



ARTICLE

Construction of Psychological Adjustment Function Model of Music Education Based on Emotional Tendency Analysis

Bin Zhang*

College of Music, Shandong Normal University, Jinan, 250000, China

*Corresponding Author: Bin Zhang. Email: 114100@sdsu.edu.cn

Received: 05 August 2022 Accepted: 14 November 2022

ABSTRACT

In the face of fierce competition in the social environment, mental health problems gradually get the attention of the public, in order to achieve accurate mental health data analysis, the construction of music education is based on emotional tendency analysis of psychological adjustment function model. Design emotional tendency analysis of music education psychological adjustment function architecture, music teaching goal as psychological adjustment function architecture building orientation, music teaching content as a foundation for psychological adjustment function architecture and music teaching process as a psychological adjustment function architecture building, music teaching evaluation as the key of building key regulating function architecture, Establish a core literacy oriented evaluation system. Different evaluation methods were used to obtain the evaluation results. Four levels of psychological adjustment function model of music education are designed, and the psychological adjustment function of music education is put forward, thus completing the construction of psychological adjustment function model of music education. The experimental results show that the absolute value of the data acquisition error of the designed model is minimum, which is not more than 0.2. It is less affected by a bad coefficient and has good performance. It can quickly converge to the best state in the actual prediction process and has a strong convergence ability.

KEYWORDS

Emotional tendency analysis; music education; psychological adjustment; functional model; core literacy orientation

1 Introduction

Music irrigates the spiritual home that belongs to mankind alone. Musicality is one of the important symbols of human nature. The earth where human beings live is full of rich and colorful music. Although the music loved by people living in the snowy Northeast Plain and the cloudy and humid tropical rain forest is very different [1,2], music as an art, after all, is to express the deepest emotional world in people's hearts. This process is full of mystery. In daily life, we often see the situation using music to affect emotions, such as music in shopping malls or movies [3]. Music can create a variety of emotional atmospheres, including a lullaby that can accompany babies to sleep and a March that can inspire soldiers' fighting spirit [4]. In addition, music education is also increasingly used to regulate psychological emotions. Students' development core literacy mainly refers to the necessary character and



development ability that students should have and can meet the needs of lifelong development and social development, including three aspects, six literacy, and eighteen basic points [5,6]. “Independent development” as one of the three aspects of core literacy, emphasizes that “autonomy” is the fundamental attribute of the human being as a subject, and that individuals can manage their own learning and life and effectively deal with the complex and changeable environment; As one of the six core qualities, “healthy life” is committed to developing students’ physical and mental health and self-management [7,8]; In addition, “sound personality”, as one of the 18 basic points, focuses on cultivating students’ positive psychological quality and can learn to regulate and manage their emotions [9]. It can be seen that the independent regulation of mental health has been used as the main line in future student development and training programs. The core quality of music education has individuality and initiative in the process of music perception, making the regulation of emotion by music education one of the elements to improve the development of core quality [10,11].

Reference [12] proposed to integrate emotional tendency analysis into music education to cultivate middle school students’ creative thinking, which is an important thinking skill of middle and primary school students in the learning stage. In music education, by integrating the analysis of emotional tendency into classroom teaching, a series of measures have been taken: (1) Changing the way of music creation; (2) Guide students to participate in classroom practice; (3) Exercise students’ reverse thinking for analysis. The full use of emotional tendency analysis in music education promotes the improvement of students’ imagination, creates more space for students, changes students’ inherent way of thinking, enables students to look at problems from multiple levels and angles, and cultivates students’ improvisation ability. Teaching practice has proved that the development of creative thinking reflects the overall quality of students. The integration of emotional tendency analysis and music education is of great significance to cultivate middle school students’ creative thinking. Reference [13] assessed the impact of the Medellin music education project in Colombia and proposed that can music soothe the soul? Many studies have confirmed the impact of culture and music education on personal well-being, and believe that music is mainly a systematic practice or skill, or an established educational supply. However, few studies have assessed the impact of music programs aimed at achieving specific goals, as music is seen as a tool for social change. As a case study, taking Medellin music school as an example, the network’s music enlightenment education project has been running for 23 years. The objective is to evaluate the economic and social impact of participation in the program, using quasi-experimental propensity score matching technology as the evaluation method. The results showed that the project significantly reduced the likelihood of participants getting involved in the conflict and made them feel better about their quality of life. Students achieve better academic performance, strengthen cultural consumption and participate in artistic activities. It is reflected by expressing the payment willingness and positive payment order of institutional beneficiaries. The work also aims to demonstrate the usefulness of the methodology in assessing the impact of cultural policies, especially in developing countries.

Although the above research has made some progress, the analysis of emotional tendency is not enough. Therefore, this paper puts forward the construction of the psychological regulation function model of music education based on emotional tendency analysis. Affective tendency analysis is a process of analyzing, processing, induction, and reasoning subjective texts with emotional color. The Internet produces a huge amount of user-engaged, valuable information about people, events, products, etc. These comments express people’s various emotional colors and emotional tendencies, such as joy, anger, sorrow, joy, criticism, praise, and so on. Based on this, potential users can read these subjective comments to see what public opinion thinks about music education. This paper designs the emotional tendency to analyze the psychological adjustment function framework of music education and establishes the evaluation system of core literacy orientation. Different evaluation methods were used to obtain the evaluation results. Design four levels of the psychological adjustment function model of music education, and put forward the

psychological adjustment function of music education. The results show that the absolute value of the data acquisition error of the designed model is minimum. It is less affected by the bad coefficient. It can quickly converge to the best state in the actual forecasting process.

