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# *Music Therapy and Music Psychology Research*

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***Abstract.*** As one of the oldest and most common art forms in human culture, music has unique emotional expression and psychological regulation. With the continuous cross-integration of psychology, neuroscience and medicine, music psychology and music therapy have become increasingly popular research directions. Music psychology focuses on exploring how music affects human cognition, emotions, behaviors and social interaction processes, while music therapy applies these theoretical results to actual clinical interventions to improve individuals' mental health levels, social functions and quality of life. This article systematically sorts out the theoretical basis and development context of music psychology and music therapy, analyzes the specific methods and psychological mechanisms of different types of music therapy, explores its application and effectiveness in mental illness intervention, and proposes challenges and possible breakthroughs in future development. By reviewing current academic research and practical experience, this article aims to demonstrate the multi-dimensional role and value of music in modern mental health intervention, and provide theoretical support for promoting the standardization, scientificization and popularization of music therapy.

***Keywords:*** Music therapy, music psychology, neural mechanism, emotion regulation, psychological intervention

## 1. Introduction

Music has long been embedded in human history as a powerful medium for communication, emotion, and healing. In recent decades, the integration of music with psychology and medicine has catalyzed the development of two closely related but distinct fields: music psychology and music therapy. Music psychology investigates how music affects human cognition, perception, emotion, memory, and social interaction. In contrast, music therapy translates these insights into structured clinical interventions aimed at improving mental health, emotional regulation, cognitive functions, and social behavior. The connection between the two fields is both theoretical and practical. The empirical findings of music psychology lay the foundation for the therapeutic strategies used in music therapy. Music therapy itself spans a broad range of applications, from treating anxiety and depression to supporting neurorehabilitation and educational development [1]. This study aims to explore the theoretical foundations and practical applications of music therapy and music psychology in order to clarify how music influences emotional regulation, cognitive functioning, and behavioral adjustment from a psychological and neurological perspective. By analyzing key

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concepts, historical development, and interdisciplinary research findings, this study aims to provide a comprehensive framework for understanding the therapeutic mechanisms of music. The significance of this research lies in promoting a deeper recognition of music as a tool for psychological healing and advocating for its broader integration into global mental health care systems.

## 2. Theoretical framework

### 2.1. Music psychology

Music psychology is an interdisciplinary subject between musicology and psychology. It studies the impact of music on individual perception, emotion, memory, learning, and social interaction from the perspective of human behavior and cognition. Its research covers a wide range, including the exploration of the neural cognitive mechanisms of auditory characteristics such as pitch, rhythm, and timbre, as well as the construction of the meaning of music in social behavior. The research objects of music psychology are not limited to music professionals but also to the general population and special groups (such as children, autistic patients, the elderly, etc.), so it has a high degree of practical significance [2].

At the cognitive level, music can promote the coordinated development of the left and right hemispheres of the brain and stimulate the synchronous operation of abstract thinking and image thinking of individuals. For example, rhythm training has been shown to improve the attention retention ability of children with attention deficit disorder (ADHD). While melody learning helps develop language logic ability. On the emotional level, music mobilizes the individual's emotional experience through changes in melody, rhythm, and harmony, making people feel happy, sad, peaceful, or excited. Music can also evoke memories at the subconscious level, help individuals tap into deep emotions in psychotherapy, and have a psychological communication method different from language. Thus, music psychology not only reveals the deep connection between music and psychology but also provides a solid scientific foundation for the theoretical construction and technical development of music therapy.

### 2.2. Historical development of music therapy

The prototype of music therapy can be traced back to ancient times. As early as in the Huang Di Nei Jing, there were records of using the “five sounds” to treat diseases. Similarly, the Greek philosopher Pythagoras proposed the idea that “music harmonizes human temperament.” In many ancient cultures, music was often used as a medium for sacred rituals, meditation, and emotional regulation. While these examples reflect the early recognition of music’s therapeutic value, the scientific research and systematic application of music as a clinical intervention did not begin until the early 20th century. Since then, interdisciplinary studies combining psychology, neuroscience, and musicology have laid the theoretical and empirical foundations for modern music therapy [3].

After World War II, volunteers in American and European hospitals played music for soldiers suffering from psychological trauma caused by the war. Tracking and recording this approach showed that it significantly improved patients' emotional and physiological states, which in turn attracted the attention of the medical community to music therapy. The research on the impact of music on the brain and nervous system has continued to deepen. Music therapy has gradually been incorporated into clinical systems such as psychology, special education, and rehabilitation medicine, becoming an effective supplement to mainstream psychotherapy methods.

