The Structural Model and Educational Guidance Strategies of Chinese Children's Music Achievement

Yumeng He
School of Music, Liaoning Normal University, China

Abstract

This paper establishes a structural model of children's musical achievement from three dimensions: musical skill achievement, academic influence achievement and aesthetic education achievement. Based on this structure model, children's music education can be divided into three types, namely skill achievement tendency, academic achievement tendency and aesthetic achievement tendency. This paper uses Delphi method and questionnaire survey to establish the element system of the structure of children's musical achievement and makes a fuzzy comprehensive evaluation of the present situation of Chinese children's musical achievement from three aspects: individual music attribute, music learning environment and music education model. The results show that the fuzzy comprehensive evaluation of children's musical achievement is consistent with the calculation results of the structural model, and the structural model can be used to analyze and predict children's musical achievement.

1. Introduction

As a big country in children's music education, China's extensive learning of children's music skills and music education, as well as its investment in time, capital and energy, are unmatched by any other country. According to a survey, "Chinese children's musical training and learning is a social trend, with some successes and some failures, and it is the rational choice of parents to truly determine children's musical achievements" [1]. Indeed, under the guidance of the current "double reduction" policy and the education policy of "five education simultaneously", how to guide children to participate in music activities outside school, how to adjust the relationship between music training and school curriculum, and how to correctly recognize children's musical achievements have become hot topics of concern to schools, families and society. Based on the current research status and development trend, combined with the new development needs of children's education in the new era, to provide a theoretical system and educational guidance strategy for the research of children's diversified musical achievements, determined the study of this problem[2]. This paper proposes and solves two synchronous related logical propositions. First, children's music achievement is a personalized and diversified landscape of children's education realization. The second is to achieve the satisfaction of all kinds of children's music achievement, the key is to optimize the design of educational guidance strategy.

Through empirical analysis, this paper presents a music education practice model from "double reduction" to "double increase". The so-called "double increase" refers to increasing the comprehensive quality of children's music and increasing the social practice of music education.

2. Research methods

2.1. Expert consultation

The Delphi method was used to determine the constituent elements of the structural model of children's musical achievement. The Delphi method is an intuitive evaluation technology developed by the RAND Corporation in the United States in the 1940s, and it belongs to the collective evaluation method of experts [3].

2.1.1. Expert object selection. There are 65 children's education experts, music education experts, primary school music teachers and pedagogy experts selected nationwide. Expert standard: Associate senior professional title or above; familiar with the field of children's music education research or the field of systematic factor analysis and evaluation; engaged in the professional work for more than 10 years.

2.1.2. Consultation and interview content. What are the basic principles of children's music education? How to determine the goals of children's music learning? How to evaluate the achievement of children's music learning? What are the elements of children's musical achievement?

2.1.3. Consultation steps. 1）Preparation of expert consultation table. Consultation table includes: a）consultation content and filling instructions; b) Expert consultation table of "Elements of the Structural Model of Children's Musical Achievement" (this consultation table is open, and experts in various fields can supplement and modify the structural elements); c) Domain experts'

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570

familiarity with structural elements and their judgment basis; d)Open-ended questions (e.g., what are your opinions and suggestions on the structural elements?) . 2) Expert consultation process. Experts in each field are required to fill out two tables and answer open-ended questions; Two rounds of expert consultation were conducted to determine the components of the structural model of children's musical achievement.

2.2. Credibility of expert consultation

2.2.1.Reliability of expert consultation. The selected 65 experts are reasonably distributed in their research fields. Among the selected experts, there are not only experts in theoretical research but also experts with rich practical research experience. Therefore, experts in various fields have a strong degree of closeness to the consulting content.

2.2.2 Effectiveness of expert consultation. In the first round of expert intuition judgment, 65 questionnaires were sent out, and 61 valid questionnaires were recovered, with an effective response rate of 94%. In the second round of expert information diagnosis, 45 questionnaires were sent out, and 39 valid questionnaires were recovered, with an effective response rate of 88%. In the first round of correspondence consultation, 28 experts put forward suggestions and revision opinions on structural elements, indicating that the effectiveness of experts' participation in correspondence consultation is relatively high.