2 Construct the Psychological Adjustment Function of Music Education under the Analysis of the Emotional Tendency

Facing the current situation of mental health education, first, there are misunderstandings in the understanding of mental health education, resulting in the lack of motivation for action in school mental health education; Second, there is a lack of research on the teaching materials and methods of mental health education, and the school mental health education lacks the necessary bridge and support, under the analysis of emotional tendency, this paper puts forward the psychological adjustment function of music education from the elements of music teaching content, goal, process, and evaluation of mental health education. The principles are: omnidirectional principle, authoritative principle, sensitivity principle, consistency principle, and executive principle; The details are as follows:

- (1) Omnidirectional principle: the establishment of this principle system should reflect the problems between music education and psychological adjustment in an all-round way;
- (2) Authority principle: this principle system can measure the internal relationship between music education and psychological regulation function under the analysis of emotional tendency;
- (3) Sensitivity principle: this principle system can accurately and effectively reflect the subtle changes between music education and psychological adjustment function;
- (4) Consistency principle: the principle system should be consistent with the local actual development, and realistically reflect the problems between music education and psychological regulation function;
- (5) Executive principle: the principle system has strong executive power, and the calculation method is simple and scientific.

2.1 Design the Functional Framework of Psychological Adjustment of Music Education Based on Emotional Tendency Analysis

Under the analysis of emotional tendency, according to the goal of mental health education in Colleges and universities, the analysis of emotional tendency is infiltrated into the content of music education [14], and the functional framework of psychological regulation of music education is designed as shown in Fig. 1.

According to the psychological adjustment function architecture of music education shown in Fig. 1, music teaching content is taken as the basis for the construction of psychological adjustment function architecture, music teaching objectives as the guidance for the construction of psychological adjustment function architecture, music teaching process as the core of the construction of psychological adjustment function architecture, and music teaching evaluation as the key to the construction of psychological adjustment function architecture.

2.1.1 Construction Orientation of Psychological Regulation Function Framework: Music Teaching Objectives

The music teaching goal of mental health education needs to be formulated by analyzing the psychological development characteristics of college students according to the change in college students' life and studies in colleges and universities [15,16]. Based on this, the objectives of information health education for college students formulated in this study are shown in Table 1.

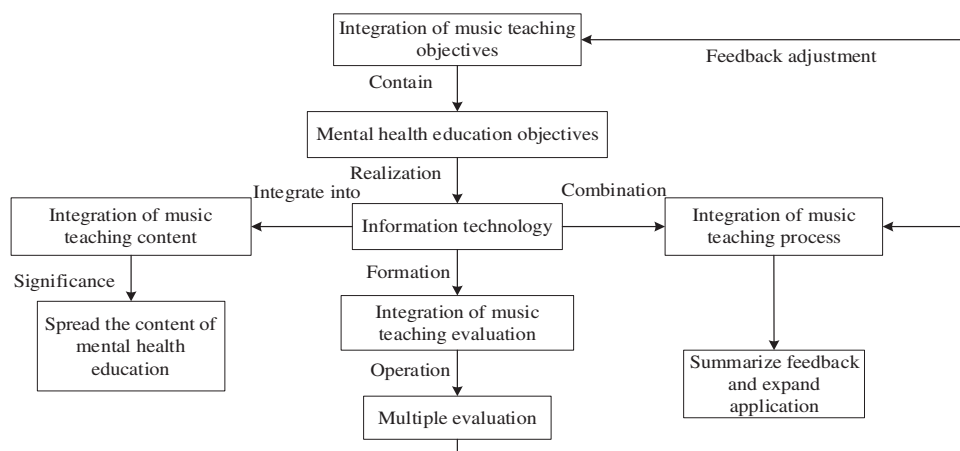


Figure 1: Structure of psychological adjustment function of music education

Table 1: Objectives of information health education for college students

Serial number	Target system	Concrete content	Significance
A	General objective	Improve psychological quality and develop in an all-round way	It is an inevitable requirement to improve the overall quality of college students
B	Direct target	Enhance the endurance and adaptability of college students	It is an effective way to innovate the education of college students
C	Ultimate objective	Improving college students' personality and promoting all-round development	It is an important measure to improve the curriculum system of higher education
D	Specific objectives	Adapt to college life as soon as possible; Establish correct three views; Cultivating college students' mentality of study and life; Guide students to establish a correct outlook on job selection	It is an urgent need to promote the healthy growth of college students
E	Basic objectives	Make students develop healthily and comprehensively	Fully stimulate the potential and lifelong mission of college students

It can be seen from [Table 1](#) that the objectives of information health education for college students are general objectives, direct objectives, final objectives, specific objectives, and basic objectives; The specific content of the general goal is to improve psychological quality and develop in an all-round way; The specific content of the direct goal is to enhance the endurance and adaptability of college students; The specific content of the ultimate goal is to improve the personality of college students and promote their all-round development; The specific content of the specific goal is to adapt to the academic life of colleges and universities as soon as possible; Establish correct three views; Cultivating college students' mentality of study and life; Guide students to establish a correct outlook on job selection. The specific content of the basic goal is to make students develop healthily and comprehensively. The goal of college students' information health education is the inevitable requirement to improve the overall quality of college students, an effective way to innovate college students' education, an important measure to

improve the college education curriculum system, an urgent need to promote the healthy growth of college students, and a lifelong mission to fully stimulate the potential of college students.

2.1.2 Construction Basis of Psychological Regulation Function Framework: Music Teaching Content

Based on the educational objectives shown in [Table 1](#), emotional tendency analysis is integrated into the teaching content. Therefore, the main contents of mental health in Colleges and universities are divided into the popularization of basic knowledge, the cultivation of good mental health habits, emotional self-regulation, the understanding of psychological abnormalities, and the psychological guidance of college students [17]. The specific contents of each item are shown in [Table 2](#).