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### 2.3. Emotional and neurological mechanisms

The reason why music can play a role in psychotherapy lies in its ability to activate neural mechanisms in the human brain that are closely related to emotion, memory, attention, and motivation. Recent neuroimaging studies have shown that musical stimulation can engage multiple brain regions simultaneously, forming a complex network of interaction. Among these regions, the amygdala, often referred to as the emotional center of the brain, is significantly activated when individuals perceive the emotional tone of music. The prefrontal cortex, responsible for higher-order cognitive functions, plays a crucial role in regulating emotional responses during musical experiences [4]. The hippocampus, known for its role in memory formation, is particularly associated with emotional memory and contributes to the nostalgic effect music can induce. Additionally, the nucleus accumbens, a core component of the brain's reward system, is instrumental in producing the sensation of musical pleasure and emotional satisfaction. These findings provide a neurological basis for understanding how music exerts its therapeutic effects in emotional regulation and mental health interventions. Music can also affect the secretion of a variety of neurotransmitters, such as promoting the release of dopamine to bring a pleasant experience, stimulating the production of serotonin and oxytocin to enhance emotional connection, and inhibiting cortisol to reduce stress. In EEG studies, music with different rhythms can also guide brain waves into alpha waves (relaxation) or theta waves (meditation) states. It is based on these neurophysiological mechanisms that music can produce stable psychological intervention effects without language and noninvasive conditions, providing a scientific basis for the treatment of emotional disorders such as anxiety, depression, and insomnia [5].

## 3. Therapeutic techniques and psychological functions

### 3.1. Types of music therapy

Music therapy can be divided into many types according to the patient's participation form, intervention methods, and treatment goals. The most important classification method is to divide it into two categories: active music therapy and passive music therapy [6]. Active music therapy refers to the interaction between patients and therapists through personal participation in music activities, such as playing instruments, improvisation, singing, writing lyrics, etc. This method emphasizes creative expression and active emotional release, which helps to develop communication skills, self-cognition, and social interaction. Especially in children, autistic patients, or people with emotional expression disorders, active participation helps to enhance the sense of control and participation and build a positive feedback mechanism. For example, during treatment, patients are encouraged to express anger, fear or sadness in non-verbal ways so that emotions can be safely released and transformed [7]. Passive music therapy refers to the psychological activities of patients mainly through listening to music and cooperating with the guidance of therapists to relax, imagine, review emotions, or associate. This method emphasizes the sensory stimulation and subconscious awakening of music and is suitable for goals such as relieving stress, improving sleep, and relieving anxiety. In some special situations, such as intensive care, before and after surgery, or pain management, passive music therapy is widely used for its noninvasive and immediate effects.

In addition, there are some structured music therapy methods that are widely used in specific groups, such as Guided Imagery Music Therapy (GIM), Nordorf-Robbins Therapy, and Neuromusic Therapy (NMT). GIM combines classical music and imagery guidance techniques to trigger individual subconscious situations and help explore inner emotions and traumatic experiences.

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Nordorf-Robbins Therapy emphasizes improvisation and interactive communication and is widely used in people with developmental disorders, autism, and social disorders [8]. Moreover, NMT is based on a neuroscience model and is specifically designed for rehabilitation training for patients with brain damage, cognitive impairment, and impaired motor function. These diverse treatment types and methods show the high adaptability and cross-domain integration capabilities of music therapy, providing personalized psychological intervention methods for different groups of people.

### 3.2. Emotional regulation and stress relief

Music therapy plays a vital role in emotional management through both physiological and psychological mechanisms.

Physiological Relaxation: Slow-tempo, soft-melody music has been shown to reduce heart rate, blood pressure, and cortisol levels. These changes guide the listener into a relaxed alpha brainwave state, which helps reduce physical tension and psychological stress. Many therapeutic environments use calming background music to create a secure and tranquil atmosphere.

Emotional Expression and Processing: For individuals who struggle to express themselves verbally—such as trauma survivors—music provides an alternative emotional outlet. Through singing, playing, or songwriting, patients can externalize repressed emotions and gradually rebuild emotional order. For example, PTSD patients often write lyrics to narrate their experiences, facilitating emotional reintegration in a safe, non-judgmental space.

Emotional Matching and Regulation: Therapists often select music that resonates with the patient’s current emotional state, then transition toward music that induces more balanced emotional responses. This "resonance–transition–transformation" strategy has been effective in guiding patients out of anxiety or depression [9].

Numerous studies confirm that music therapy significantly lowers anxiety scores and stress biomarkers across diverse populations, including students before exams, preoperative patients, and individuals coping with life pressures.

### 3.3. Clinical applications

Music therapy is often integrated with other therapeutic approaches to enhance its effectiveness and adaptability in diverse clinical contexts. This interdisciplinary combination allows for more comprehensive and individualized treatment plans, tailored to patients’ physical, emotional, and psychological needs. For instance, when combined with psychological counseling, music therapy provides a nonverbal medium through which patients can express repressed emotions, especially those who struggle to articulate their feelings through language. This can foster a deeper therapeutic connection and significantly reduce psychological resistance [10].

In cognitive behavioral therapy (CBT), music is strategically employed to guide patients in identifying, confronting, and restructuring negative thought patterns. Rhythmic auditory stimulation or emotionally evocative musical pieces can be used to trigger cognitive responses, allowing therapists to intervene more effectively. Similarly, in physical therapy or rehabilitation settings, the incorporation of music—particularly rhythmic cues—has been shown to improve motor coordination, enhance balance, and boost patients' motivation to engage in physical activity. Music can also help synchronize movement and reduce the perception of pain during repetitive exercises.