2.2.3 The degree of authority of expert advice. For the three first-level elements, the expert authority degree of the first round of correspondence consultation is between 0.69 and 0.78, and that of the second round of correspondence consultation is between 0.75 and 0.82 (see Table 1).

Table 1.The degree of authority of experts in the evaluation of children's musical achievement

	First round of consultation			Second round of consultation		
	Reference for judging	Degree of familiarity	Degree of authority	Reference for judging	Degree of familiarity	Degree of authority
Skill achievement	0.793	0.665	0.783	0.832	0.765	0.823
Academic achievement	0.832	0.702	0.767	0.879	0.709	0.812
Aesthetic achievement	0.805	0.678	0.699	0.858	0.678	0.757
Average	0.810	0.682	0.750	0.856	0.717	0.797

One is the basis on which the expert makes a judgment on the solution, and the other is how familiar the expert is with the problem. Authority degree is the arithmetic mean of judgment coefficient and familiarity coefficient, and the value ranges from 0 to 0.95. An authority level greater than or equal to 0.70 is generally considered acceptable. In this study, the average authority degree of experts in the two rounds of consultation for primary structural elements is 0.78 and 0.82 respectively, indicating that the expert authority degree is relatively high. According to the law that the prediction accuracy increases with the increase of expert authority, it can be inferred that the prediction accuracy of this study is high.

2.2.4. Coefficient of coordination of expert opinions. The coordination coefficients of all structural elements of the two rounds of consultation are shown in Table 2. The two-round coordination coefficients of all structural elements are 0.127 and 0.207 respectively. The significance levels of coordination coefficients after X2 test are all less than 0.05, indicating that the evaluation results are desirable.

Table 2. Coordination degree of expert opinions of primary structural elements and X^2 test

	First round of consultation			Second round of consultation		
	X^2R	P values	Coordination coefficient	X^2R	P values	Coordination coefficient
Skill achievement	0.165	196.356	0.000	0.191	163.136	0.000
Academic achievement	0.096	46.452	0.000	0.069	30.796	0.050
Aesthetic achievement	0.079	91.768	0.000	0.120	46.675	0.006
All the elements	0.132	573.357	0.000	0.201	273.227	0.000

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570

The degree of coordination of expert opinions refers to whether there is a big difference between all experts' evaluation opinions on all indicators, which is expressed by the coordination coefficient W. The value of coordination coefficient W ranges from 0 to 1. The larger W is, the better the coordination degree is. The total coordination coefficients of the first and second rounds of consultation in this study were 0.132 and 0.201 respectively, indicating that there was coordination of expert opinions after the two rounds of consultation and the result was desirable. However, the degree of coordination is not very high, which may be caused by: (1) There are many and scattered structural elements, and experts are not familiar with some of them. (2) The principle of Delphi method is back-to-back, and there is less communication between experts.

Determining the weight of structural elements is a key step in this consultation. The methods to determine the weight are percentage weight method, analytic hierarchy process, rank sum ratio method, factor analysis method and so on. The percentage weight method is easy to calculate and has no special requirements for data. In general factor analysis and evaluation, this method is often used to calculate the weight coefficient. In this expert consultation, on the basis of the ranking of expert structural elements, the percentage weight method is used for statistical calculation, and the weight coefficients of each index are obtained.

3. Result analysis

3.1. Determination of structural factors of children's musical achievement

3.1.1.Selection of structural factors. According to the results of central trend and discrete trend of expert consultation, the mean importance was <7.6, and the coefficient of variation was >0.27. The elements with mean operability <6.0 and coefficient of variation >0.35 were deleted (the disabled factor was retained), and a total of 8 elements were deleted. In addition, three elements were modified: two elements of musical skills were merged into one element, and three elements were added according to experts' opinions. After the selection and modification of the results of the first round of expert consultation,15 structural elements of the second round of consultation were formed, including 3 first-level elements and 15 second-level elements.

According to the results of central trend and discrete trend of expert consultation, the mean importance value was <8.0 and the coefficient of variation was >0.20; Four secondary factors were deleted when the mean operability was <6.0 and the coefficient of variation was >0.31 (residual factors were retained). Finally, the element system of children's musical achievement structure is obtained.