Table 2: Contents of mental health training programs for college students

Project	Concrete content	Significance
Popularization of basic music knowledge	General knowledge of mental health in music teaching in life; Recognize their own psychological changes; Know your personality characteristics	The importance of mental health in music teaching
Cultivation of good mental health habits in music teaching	Cultivation of living and learning habits; High environmental adaptability; Cultivate innovative consciousness; Cultivate practical ability; Cultivate the spirit of hard work and perseverance; Improve psychological endurance	Improve the adaptability to study and life and prevent tragedies
Emotional self-regulation	Self regulation to eliminate confusion; Improve the psychological quality of music teaching; Protect mental health	
Understanding of psychological abnormalities in music teaching	Understand the types and causes of psychological problems; Use music to actively face psychological problems	Preventing psychological problems in music teaching
Psychological guidance of college students in music teaching	Teach students in accordance with their aptitude; Using music for scientific guidance	Improve the quality of music teaching

The contents of mental health education in Colleges and universities are shown in [Table 2](#), following the educational concept of “human development-oriented”, and under the analysis of emotional tendency, information-based means are adopted to disseminate the teaching contents of mental health, so as to realize the organic combination of the teaching contents of mental health and the analysis of emotional tendency.

2.1.3 Construction Core of Psychological Regulation Function Framework: Music Teaching Process

The teaching process is a process to show the teaching content and improve the comprehensive ability and overall quality of college students in an efficient, time-saving, and simple way according to the teaching objectives [18]. However, in the process of music teaching, the resources available to teachers are limited. In some links of teaching, it limits students’ free play and affects the teaching effect. Therefore, combined with the characteristics of emotional tendency analysis, let emotional tendency analysis and music teaching permeate and integrate with each other, and realize the integration of the teaching process through the three links of creating a situation-guiding exploration, communication, and interaction-meaning construction, summary, and feedback-application expansion.

- (1) Create situations-guide exploration. Under the analysis of emotional tendency, the use of modern technologies such as multimedia and virtual reality can create teaching situations in the mental health classroom, impact the thoughts of college students in many aspects such as perception and emotion, attract students to understand and learn mental health courses, and stimulate the interest of college students in discovering, analyzing and solving problems, Achieve the goal of mental health teaching [19].
- (2) Communication and interaction-meaning construction. In the face of a variety of modern emotional tendency analyses, a multi-dimensional interactive activity organization form can be adopted, as shown in Fig. 2.

In the form of interaction, as shown in Fig. 2, the relationship between teachers and students is equal. At this time, teachers can learn about students' psychological status from college students, or directly guide students' psychological development as friends, playing the role of teaching and learning [20].

- (3) Summary feedback-application extension. In the process of music teaching, teachers need to constantly summarize students' activities, participation, speech, attention, and other classroom performance, understand the teaching effect, adjust teaching methods, expand cooperation, stimulate, tap, and mobilize college students' own potential, so that college students can learn to develop their strengths and avoid their weaknesses, recover their self-confidence, and improve their self-awareness, evaluation Monitor the level and ability of college students to avoid adverse psychological problems such as inferiority complex, weariness, and fear due to environmental problems.

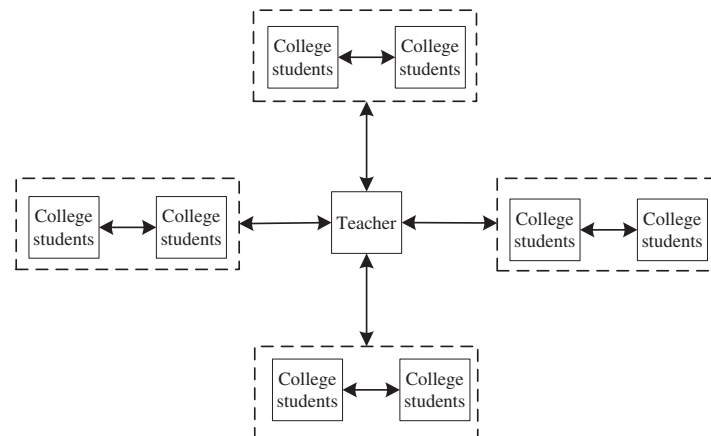


Figure 2: Activity organization form of multi-dimensional interaction

2.1.4 Key to the Construction of Integration Mode of Psychological Regulation Function Structure: Music Teaching Evaluation

The evaluation of mental health education can quickly find the problems existing in mental health education in Colleges and universities. It is also an important test means for the psychological development of college students and the effect of mental health education [21,22]. According to the evaluation results, the goal, content, and process of mental health education can be adjusted in time, so as to improve the effectiveness of mental health education.

From the teaching objectives of mental health education, we can see that the teaching evaluation of integrated mode needs to pay attention to the all-around development of college students [23,24]. Therefore, it is necessary to evaluate the effect of mental health education on each college student from a comprehensive, holistic and developmental perspective, rather than judge each college student directly through the results.

Affective tendency analysis has the characteristics of timely feedback, no restriction of time and place, tracking and monitoring, convenient management, and so on. Under the condition of health education, a psychological evaluation can be integrated by means of information technology [25]. The diversified operation process is as follows: using SPSS, Excel, learning tracking software, psychological measurement software, etc., establish the psychological development files of college students, or establish an evaluation website with multiple evaluation functions, record each student's emotions, study, life, personality, family situation, communication, and other aspects, and understand and evaluate each college student's ability, attitude quality, and psychological development track, so as to find the problems, and timely adopt scientific methods to guide the development of college students and adjust their psychological state [26,27].

In addition, the learning situation tracked and recorded in the archives can evaluate the effectiveness of mental health education and feedback information such as the objectives, process, and content of mental health education. This feedback information can enable teachers to adjust the deficiencies in teaching plans and methods, so as to achieve the purpose of quickly and effectively solving students' mental health problems.

