

An Intervention Study on Music Therapy for Anxiety in High School Students

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Abstract. High school is a crucial period for physical, mental and psychological growth. Due to the increased pressure from academic studies, interpersonal relationships, and the changes of adolescence, anxiety has become a common psychological problem among high school students. It may have adverse effects on their physical and mental health, as well as on their academic performance. Music therapy is a simple, feasible non-pharmacological treatment method that has been widely applied in clinical practice due to its role in regulating emotions and its impact on the nervous system. It has received extensive attention and application in the intervention of adolescent anxiety. Drawing on pertinent research findings both domestically and internationally, the author assesses the prevailing anxiety levels among high school students in China, elucidates the mechanisms by which music therapy mitigates anxiety from physiological and psychological viewpoints, and ultimately presents the methodologies and outcomes of music therapy interventions for anxiety in high school students. This aims to serve as a foundational reference for mental health education and anxiety intervention in high schools, as well as to standardise and personalise the application of psychological music therapy within educational settings.

Keywords: High school students, Anxiety, music therapy, Psychological intervention, Mental health

1. Introduction

The high school stage is a crucial period for an individual's transition from adolescence to adulthood. High school students often encounter negative emotional states, including anxiety, depression, and irritability, due to the discord between swift physical development and underdeveloped psychology, exacerbated by intense academic competition, significant college admission pressure, inadequate parent-child communication, and strained interpersonal relationships. Anxiety has emerged as a significant psychological issue that impedes the well-being of high school kids [1-3]. Long-term anxiety can affect their academic performance, sleep quality, and interpersonal relationships. It may lead to various psychological disorders, which are not conducive to the development of a healthy personality.

Traditional psychological interventions mainly focus on psychological counseling and guidance. However, due to issues such as stigmatization and communication barriers, some students have low participation and compliance with the intervention, and the intervention effect is not obvious. Music

therapy is a method that uses music as a carrier for emotional expression, psychological counseling, and behavioral correction. It has the characteristics of being interesting, easy to accept, and free of side effects, which align with teenagers' psychological characteristics and acceptance habits. In recent years, there have been more and more effective anxiety intervention studies using music therapy, and the research has continuously moved from clinical verification to campus practice, providing new approaches. It means for the anxiety intervention of high school students [4-6]. Therefore, this study aims to investigate the role and methods of music therapy in alleviating anxiety among high school students and improving their psychological well-being.

2. The current situation and causes of anxiety among high school students

2.1. Current situation of anxiety among high school students

Numerous studies both domestically and internationally, have shown that the anxiety situation among high school students is quite difficult. Yu Xiaqi et al. used a meta-analysis method. They found that the detection rate of psychological health problems among high school students in the Chinese mainland region during 2010-2020 was relatively high, with anxiety and depression being the most prevalent [2]. Academic anxiety and exam anxiety are currently the main forms of anxiety among high school students. Foreign research has found that compared to the United States, Japan, and South Korea, the anxiety and mental stress levels of high school students in China are higher, and the pressure caused by study is one of the main factors affecting students' mental health [3].

Studies focusing on high school students have found that anxiety is a common emotional experience among high school students. Some students have moderate or higher levels of anxiety which affects their normal study and life. They also experience symptoms such as insomnia, lack of concentration, and anorexia [5]. Domestic study on school mental health indicates that psychological illnesses, particularly anxiety symptoms, among high school students have increasingly emerged as a significant issue in school psychological education, necessitating urgent interventions [7].

2.2. Causes of anxiety among high school students

The causes of anxiety among high school students are composed of internal and external factors. Firstly, from the external perspective, academic pressure is an important reason. Due to difficult courses, numerous exams, and intense competition for admission, students are constantly in a tense learning environment, which leads to exam and academic anxiety. Secondly, parents' educational methods are also an important factor. Parents' excessively high expectations, excessive intervention, or lack of good parent-child communication will increase the pressure in students' minds; interpersonal relationships among classmates, lack of communication and interaction between teachers and students, and excessive emphasis on academic performance by society can all lead to greater anxiety among high school students during this stage.

Internal factors: High school students at this stage have strong self-awareness but weak emotional management skills, so they cannot effectively comfort themselves. Additionally, some students have incorrect psychological cognitions and overly unrealistic expectations for themselves and their studies. When they fail to reach the expected goals, they are prone to feelings of frustration and anxiety. Moreover, the emotional fluctuations brought about by physical development during adolescence make negative emotions more severe, leading to anxiety [3, 8].