3.1.2. Elements weight coefficien. The weight coefficient formula of each factor calculated by the percentage weight method is as follows[4]:

$$K_j = \frac{S_j}{N \times \sum_{i=1}^{n} B_i} \quad (1)$$

$$S_j = \sum_{i=1}^{n} B_i N_i \quad (2)$$

K_j represents the percentage weight value of the j elements; N is the number of responses to the question. S_j represents the score of the$j$ elements;j represents the evaluated elements (1,2,3... ,m); i represents the number of evaluation grades (1,2,... , n); B_i is the grade i score; N_i represents the frequency of element j at grade i. The weight coefficients of the primary and secondary structural elements were calculated according to the rating of the importance of the structural elements by the experts consulted in the second round, as shown in Figure 1 (see Appendix).

3.2. A structural model of Children's musical achievement

Above adopted Delphi method, the expert qualitative prediction methods of diagnosis and evaluation of the children's music achievement structure model is established, it is depend on the familiar music education domain knowledge, in a children's music education theory and rich practical experience of experts, according to the already existing literature, through the layers of analysis and comprehensive judgement, The structure model of children's musical achievement is established, which has great credibility. We can take the relative influence degree (weight) of the three-dimensional major elements of musical achievement obtained by Delphi method as the unestimated coefficients α, β and γ in the structural model of children's musical achievement, so the structural model can be expressed as:

$$A = 0.46S + 0.29L + 0.25E \quad (3)$$

Formula (3) is a formal expression of evaluating children's musical achievements. The relative influence degree of the three dimensions of musical achievement can also be obtained by regression analysis. However, it is difficult to obtain complete statistical data on the realization degree of children's musical achievement, although the reliability of the data obtained under certain assumptions will be questioned. However, the relative influence degree of factors obtained through multi-layer argumentative of domain experts has the attribute of

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570

experience, but the reliability and credibility of such high cognition-based overall perception (group perception) evaluation can be accepted.

4. Discussion

4.1. The Realization Level of Children's Musical Achievement in the Traditional Sense

Through questionnaire survey and fuzzy comprehensive evaluation, the basic situation of Chinese children's musical achievements is that it is the inertial mentality of Chinese parents not to let their children lose at the starting line, so it is a common phenomenon for Chinese children to receive music skills education at an early stage. Due to the differences in children's musical skill learning and the incompleteness of music skill education, only 40.56% of children achieve a better realization of musical skills, and 67.94% of children can accept the realization of musical skills. This result is more in line with the reality of Chinese children's music learning. In traditional Chinese basic education, music education mainly refers to music skills education[5], for example, children learn piano, violin and all kinds of ethnic instruments in the early stage, and in children's music skills learning and training, has a good foundation and extensive. The vast majority of parents have the awareness to cultivate their children's musical skills [6]. Those who have achieved success in musical skills and achieved good results in international music competitions are among 12.30% of our statistics (the degree of musical skills achieved well). In other words, children who achieve musical skills well tend to go on to professional careers in music[7].

4.2. The Realization Level of Children's Musical Achievement in Modern Sense

From the perspective of the complete education concept of music learning and training, music skill learning is a means and way to receive music education. Through music skill learning and training, children can understand and master music, improve their perception and cognitive ability through music, so as to promote the development of all aspects. In music pedagogy [8], music psychology [9], music neuroscience[10] and other research fields, the influence of music training on human cognitive ability is explored from different perspectives. For example, the influence of musical skill training on children's language ability; Influence on mathematical ability, etc. .Although there are many experimental analysis results in this aspect, there is still a lack of systematic research on the impact of such relevant studies on children's academic performance, the promotion of music as an important way of cognitive ability training in different educational environments, and what results will be generated.

4.3. Educational Guidance Strategies for Children's Musical Achievement

This study describes the overall realization of children's musical achievement by establishing a structural model, whose significance is to expand music education from a single category of artistic skills to a comprehensive education that includes people's academic development and aesthetic literacy. This structure model can not only reflect the comprehensive characteristics of individual musical achievement, but also be used to evaluate the overall realization of children's musical achievement in a region.