2.2 Establish a Core Literacy-Oriented Evaluation System

By analyzing the framework and evaluation system of psychological core literacy in different regions and countries, it is not difficult to find that although there are some differences in content, the fundamental purpose and essence are to cultivate comprehensive talents needed by society, which also provides a certain reference for the establishment of the core literacy-oriented evaluation system in this paper [28]. The psychological core quality of Chinese college students should mainly start from "the necessary character and key ability to adapt to the needs of development and social development for life", according to the concept of college students' psychological core quality orientation and key ability, and with reference to the existing standards in different regions and relevant references [29,30], combined with the current actual situation of China, Some evaluation indexes are obtained from the law of college students' psychological growth and development, they are professional quality, Humanistic Heritage, autonomous learning, healthy life, responsibility, and practical ability. The specific contents are as follows:

(1) Professional quality

Reasonable knowledge structure: mainly including "t" structure and cross structure;

Basic knowledge: enable students to understand, update and adjust their knowledge;

Scientific spirit: an important part of training and development, and establishing correct values;

Career planning: an important part of training and development, and establishing correct values.

(2) Humanistic details

Basis of traditional culture: ethics is the core content of education and the inheritance of traditional culture;

Aesthetic consciousness: cultivating aesthetic taste can enhance the overall quality and maintain a correct attitude;

Modern civilized habits: conducive to the formation of a sound personality and the correction of bad habits;

International vision: understand world history and evaluate national status from the perspective of the world.

(3) Autonomous learning

Active exploration: in science, humanities, language, and other fields;

Improve learning methods: the purpose is to improve learning efficiency and achieve learning objectives;

Establish the awareness of lifelong learning: only by ensuring the awareness of active learning can we continuously improve our own development.

(4) Healthy life

Physical health: physical health is the basis of learning and development, and cultivates a positive and confident attitude;

Mental health: maintain a correct world outlook and coordinate the relationship between mental activities such as meaning, knowledge, and behavior;

Emotional stability: it can reflect the temperament type and mental health status of college students.

(5) Responsibility bearing

National Identity: psychological activities to confirm what kind of country they belong to and their national attributes;

Social responsibility: it is the inevitable requirement of carrying forward the national spirit and the spirit of the times;

Problem-solving ability: help students reduce learning pressure and prevent depression;

Awareness of law and rules: it is not only the basic quality that college students should have but also a kind of psychological experience.

(6) Practical ability

Innovation and Entrepreneurship: carry out entrepreneurial activities on the basis of innovation;

Teamwork: including service spirit, cooperation consciousness, and spiritual skills;

Social participation: refers to college students' understanding, understanding, attitude towards national politics, society, and culture, and actual participation behavior.

It can be seen from the above contents that the guiding evaluation goal of college students' core literacy should correspond to the framework of psychological core literacy [31]. The whole evaluation system plays an important role in the process of model construction, providing guidance for the psychological regulation function model of music education.

2.3 Selection of Evaluation Methods

Among the evaluation methods of the psychological adjustment function model of music education, a variety of evaluation methods are selected for compatible applications [32]. This method is a comprehensive evaluation method based on fuzzy mathematics, which evaluates the global integrity of things or objects constrained by many methods and factors. Select an index $A = (a_1, a_2, \dots, a_n)$, which corresponds to the established evaluation index system. In addition, determine the evaluation set $B = (b_1, b_2, \dots, b_m)$, and divide the state of the evaluation object into levels. Each level corresponds to a fuzzy subset. This model divides the evaluation indexes of the psychological regulation function of music education into three levels: good, general, and poor [33,34]. The fuzzy relation matrix is established. After the fuzzy subset is constructed, the evaluated indexes need to be quantified from various factors in sequence. The membership matrix is as follows:

$$C = \begin{bmatrix} c_{11} & c_{12} & \dots & c_{1m} \\ c_{21} & c_{22} & \dots & c_{2m} \\ \dots & \dots & \dots & \dots \\ c_{n1} & c_{n2} & \dots & c_{nm} \end{bmatrix} \times A \times B \quad (1)$$

In formula (1), c_{nm} represents the element in row n and column m , and represents the membership of an evaluated student to the fuzzy subset of c_m grade from the perspective of index c_n . Determine the weight vector of evaluation factors and complete normalization before final synthesis [35]. Synthesize the weight vector and fuzzy relation matrix to obtain the fuzzy comprehensive evaluation result vector D . The calculation process is as follows:

$$D = E \times C = (s_1, s_2, \dots, s_m) \quad (2)$$

In formula (1), E represents the index evaluation set, and s_m represents the overall membership of the evaluated students to the grade fuzzy subset. In order to quantify the evaluation results, the hundred mark system is used to assign scores to each evaluation grade. Different scoring methods will lead to different evaluation results.

3 Construct the Model of Realizing the Psychological Adjustment Function of Music Education

The psychological regulation function model of music education uses information storage and neural network learning ability to optimize the control rules and establishes membership functions and different output function rules for different learning samples and language variables so that the model has an adaptive self-learning function.

3.1 Level of Psychological Adjustment Function Model of Music Education

The psychological adjustment function model of music education has four layers, and the meaning of nodes in each layer is as follows:

Layer 1: Input signal fuzzification processing, and the output function of processing node a is:

$$W_a = R_r \times F_o \quad (3)$$

In formula (3), R_r represents the length of node r belonging to feature point R , and the corresponding parameter set can be obtained according to the correlation of different variables. The fuzzy operator calculation formula of each processing node A is as follows:

$$W_A = W_a \times W_c \quad (4)$$

In formula (4), W_c represents the output function of processing node c ;

Layer 2: Process nodes a and A to obtain normalized credibility W' ;

Layer 3: After the node a and A are processed in layer 2, the adaptive output results can be obtained:

$$Q = W' \times (\alpha_i a_1 + \beta_i a_2) \quad (5)$$

In formula (5): α_i , a_1 , β_i and a_2 all represent subsequent parameters;

The fourth layer: the node realizes the fuzzification process, so as to obtain the total output result.

Based on the four-tier structure of the psychological adjustment function model of music education, a database is constructed. The database separates the client and server, making the program distributed evenly, as shown in Fig. 3.