3. The mechanism of music therapy in reducing anxiety

3.1. Physiological mechanism

From a physiological perspective, modern neuroscience also provides anatomical evidence for the effect of music intervention in alleviating anxiety. Studies have shown that music can regulate the levels of neurotransmitters, brain waves, and neural pathways in the human brain to improve anxiety conditions. Li et al. pointed out that music intervention can play a role in the emotional control and anxiety processing of the main brain circuits - the prefrontal cortex - hippocampus and amygdala loop, by regulating the neurons of this loop to reduce the highly activated state of the amygdala and lower the stress-related behaviors caused by anxiety [9].

In addition, in terms of brainwave regulation, the acoustic parameters of music modulate gamma oscillations and prefrontal cortex connectivity. Gamma oscillations are related to emotional cognition and anxiety regulation, and appropriate musical stimulation can optimize brainwave activity and reduce anxiety levels [10]; moreover, music intervention can also regulate the secretion of neurotransmitters such as cortisol and dopamine. Cortisol is a stress hormone, which significantly increases during anxiety, and soothing music can reduce cortisol and increase dopamine secretion, providing a physical relief from anxiety and insomnia [11]; personalized brainwave music can specifically improve the individual's anti-anxiety state, and by intervening with music that matches the individual's brainwave rhythm, it will be more conducive to physiological and emotional regulation and enhance the intervention effect [12].

3.2. Psychological mechanism

From a psychological perspective, music therapy can help high school students regulate their emotions, receive psychological counseling, and reduce their tension and unease. On the one hand, music directly influences emotions. Soft and pleasant music can prompt high school students to relax their bodies and minds, shift their attention away from the causes of anxiety, and relieve their inner dissatisfaction and stress; lively and uplifting music can stimulate positive emotions and improve depression and irritability [8].

Secondly, music therapy provides a safe channel for high school students to vent their emotions. Due to psychological closure, high school students usually do not want to express their inner anxiety and troubles. Still, through, but through music appreciation, instrument playing, composition and lyric writing activities for music therapy, students can indirectly express their negative emotions and release psychological pressure [5]. Moreover, group music therapy can create a relaxed social atmosphere to enhance high school students' interpersonal communication and social support, which is an important protective factor for reducing exam anxiety and forms a synergistic effect with music therapy [6].

In addition, music therapy can improve an individual's emotional control ability and self-awareness. In music activities, high school students can learn to recognize and manage their emotions, gradually develop a positive cognitive approach, and respond to the pressure of studying and life setbacks in life with a more rational and optimistic attitude, thereby reducing their anxiety levels at the source [13].

4. The practical application of music therapy in the intervention of anxiety among high school students

4.1. Music therapy intervention forms

4.1.1. Receptive music therapy

Receptive music therapy is the simplest and most easily implemented form, mainly focusing on listening to music. For anxious high school students, soothing relaxing classical music, light music, natural music, etc., are selected, and students are asked to close their eyes and listen quietly. Combined with deep breathing training, they can relax their muscles and calm their mood, reducing anxiety and tension. This method is the simplest and can be used in group settings such as class meetings and psychological club activities, and can also be applied in students' daily self-adjustment to alleviate insomnia caused by anxiety [8, 11].

Example: Huang Qichong published a study in "Course Education Research", targeting 120 high school students with test anxiety from grades 1 to 3, using receptive music therapy. Classical light music, natural environment sounds (streaming water, bird calls), and progressive muscle relaxation training were selected. The therapy was conducted twice a week for 30 minutes each time, for 6 weeks. The results showed that after the intervention, the students' self-assessment scale for anxiety (SAS) and test anxiety scale (TAI) scores significantly decreased, and anxiety-related physical symptoms such as insomnia and palpitations were significantly alleviated, confirming that this method is suitable for promotion and application in high school group psychological counseling [14].

4.1.2. Participatory music therapy

Participatory music therapy involves students actively engaging in music activities, such as chorus, using various musical instruments, and playing music games and song adaptations. During the active participation process, students can fully immerse themselves in the music, shift their attention to it, and release their inner repressed feelings. Additionally, in music production and performance, they . Group participatory music activities can also promote peer interaction and the development of social skills, can help reduce anxiety associated with interpersonal adaptation [5].

Example: Yu Dingcong, in his master's thesis "Experimental Research on Music Activities to Alleviate High School Students' Anxiety," conducted an 8-week group participatory music therapy program with anxious students from three high schools in Chengdu. The activities included drum-circle improvisation, chorus, and Orff-instrument performance, twice a week for 45 minutes each time. The results showed that the participatory music activities significantly reduced students' anxiety scores on the Self-Assessment Scale (SAS), improved interpersonal avoidance and emotional repression, and enhanced self-confidence and social skills [15].

