musical content with classroom practice so that prospective teachers can translate their personal musical experiences and competencies into developmentally appropriate educational activities for young children.

V. Summary of Results

This study conducted an item-level analysis of the music competence of 380 preschool education students. Overall, the participants achieved a mean Music Competence score of 5.002 (SD = 1.216), indicating generally positive self-perceptions of their music competence. The 12 Music Competence items demonstrated high internal consistency (Cronbach's α = .937), indicating good reliability of the measure used in this study. Notably, only 20% of the participants reported having prior music learning or training experience, whereas 80% reported no such experience. Therefore, the findings primarily reflect the music competence of generalist preschool education students rather than that of students with specialized music backgrounds. A recent review of music teaching among generalist early childhood and primary teachers similarly indicated considerable

variation in teachers' prior musical experiences and preparation during initial teacher education, highlighting the importance of systematic music-related preparation within teacher education programs (Nguyen et al., 2025).

At the item level, variations were observed across different areas of music competence. The three highest-rated items were singing accurately along with a recording (MC2, M = 5.163), identifying musical genres (MC5, M = 5.147), and expressing emotions evoked by music (MC8, M = 5.113), indicating relatively positive self-perceptions in singing along accurately, musical recognition, and emotional expression. In contrast, identifying whether singing or playing was out of time with the beat (MC3, M = 4.839) and independently singing a new song after hearing it two or three times (MC7, M = 4.842) received the lowest mean scores. These findings suggest that rhythmic perception, auditory memory, and musical reproduction may represent areas warranting further attention in teacher preparation. A recent systematic review of music-and-movement pedagogy similarly emphasized the close relationships among rhythm, auditory perception, and bodily movement in music learning and highlighted the importance of developing these abilities through practical experiences in teacher education (del Barrio & Arús, 2024).

Meanwhile, noteworthy findings emerged for competencies directly related to the pedagogical application of music in early childhood education. Participants reported relatively positive self-perceptions of their ability to design gamified musical activities appropriate for children of different ages (MC10, M = 5.068) and to use simple musical instruments to facilitate children's understanding of rhythm and beat (MC11, M = 5.089). These findings indicate that music competence among preschool education students should not be understood solely in terms of personal singing, pitch discrimination, or musical recognition; it should also encompass the capacity to transform musical knowledge and skills into educational activities for young children. Previous research has emphasized the importance of integrating musical skills, pedagogical knowledge, and classroom application in preschool teacher preparation, while sustained practice, modeling, and professional support can further strengthen prospective teachers' preparedness to implement musical activities (Lee, 2023; Savage et al., 2025). Overall, the findings suggest that preschool education students exhibit a generally positive but uneven profile of music competence across specific areas. Future teacher preparation should therefore build upon students' existing musical strengths while providing more systematic opportunities to develop rhythmic perception, musical reproduction, and the pedagogical application of music.

VI. Conclusion

This study examined the self-reported music competence of 380 preschool education students in Hebei Province, China. Overall, the findings indicated that participants held relatively positive perceptions of their music competence, although some variation was evident across specific areas of competence. Students reported relatively stronger competence in singing accurately along with music, identifying musical genres, and expressing emotional responses to music, whereas rhythmic discrimination and independent musical reproduction based on auditory memory emerged as comparatively weaker areas. At the same time, participants reported relatively positive perceptions of their competence in pedagogically oriented tasks, such as designing gamified musical activities for young children and using simple musical instruments to facilitate children's understanding of rhythm and beat. These findings suggest that, for preschool education students, music competence should not be understood solely in terms of personal musical skills, such as singing, rhythm, or musical discrimination, but should also encompass the capacity to translate these skills into meaningful practices within early childhood education. Recent research on generalist early childhood and primary teachers similarly emphasizes that teachers' musical preparation is shaped by multiple factors, including prior musical experiences, musical knowledge, pedagogical competence, and opportunities for professional learning (Nguyen et al., 2025).

These findings have direct implications for preschool teacher preparation. Music courses within preschool education programs should not focus exclusively on relatively discrete areas of skills training, such as vocal performance, instrumental performance, or basic music theory. Instead, stronger connections should be established among fundamental musical skills, practical musical experiences, and pedagogical applications in early childhood education. In particular, the relatively weaker areas of rhythmic perception and auditory reproduction identified in this study could be addressed through additional activities involving rhythmic discrimination, movement, singing by imitation, song memorization, and the integration of music with bodily movement. At the same time, activities such as teaching children's songs, designing musical games, using simple instruments, and participating in simulated preschool music lessons could provide students with opportunities to transform

their personal musical skills into practical teaching competence. Recent research indicates that experiential activities, modeling, collaboration, feedback, and authentic or simulated teaching experiences are particularly valuable for developing music teaching competence among generalist teachers (Nguyen et al., 2025). Similarly, the integration of music and movement provides an important practical approach to developing rhythmic understanding, auditory perception, and embodied engagement with music (del Barrio & Arús, 2024).

Several limitations of the present study should be acknowledged. First, the study relied on a self-report questionnaire; consequently, the findings represent students' subjective perceptions of their music competence and cannot fully substitute for objective assessments of singing, rhythm, aural discrimination, or actual music teaching performance. Second, the cross-sectional design primarily captured patterns of competence at a single point in time and therefore does not permit causal conclusions regarding the development of students' music competence. Third, the participants were drawn from Hebei Province, China, and caution should therefore be exercised when generalizing the findings to other geographical regions or teacher education systems. Future research could combine self-report measures with performance-based assessments, classroom observations, or authentic music teaching tasks and examine differences in music competence among students with varying levels of prior music learning experience. Longitudinal research could also investigate changes in students' music competence and music teaching competence as they transition from teacher education programs into professional preschool practice. Such research would provide a more comprehensive understanding of how pre-service music learning is translated into the actual pedagogical practices of future preschool teachers and could provide stronger empirical evidence for the continued improvement of music education within preschool teacher preparation programs.

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