The realization of children's musical achievement is a development process from adaptation of music education to realization of musical achievement. Music has multiple perception and cognitive attributes, and children have differences in music perception and cognition, which form the fitness distribution in music education [11]. Some children are gifted in musical skill learning (with strong musical aptitude) and are adapted to develop musical skill achievement. Some children although the tendency of musical ability is weak, but can improve cognitive ability in music, adapt to develop learning ability through music. Some children are weak in musical skills and cognitive conversion ability, so they adapt to the cultivation of musical aesthetic ability, love music through music learning and training, and can get happiness from music. Therefore, in children's music education, according to the characteristics and adaptability of children in music learning, reasonable and effective design of education and teaching mode, can achieve the desired degree of music achievement landscape [12].

According to the above music education guidance strategy, we can design the landscape of achieving various musical achievement, which reflects the peaks of three different musical achievement (satisfaction achievement goal). As shown in Figure 2:

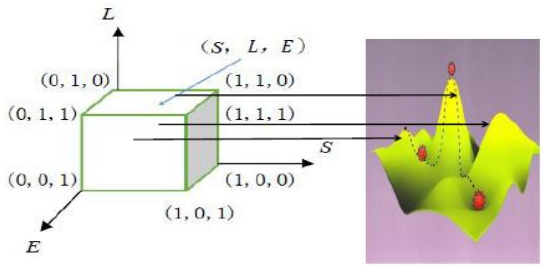

Figure 2. Realization landscape of children's musical achievement based on educational guidance strategy

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570

As can be seen from Figure 2, any point (S, L, E) on the realization degree space reflects the realization characteristics of children's musical achievement. For example, the points (1,0,0), (0,1,0) and (0,0,1) on the three axes are singularities (impossibilities) of children's musical achievement, while the points (0,0,0) are the worst, the points (1,1,1) are the best, and the path from the points (0,0,0) to the points (1,1,1) is the most path. In other words, the realization path of children's musical achievement in different regions and different levels of music education development can be determined according to the realization degree structure model. The significance of the model also lies in the empirical analysis to explain the differences in children's musical achievements [13]. That is, why similar individual music attributes have different musical skill achievements, why the same music education environment has different influences on children's learning, and why the same school music education curriculum has different aesthetic education effects.

5. Conclusion

The main contribution of this paper is to propose a structural model of children's musical achievement and establish a method for analyzing the realizability of different types of musical achievement. The research shows that how to understand and determine what kind of achievement children should get in music learning and training, and how to choose the goal of music achievement reasonably are the common concerns of music learners and educators. The goal and process of music teaching and learning can be trusted when both learners and educators choose the type and goal of music achievement. For children's music education, no matter musical skill achievement, academic development achievement, aesthetic education achievement, are children's music learning must determine the goal. However, in the concrete implementation of music education, the three achievement attributes will have different tendencies due to the differences of children's individual cognition and development of music. Therefore, children's music education can be divided into three tendencies, namely, the tendency of musical skill training, the tendency of music promoting academic achievement, and the tendency of music aesthetic education. The three musical learning tendencies and achievement attributes proposed in this paper provide a criterion for children's music learners and music educators to choose goals.

6. References

[1] Jesús Rodríguez Rodríguez, Rosa María Vicente Álvarez. The music materials in early childhood education: A descriptive study in Galicia (Spain), International Journal of Music Education. 2017, 35, pp.139–153.

[2] Fang Li. The influence of music education on children's intelligence development -- a case study of two primary school students in Hohhot. Inner Mongolia Normal University, 2008.(Chinese)

[3] SS Shih. Role of Achievement Goals in Children's Learning in Taiwan. Journal of Educational Research, 2005, 98, pp.310-319.

[4] Dianne M. Tai, Shane N. Phillipson, Sivanes Phillipson.Music training and the academic achievement of Hong Kong students. Research Studies in Music Education, vol. 40, 2: pp. 244-264.

[5] Calvin KC Lee, Bo-Wah Leung. Factors in the motivations of studio-based musical instrument learners in Hong Kong: An in-depth interview study. International Journal of Music Education, 2020,vol. 38, 3: pp. 400-414.

[6] Gary E. Mcpherson. The role of parents in children's musical development. Psychology of Music, 2008, vol. 37, 1: pp. 91-110.

[7] Andrew Kingsford-Smith, Paul Evans. A longitudinal study of psychological needs satisfaction, value, achievement, and elective music intentions. Psychology of Music. 2019,49, 382-398.