Moreover, in palliative and hospice care, music therapy serves as a powerful tool to address not only physical discomfort but also the existential and emotional suffering associated with terminal illness. Through carefully selected musical interventions, therapists can alleviate symptoms such as

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anxiety, depression, and spiritual distress, providing patients with a sense of peace and dignity during the end-of-life stage [11].

These examples highlight that music therapy is not a standalone treatment, but a highly flexible and synergistic modality. Its integration with psychological, physical, and medical therapies significantly enhances patient outcomes, improves quality of life, and supports holistic healing processes. As research in this interdisciplinary field continues to grow, music therapy is increasingly recognized as an essential component of modern healthcare.

## 4. Current developments and future prospects of music therapy

### 4.1. Current developments in music therapy

In recent years, music therapy has gained increasing attention and application across various fields of physical and mental health. It is widely used to support emotional regulation, reduce anxiety and depression, assist in pain management, improve cognitive functions, and enhance social interactions. Clinical practice has demonstrated that music therapy plays a significant role in supporting individuals with autism spectrum disorders, dementia, trauma-related conditions, and chronic illnesses. In educational settings, it is also integrated to help children with learning difficulties or emotional disorders develop concentration and communication skills. Moreover, music therapy has been gradually accepted in community care, elderly rehabilitation, and hospice services, showing considerable flexibility in both group and individual sessions. The integration of music therapy with other disciplines, such as psychological counseling, occupational therapy, and cognitive behavioral therapy, further expands its scope of application and effectiveness. At the same time, a growing number of research institutions have begun to carry out systematic training programs for music therapists, helping to promote the professionalization and standardization of the field [12].

### 4.2. Future prospects of music therapy

Looking ahead, the future of music therapy lies in further integration with modern science and technology, interdisciplinary collaboration, and cultural adaptability. Firstly, with the advancement of neuroscience and brain imaging techniques, the neural mechanisms of music therapy will be more clearly revealed, providing a more solid scientific foundation for clinical applications. Secondly, the application of artificial intelligence and digital technology is expected to enhance the precision and personalization of therapy—for instance, the development of adaptive music systems that can respond to patients' emotional and physiological states in real time. Thirdly, future music therapy must consider cross-cultural sensitivity and adaptability [13]. As music carries cultural and emotional symbols, effective therapeutic interventions need to respect patients' cultural backgrounds and personal music preferences. Furthermore, the establishment of globally recognized professional certification systems, along with the development of standardized treatment protocols and quantitative evaluation indicators, will be essential for improving treatment credibility and promoting the large-scale implementation of music therapy. In short, as research deepens and practices diversify, music therapy is poised to play an increasingly important role in modern holistic health care.

## 5. Conclusion

This paper conducts an in-depth discussion on the theory and practice of music therapy and music psychology. Starting from the core concepts of music psychology, the development history and

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neural mechanisms of music therapy, it analyzes the psychological functions of music in emotion regulation, cognitive promotion, and behavioral intervention. Although the number of clinical cases cited is limited, relevant research literature is referenced to illustrate the potential application and adaptability of music therapy in the field of mental health.

Research shows that music therapy is not only an auxiliary treatment method, but also an important tool for building human emotional connections and promoting physical and mental integration. Its non-invasive and culturally adaptable characteristics make it widely used in mental disorders, neurological diseases, elderly care, special children education and other fields. Although there are still many challenges in theoretical research, practical operation, talent training, and policy support for music therapy, its interdisciplinary characteristics and technological integration potential provide broad space for future development.

At a time when the global mental health crisis is becoming increasingly severe, music therapy provides a people-oriented and spiritually resonant treatment path. In the future, with the integration of cutting-edge technologies such as artificial intelligence, virtual reality, and brain science, alongside the reinforcement of cultural diversity and institutional support, music therapy is expected to expand beyond professional institutions and become a widely accessible approach to promoting mental well-being across educational settings, communities, and families. We have reason to believe that through the fusion of science and art, music can not only alleviate individual suffering but also compose a melody of harmony, symbiosis, and collective healing in human society.

Nevertheless, this paper has several limitations. Due to constraints in data collection and research scope, no original experiments were conducted, and the empirical basis remains limited. The referenced literature, while supportive of the core arguments, does not cover the full diversity of global practices or recent developments in interdisciplinary research. Future studies should aim to incorporate more comprehensive data analysis, cross-cultural case studies, and where possible, empirical validation through experimental or longitudinal methods.

As our academic research progresses and depending on future opportunities for interdisciplinary collaboration and funding support, this topic holds significant potential for further refinement. Subsequent work may explore targeted applications of music therapy in specific populations, such as children with developmental disorders, trauma survivors, or elderly individuals with neurodegenerative conditions. Additionally, integrating neuroscientific tools and digital platforms may enhance the precision and accessibility of therapeutic interventions, making music not only an art form, but a scientifically grounded instrument of healing.

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