4.1.3. Personalized music therapy

Personalized music therapy is the future trend of music therapy. It is targeted at different types of anxiety in high school students, their personality traits, and music preferences for personalized music therapy. In contrast to general music therapy, personalised music therapy more effectively addresses individual needs and selects varied musical materials and methods for different degrees and types of anxiety (such as academic, interpersonal, and test anxiety), thereby significantly

enhancing therapeutic outcomes [12, 13]. For example, for high school students with pre-examination anxiety, applying mindfulness stress reduction therapy combined with personalized music intervention can achieve the effect of regulating the patient's psychological condition and cognitive ability [6].

Example: A high school targeted a case of a 17-year-old senior high school girl named Wu. Due to test anxiety accompanied by somatic symptoms (tension, hand tremors, pre-examination fainting), personalized music therapy was adopted: combining her introverted personality and preference for classical music, a "mindfulness breathing + personalized music listening + emotion sorting" plan was customized, twice a week for 45 minutes each time, for 11 weeks. After the intervention, her Sarason Test Anxiety Scale (TAS) score decreased significantly, somatic symptoms disappeared, her emotional regulation improved, and she successfully completed the college entrance examination [16].

4.2. Effectiveness of music therapy intervention

In addition, numerous studies have proved that music therapy has an effective intervention effect on the anxiety of high school students. In a study specifically targeting high school students for psychological intervention, it was found that music therapy can effectively alleviate the anxiety and depression scores of high school students, and can effectively reduce the learning pressure of high school students and improve their mental health status; in the experimental group, the anxiety of the students improved significantly after receiving music therapy, and this improvement was long-term, indicating that music therapy has a good therapeutic effect on psychological problems in the high school stage [5].

De Witte et al. conducted a systematic review and multi-level meta-analysis, showing that music therapy is always effective in treating adolescent anxiety symptoms, significantly reducing all types of anxiety symptoms and having good safety and acceptability [4]; Xiang & Li's study revealed that the integrated approach of mindfulness, music therapy, and social support is more efficacious in alleviating pre-examination anxiety in teenagers [6]. The combination of the three can improve anxiety from physiological, psychological, and social interaction aspects, supplementing the deficiencies of routine intervention measures in college student mental health services, enhancing students' participation enthusiasm, reducing the incidence of anxiety among high school students, and facilitating the development of college mental health education [7].

5. Shortcomings and optimization paths of music therapy in anxiety intervention

5.1. Existing shortcomings

Although music therapy can help alleviate anxiety among high school students, there are still some problems: Firstly, music therapy in schools is mostly general rather than personalized. In the intervention, corresponding strategies are not designed based on the individual situation of high school students and the different types of anxiety, making it difficult to achieve the best effect [13]. Moreover, schools lack professional music therapists. Some school psychological teachers have not received systematic training and cannot implement formal music therapy.

In addition, the time, frequency, and plan of music therapy intervention are not standardized, and there is no empirical research on follow-up tracking. Neither home nor school has formed a home-school intervention linkage model, and is unable to consolidate the intervention results effectively.

5.2. Optimization paths

First, shift music therapy from "general" to "personalized" and design personalized intervention methods based on the characteristics of high school students' anxiety, music preferences, and neurological systems to improve the effectiveness and targeting of the intervention [13]. Secondly, increase the pool of music therapy talent in schools, provide specialized music therapy training for school psychological teachers, and cultivate professional campus music intervention personnel to standardize intervention procedures.

Secondly, establish a music therapy intervention mechanism, set reasonable intervention time, frequency, and plan based on the combination of school mental health education practice, and conduct long-term follow-up investigations to prove the continuity of the intervention's effectiveness; strengthen home-school communication, disseminate information about music therapy, encourage parents to assist schools in conducting music intervention at home, and build a home-school linkage mental health service system [7]. At the same time, use new technologies to develop personalized brainwave music intervention systems, making technology better serve the convenience and targeting of music therapy [12].

6. Conclusion

Anxiety among high school students is a mental health problem that needs to be urgently addressed at present, and it has affected the physical and mental health of teenagers. Music therapy can effectively reduce anxiety among high school students through its physiological and psychological effects; it is also highly operable, easily accepted, and has no negative effects, and can be widely applied in school psychological counseling work.

The music therapy for high school students' anxiety still needs to be improved. On this basis, through personalized intervention, professional talent cultivation, the establishment of a home-school cooperation mechanism, and the leveraging of technology, the effectiveness of music intervention can be enhanced. In the future, more efforts should be made to study the relationship between music intervention and teenagers' mental health, and the implementation of music intervention in schools should be well coordinated. This will make music therapy an important way for high school students to relieve anxiety, allowing them to alleviate their psychological pressure and enhance their mental health level, thereby achieving a state of physical and mental health development.

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