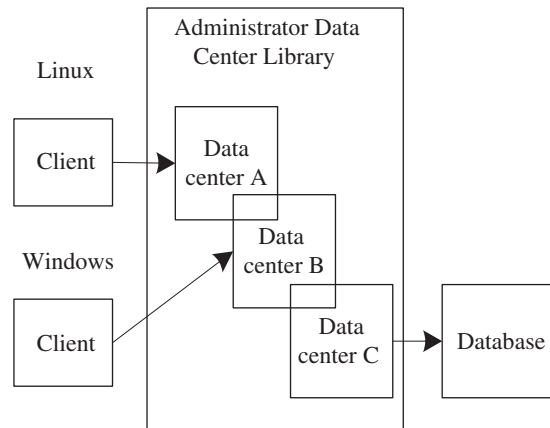


Figure 3: Database of psychological regulation function model of music education

The database needs a TCP/IP network connection. In this LAN, the client directly connects to the main process of the database, establishes a new service for user access requests, and obtains access data through web page mode.

3.2 Psychological Adjustment Function of Music Education

According to the actual operation object's psychological and emotional tendency of users, dynamically judge the psychological adjustment needs of music education, and analyze the psychological adjustment function of music education in combination with the adjustment feasibility analysis.

The overall task of the function development of the psychological adjustment model of music education is to systematically, standardize, and automatically manage and analyze the psychological analysis of users, and realize the unified recording of historical data. The model function analysis is realized on the basis of the overall architecture of system development. The functions realized include:

- (1) Student-related information collection: including name, age, gender, main learning tasks, learning situation, etc.
- (2) Psychological test question bank management: set different psychological test question types according to students of different grades, including the maintenance of the set psychological test question bank, such as multiple-choice questions and blank questions of psychological test.
- (3) Data analysis: analyze the psychological test results of different students [36].
- (4) Result feedback: provide information feedback on the psychological status of the tested object, provide corresponding test results and countermeasures, and give a corresponding psychological counseling scheme, so that the tested user can better make a psychological adjustment.
- (5) Answer process: this method aims at each answer operation made by the test students when entering the database, and obtains different test content questions according to the selected corresponding question bank, which is convenient to distinguish the answer operations of different target students.
- (6) Result query: score the answer process of each test or give feedback on the evaluation information. After logging into the system, the subject will get the evaluation results immediately.
- (7) Put forward suggestions: according to the different conditions of the test results, give corresponding health guidance, so that the test students can find their mental health status in time in their daily study.

3.3 Construction of Psychological Regulation Function Model of Music Education

Using the above psychological adjustment function of music education, we can obtain the mental health data with important practical significance at different stages, and then construct the psychological adjustment function model of music education to complete the task of efficient data collection, so as to provide a theoretical basis for the field of mental health state analysis.

The distributed data collection model analyzes the emotional tendency, develops the model by using transmission control protocol/Internet protocol, and divides the model according to the performance of the plate. The overall structure of the model is shown in Fig. 4.

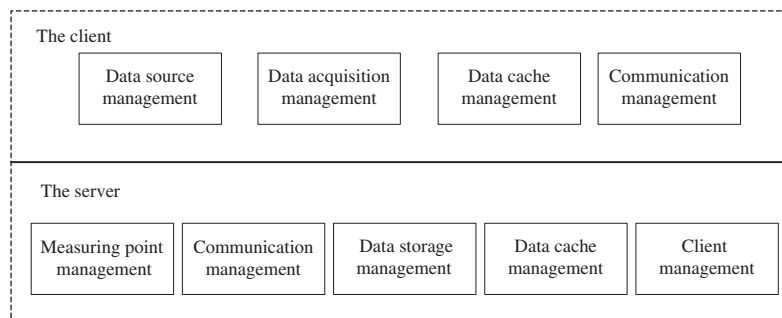


Figure 4: Structure diagram of psychological adjustment function model of music education

It can be seen from Fig. 4 that the first process in the data collection process of the music education psychological adjustment function model is configuration preprocessing. Configuration preprocessing is the basis of distributed data collection. After obtaining detailed configuration information, it needs to go through two parts of preprocessing. Firstly, calibrate and distribute the measurement point configuration information. After double calibration, remove the point data that is not available in the mental health data source. Prevent inaccurate data collection due to different types of measuring points on the server and data source. Secondly, it is necessary to reconstruct the mapping table of source measurement points and target measurement points. String features are generally used as key values in information searches. The speed of data search and processing is slow and the performance is slightly poor. In the preprocessing stage, some attribute values are selected to reconstruct the mapping table, which can enhance the search rate, reduce the packet length and improve the transmission quality. The second process is data transformation. After reading the current mental health data from the source database, three kinds of data transformation should be carried out according to the measurement point configuration. This completes the construction of the psychological regulation function model of music education based on the analysis of emotional tendency.

4 Experimental Analysis

In order to verify the effect and feasibility of the psychological regulation function model of music education based on emotional tendency analysis, an experiment is designed to verify it. After the model is successfully constructed, the implementation of the model needs to start from the actual perspective of evaluation, analyze the convenient and reasonable practical needs, under the analysis of emotional tendency, starting from the elements of music teaching content, goal, process, and evaluation of mental health education, this paper puts forward the psychological regulation model test of music education according to this principle, verify the model, and design the test environment of the model. The hardware environment of the experimental platform includes R4900G32U database server Android mobile terminal and wireless WiFi running network; A small tower server and a data card tri network mobile terminal. The platform also needs more than 150 mbits of network bandwidth. The software environment is: it

mainly refers to the software tool for developing the psychological adjustment function model of music education. Because the model verification is based on the experimental platform, an experimental platform application development environment is needed for verification. It is planned to use an integrated software development environment, an SDK plug-in, and an SQL Server 2005 background database. Other parameter configurations in the experimental test environment are shown in [Table 3](#):

Table 3: Description of model test environment parameters

Content	Parameter	Explain
Master node server	4cpu, 13 g memory, 3T hard disk	The number is 1, which is responsible for the name node and job tracker of the system
Slave node server	4cpu, 2 G memory, 1t hard disk	The number is 4, responsible for the data node and task tracker of the system
Network equipment	San switch	Above 100 Mbps
Database	SQL Server 2008	-
Front end development tools	Bootstrp framework	-
Backend development tools	Tomcat7	-

Under the conditions of experimental parameters in [Table 3](#), the construction and processing flow of music education psychological regulation function model based on emotional tendency analysis is shown in [Fig. 5](#).