[8] Vicky Abad, Margaret S Barrett. Laying the foundations for lifelong family music practices through Music Early Learning Programs. Psychology of Music. 2020, 34, 212-238.

[9] Leonard Tan, Hui Xing Sin. Achievement Goals in Music Contexts: A Review of Literature. Update: Applications of Research in Music Education, 2019,vol. 38, 2: pp. 10-19.

[10] Beatriz Ilari. Musical Parenting and Music Education: Integrating Research and Practice. Update: Applications of Research in Music Education, 2017,vol. 36, 2: pp. 45-52.

[11] Lily Chen-Hafteck. In search of a motivating multicultural music experience: lessons learned from the Sounds of Silk project. International Journal of Music Education, 2007, vol. 25, 3: pp. 223-233.

[12] Mary E. Halick. Neuroscience, Music, and Culture: Finding Pathways to Effective Multicultural Music Education. Update: Applications of Research in Music Education, 2016,vol. 35, 3: pp. 11-15.

[13]Hyun Kyung Youm. Parents' Goals, Knowledge, Practices, and Needs Regarding Music Education for Their Young Children in South Korea. Journal of Research in Music Education, 2013,vol. 61, 3: pp. 280-302.

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570

Appendix

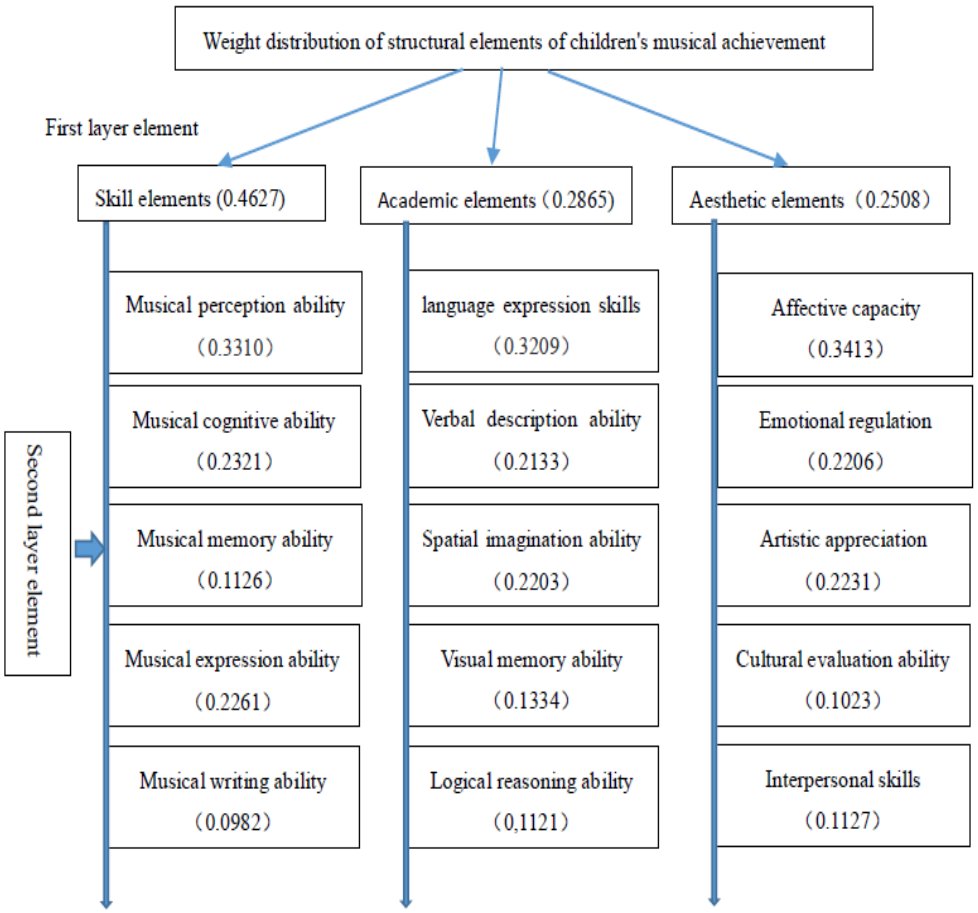

Figure 1. Weight distribution of structural elements of children's musical achievement

 | DOI: 10.20533/ijcdse.2042.6364.2022.0570