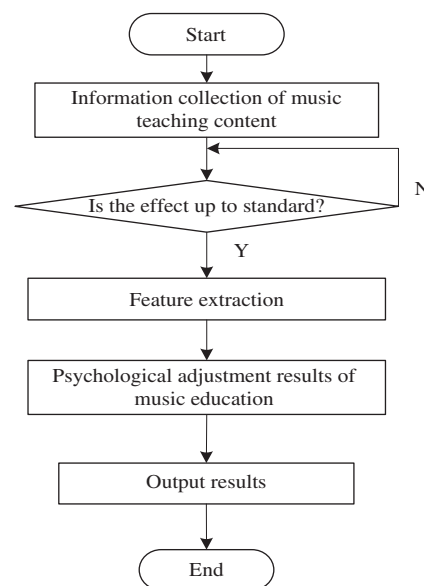


Figure 5: Construction and processing flow of psychological regulation function model of music education

It can be seen from [Fig. 5](#) that by calling the data collector to search for keywords about the psychological state of music education in the network, in the data storage component of the data

collector, managers regularly store keywords and key behaviors in the component, so as to improve the accuracy of data collection. The construction and processing process of the psychological regulation function model of music education is to first extract the psychological keywords and key behaviors in the storage components, then start the data acquisition module and call the cloud computing technology to collect data on the Internet. The absolute value of distributed acquisition error of mental health data of the three models is shown in Fig. 6.

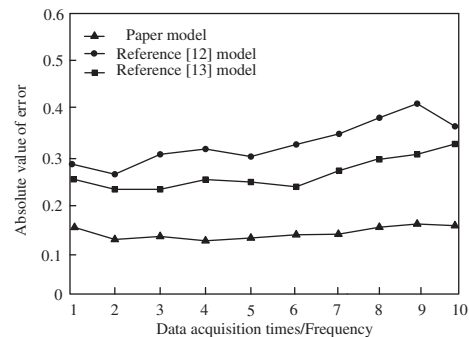


Figure 6: Comparison of absolute value of distributed acquisition error of mental health data

It can be seen from Fig. 6 that the absolute value of the data acquisition error of the model in this paper is the smallest, which does not exceed 0.2. The detection error between the model in reference [12] and the model in reference [13] is high, and the stability of the method in the acquisition process is slightly poor. The reason for this phenomenon is that this model designs the level of psychological regulation function model of music education uses information storage and neural network learning ability optimizes control rules and establishes membership functions and different output function rules from different learning samples and language variables, so that the model has adaptive self-learning function and can obtain mental health data with a reference value, The overall accuracy of the model is improved, and the absolute value of error is also reduced. According to the large time span and other properties of mental health data, it can be seen that most of these data collection processes have certain unstable factors. The unstable factors are formulated as bad coefficients, and the value range is 0~1. Compare the data acquisition time of the three models, and the results are shown in Table 4.

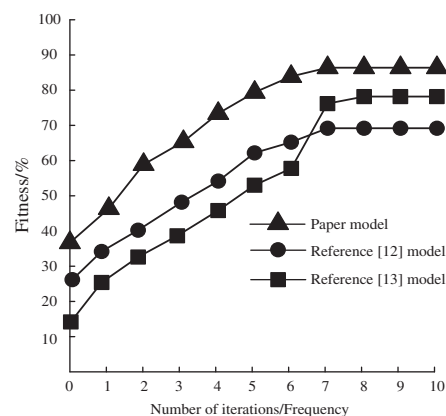
It can be seen from Table 4 that the model in this paper is less affected by the bad coefficient and has little difference from the value of the bad coefficient. It can effectively resist the low collection efficiency of music education psychological adjustment caused by the complex external environment and has strong practicability and robustness, which provides a sufficient guarantee for the rapid collection and analysis of the music education psychological adjustment health data.

The relationship between comfort and iteration times of music education psychological adjustment function model can show the convergence ability of the model. The relationship curve between comfort and iteration times of the three models when predicting data samples is shown in Fig. 7.

According to the analysis of Fig. 7, with the increase in the number of iterations, the fitness of the three models also increases. When the fitness reaches the requirements of the model prediction, the fitness remains horizontal with the increase in the number of iterations. The fitness curve of this model starts to maintain a horizontal state when the number of iterations is 7, which is less than that of the other two models, and the fitness value of this model is always higher than that of the other two models. Therefore, this model can quickly converge to the best state in the actual prediction process and has a strong convergence ability.

Table 4: Comparison of time consumption of distributed collection of psychological adjustment health data in music education/ms

Number of experiments	Bad coefficient	Paper method	Reference [12] model	Reference [13] model
1	0.02	0.03	10.3	10.5
2	0.25	0.24	10.5	11.8
3	0.37	0.36	10.8	12.2
4	0.41	0.40	10.8	12.5
5	0.45	0.45	10.9	12.8
6	0.49	0.49	11.1	13.1
7	0.56	0.55	11.3	13.5
8	0.59	0.60	11.4	13.7
9	0.61	0.61	11.7	14.3
10	0.70	0.69	12.1	14.9

**Figure 7:** Relationship curve between comfort and iteration times of three models

To sum up, the designed music education psychological adjustment function model based on emotional tendency analysis has a small absolute value of error in the process of collecting data, is less affected by the adverse coefficient, and has strong convergence performance.

5 Conclusions and Prospects

5.1 Conclusion

In the face of the highly competitive social environment, mental health problems have gradually attracted the attention of the public. In order to achieve accurate mental health data analysis, the independent regulator of mental health has been used as the main line in the future student development and training program. The core quality of music education has individuality and initiative in the process of music perception, making the regulation of emotion in music education one of the elements to improve and develop the core quality, The constructed model effectively verifies the above theory.

- (1) The absolute value of data collection error of the psychological adjustment function model of music education based on emotion orientation analysis is the smallest, which is not more than 0.2;
- (2) The model in this paper is less affected by the bad coefficient and has a small difference from the bad coefficient value, which can effectively resist the problem of low efficiency in the collection of

psychological adjustment of music education caused by the complex external environment and has good performance;

- (3) As the number of iterations increases, the fitness curve of the model in this paper begins to maintain a level state when the number of iterations is 7, and it can converge to the optimal state rapidly in the actual prediction process, with strong convergence ability.

5.2 Prospects

- (1) The research on the psychological regulation function of music education is an important supplement to the research on the function of music education. It is not only reflected in the extended development of the theoretical context but also filled in the blank in the empirical research methods. In the future research content, the pursuit and pursuit of the educational mission of developing students' core literacy is a response to the urgent need for the mental health development of contemporary college students, Theoretically, it also reflects the historical continuity of the research on the function of music education.
- (2) From the perspective of the topic selection of the psychological regulation function of music education, the next research on the function of music education can be explained and discriminated from the perspective of theoretical speculation. It should not only highlight the aesthetic uniqueness of music education but also reflect the scientific characteristics guided by psychological experimental methods and the individual perspective of qualitative research methods. The innovation of research methods is mainly reflected in the application of mixed methods, the empirical test of the music education function model, and the application of R language programming in data analysis and statistics.
- (3) So far, the application of mixed-method research has not been found in the research field of music education in China. Future research, through the organic integration of quantitative research and qualitative research, on the psychological regulation function of music education, not only relies on the accurate data of laboratory experiments but also reflects the qualitative transformation of experimental data, It makes the personalized realization of the psychological adjustment function of music education possible. The mixed method research adds more individual experience situations to the quantitative research stage of this study and also ensures the scientificity of the qualitative research of personalized intervention exploration in the selection of measurement tools and subjects.

Funding Statement: This work supported by Shandong Provincial Social Science Planning Research Project “Research on Inheritance and Innovation of Shandong Wooden Clappers Culture” (20CCXJ26).

Author Contributions: The raw data supporting the conclusions of this article will be made available by the author, without undue reservation.

Conflicts of Interest: The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflicts of interest.

References

1. Ginty, A. T., Tyra, A. T., Young, D. A. (2020). John-henderson N A, tsang J A C. state gratitude is associated with lower cardiovascular responses to acute psychological stress: A replication and extension. *International Journal of Psychophysiology*, 158(6), 238–247.
2. Galera, C., Orri, M., Vergunst, F., Melchior, M., Waerden, J. et al. (2020). Developmental profiles of childhood attention-deficit/hyperactivity disorder and irritability: Association with adolescent mental health, functional impairment, and suicidal outcomes. *Journal of Child Psychology and Psychiatry*, 62(2), 232–243.

3. Fh, A., Ma, B., Smcd, E. (2020). Continuous emotion recognition during music listening using eeg signals: A fuzzy parallel cascades model. *Applied Soft Computing*, 101(3), 107–128.
4. Peretz, I., Ayotte, J., Zatorre, R. J. (2020). Effects of vocal training in a musicophile with congenital amusia. *Neuron*, 33(2), 185–191.
5. Montgomery, A. P., Mousavi, A., Carbonaro, M., Hayward, D. V., Dunn, W. (2019). Using learning analytics to explore self-regulated learning in flipped blended learning music teacher education. *British Journal of Educational Technology*, 9(10), 114–127.
6. Tsioutas, K., Xylomenos, G. (2021). On the impact of audio characteristics to the quality of musicians' experience in network music performance. *Journal of the Audio Engineering Society: Audio, Acoustics, Applications*, 69(12), 1549–4950.
7. Hawkins, S. (2019). Situational influences on rhythmicity in speech, music, and their interaction. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 369(1658), 2013–2039.
8. Martina, R., Gorana, P., Deborah, T. (2020). The emotional facet of subjective and neural indices of similarity. *Brain Topography*, 32(6), 956–964.
9. Quasim, M. T., Alkhamash, E. H., Khan, M. A., Hadjouni, M. (2021). Emotion-based music recommendation and classification using machine learning with iot framework. *Soft Computing*, 15(6), 12249–12260.
10. Palvanova, Z. D. (2020). Study of the problems of suicidal personality behavior in foreign psychology. *ACADEMICIA An International Multidisciplinary Research Journal*, 10(11), 2140–2152.
11. Nag, S., Sanyal, S., Banerjee, A., Sengupta, R., Ghosh, D. (2019). Music of brain and music on brain: A novel EEG sonification approach. *Cognitive Neurodynamics*, 13(4), 13–31.
12. Zhang, L. (2022). Integration of information technology into music education to cultivate creative thinking among middle school students. *Journal of Contemporary Educational Research*, 6(1), 93–98. <https://doi.org/10.26689/jcer.v6i1.2931>
13. Gómez-Zapata, J. D., Herrero-Prieto, L. C., Rodríguez-Prado, B. (2021). Does music soothe the soul? Evaluating the impact of a music education programme in medellin, Colombia. *Journal of Cultural Economics*, 45(1), 63–104. <https://doi.org/10.1007/s10824-020-09387-z>
14. González-Espinoza, A., Martínez-Mekler, G., Lacasa, L. (2020). The arrow of time across five centuries of classical music. *Physical Review Research*, 15(4), 33–46. <https://doi.org/10.1103/PhysRevResearch.2.033166>
15. Hervé, P., Jean-Claude, B., Béatrice, D., Frédéric, B., Francis, E. (2019). Semantic and episodic memory of music are subserved by distinct neural networks. *NeuroImage*, 20(1), 244–256.
16. Mirandola, C., Pazzaglia, F. (2021). Working memory beats age: Evidence of the influence of working memory on the production of children's emotional false memories. *Frontiers in Psychology*, 12(8), 71–78. <https://doi.org/10.3389/fpsyg.2021.714498>
17. Gao, Y., Fan, S., Hu, Z. E., Li, C. C., Dong, Y. C. (2022). Learning personalized individual semantics through the data of distributed linguistic preference relations: A two-stage method to support linguistic consensus reaching. *Computers & Industrial Engineering*, 172(1), 108–121. <https://doi.org/10.1016/j.cie.2022.108581>
18. Hizlisoy, S., Yildirim, S., Tufekci, Z. (2020). Music emotion recognition using convolutional long short term memory deep neural networks. *Engineering Science and Technology an International Journal*, 24(3), 760–767. <https://doi.org/10.1016/j.jestch.2020.10.009>
19. Stoffel, M., Abbruzzese, E., Rahn, S., Bossmann, U., Ditzen, B. (2021). Covariation of psychobiological stress regulation with valence and quantity of social interactions in everyday life: Disentangling intra- and interindividual sources of variation. *Journal of Neural Transmission*, 128(9), 1381–1385. <https://doi.org/10.1007/s00702-021-02359-3>
20. Bigliassi, M., Karageorghis, C. I., Hoy, G. K., Layne, G. S. (2019). The way you make me feel: Psychological and cerebral responses to music during real-life physical activity. *Psychology of Sport and Exercise*, 41(3), 211–217. <https://doi.org/10.1016/j.psychsport.2018.01.010>
21. Rajesh, S., Nalini, N. J. (2020). Musical instrument emotion recognition using deep recurrent neural network. *Procedia Computer Science*, 167(1), 16–25. <https://doi.org/10.1016/j.procs.2020.03.178>

22. Kupper, N., Jankovic, M., Kop, W. J. (2020). Individual differences in cross-system physiological activity at rest and in response to acute social stress. *Psychosomatic Medicine*, 83(2), 138–148.
23. Proverbio, A. M., Benedetto, F. D., Guazzone, M. (2019). Shared neural mechanisms for processing emotions in music and vocalizations. *European Journal of Neuroence*, 51(9), 1987–2007. <https://doi.org/10.1111/ejn.14650>
24. Chaudhary, D., Singh, N. P., Singh, S. (2020). Development of music emotion classification system using convolution neural network. *International Journal of Speech Technology*, 24(3), 1–10.
25. Cowan, B., Hao, Z. (2021). Medicaid expansion and the mental health of college students. *Social Science Electronic Publishing*, 30(6), 1306–1327. <https://doi.org/10.1002/hec.4256>
26. Guo, J., Song, B., Zhang, P., Ma, M., Luo, W. et al. (2019). Affective video content analysis based on multimodal data fusion in heterogeneous networks. *Information Fusion*, 51(11), 224–232. <https://doi.org/10.1016/j.inffus.2019.02.007>
27. Li, B., Liu, X., Dinesh, K., Duan, Z., Sharma, G. (2019). Creating a multitrack classical music performance dataset for multimodal music analysis: Challenges, insights, and applications. *IEEE Transactions on Multimedia*, 21(2), 522–535. <https://doi.org/10.1109/TMM.2018.2856090>
28. Chowdhury, S., Praher, V., Widmer, G. (2021). Tracing back music emotion predictions to sound sources and intuitive perceptual qualities. *Electrical Engineering and Systems Science*, 29(6), 45–52.
29. English, H. J., Lumb, M., Davidson, J. W. (2021). What are the affordances of the digital music space in alternative education? A reflection on an exploratory music outreach project in rural Australia. *International Journal of Music Education*, 39(3), 275–288. <https://doi.org/10.1177/0255761421999731>
30. Viloria, A., Lezama, O., Cabrera, D. (2020). Segmentation process and spectral characteristics in the determination of musical genres. *Procedia Computer Science*, 175(1), 96–101. <https://doi.org/10.1016/j.procs.2020.07.016>
31. Melo, D., Fadigas, I., Pereira, H. (2020). Graph-based feature extraction: A new proposal to study the classification of music signals outside the time-frequency domain. *PLoS One*, 15(11), 24–35. <https://doi.org/10.1371/journal.pone.0240915>
32. Li, J. B., Wang, J., Xu, M. M., Wang, C. (2021). Twitter sentiment analysis based on leap LSTM-CNN network. *Computer Simulation*, 38(8), 478–481+496.
33. Nguyen, T. L., Trieu, B. L., Hiraguri, Y., Morinaga, M., Morihara, T. et al. (2020). Effects of changes in acoustic and non-acoustic factors on public health and reactions: Follow-up surveys in the vicinity of the Hanoi noi bai international airport. *International Journal of Environmental Research and Public Health*, 17(7), 2597–2610. <https://doi.org/10.3390/ijerph17072597>
34. Asano, R. (2021). The evolution of hierarchical structure building capacity for language and music: A bottom-up perspective. *Primates*, 11(4), 15–31.
35. Du, R., Bian, Y., Bai, Z., Zhu, Y. (2020). Brain emotional oscillatory activity for anger revealed by event-related spectral perturbation. *Wuhan University Journal of Natural Sciences*, 25(2), 75–81.
36. Kim, D., O’Connell, K., Ott, W., Quaini, A. (2021). A kinetic theory approach for 2D crowd dynamics with emotional contagion. *Mathematical Models and Methods in Applied Sciences*, 31(6), 1137–1162. <https://doi.org/10.1142/S0218202521400030>