



Sociological and Psychological Perspective in Music Clinical

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Abstract. This article aims for the sociological and psychological perspective in music education as well as in music therapy clinical experience. The physical, social, and cognitive abilities of people are all impacted by music in various ways. The benefits of music education and music therapy for people may also include improved general memory, problem-solving skills, and other benefits that may translate to better academic performance. Personal experience education has allowed for the demonstration of the consequences in terms of advantages and benefits in real-world situations. According to the results, music education and music therapy clinics should be pushed more widely because they have the potential to profoundly alter people's lives.

Keywords: Music Clinical, Music Therapy, Education

1 Introduction

In contemporary society, music permeates all facets of human existence, exhibiting a direct correlation with routine activities. A myriad of activities, encompassing dance, celebratory events, and formal gatherings, are conventionally reliant on the presence of music. Through the strategic use of lyrics and melody, music has the capacity to elicit specific emotional responses in its audience. For instance, matrimonial ceremonies typically feature music that engenders feelings of joy and happiness, while ecclesiastical settings often utilize formal and solemn music to convey reverence and divine love. The emotional state of individuals often dictates their choice of music, with upbeat tunes favored during periods of happiness, and the reverse during less positive times. Music possesses the ability to augment emotions, thereby exerting a significant influence on human lives. Despite the ubiquity of music in human life, seldom do individuals contemplate its impact on humanity, or its role in stimulating and transmitting information to the human brain. Music is postulated to have a profound effect on cognitive abilities, thereby engendering a multitude of influences on human life. For example, engaging in music performance enhances memory recall, as musicians are required to remember specific elements such as musical notes, beats, and melodies of particular pieces. This paper aims to elucidate the interaction between humans and music, providing examples of how this interaction can be harnessed in the fields of music therapy and education.

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2 Literature review

Numerous scholarly investigations posit that musical behaviors may have evolved through processes inherent in human history, given their transgenerational transmission and the sustained significance and functionality of music in human life. As societies progress, music becomes increasingly ubiquitous and fundamentally intertwined with human existence. Various distinct cultures and ethnicities possess unique musical traditions. For instance, postprandial musical events are customary in traditional hunter-gatherer societies in Africa, where adults engage in song while children observe or participate. Despite limited exposure to global musical cultures, music has assumed a pivotal role in their lives, propagated through generational transmission of knowledge and practices. Occasionally, the presence of music may go unnoticed, as the definition of music extends beyond instrumentally or vocally produced sounds to encompass any patterned and meaningful auditory output. For example, rhythmic hand clapping is also classified as music. Music serves to strengthen social bonds and facilitate mate attraction in both human and animal societies^[5].

Music, in its most fundamental form, can be defined as sounds, which are produced by the vibration of an object, instigating movement in the surrounding air molecules, ultimately perceived by humans as music. This perception is facilitated by a complex process involving the outer ear, middle ear, and the basilar membrane of the inner ear, which induces movement in hair cells. Subsequently, the auditory nerve transmits electrical signals to stimulate the auditory brain, which then activates the neural cortex. At this juncture, pitch differentiation is not yet possible. In fact, the perception of pitch is influenced by the periodic motion of sound waves. Pitch is not merely a physical response of the ears, but rather a perceived experience. The human cochlea physically responds to vibrations in air waves, and the brain subsequently assigns meaning to these vibrations, enabling their psychological interpretation as sound, which can then be discerned as a musical pitch. Any naturally occurring sound, such as footsteps, shattering glass, or a musical note played on an instrument, can be characterized as possessing a sine-wave component. Generally, an increase in the pitch of a sound is accompanied by a rise in the frequency rate of a periodic sound. The human brain is capable of distinguishing specific sound properties, including tone colors, timbres, harmonics, among others, in addition to pitch (Thompson, 2009). Physical characteristics, which underpin the ability of humans to perceive music, significantly influence the musical experience. Through a series of translations of sounds, individuals can perceive various meanings and degrees of significance, a process facilitated by social construction.

The concepts of consonance and dissonance in music are purportedly shaped by musical experience and are susceptible to evolution throughout an individual's lifespan. Consonant sounds are generally favored over dissonant ones by listeners, although this preference can shift as individuals accrue more musical knowledge and experience. For those devoid of formal musical training, discerning the differences between consonant and dissonant intervals necessitates considerable time and focused listening. By attentively listening to specific intervals, individuals may cultivate sensory memory, enabling them to distinguish between consonance and dissonance. For example, numerous modernist or jazz compositions amalgamate consonant and dissonant tones. Initially,

these compositions may induce discomfort, but as individuals become more accustomed to jazz music, their emotional responses may vary. The perception of various combinations of pitches and sounds as melodically or harmonically expected is influenced by individuals' musical knowledge and experiences, given that pitch is psychologically perceived. For instance, when tuning a guitar using natural harmonics, if the notes are not perfectly in tune, they will clash, resulting in a dissonant unison. The objective is for these harmonics to gradually converge to produce a consonant sound. However, through repeated tunings, this initial dissonance may be perceived as harmonically implied or even pleasing due to prior exposure. Contrary to the discomfort induced by dissonant intervals and chords, appropriate training and experiences can transform individuals' traditional perceptions of dissonant music. Consequently, it is posited that musical consonance and dissonance are contingent on musical experience and may evolve over time. This also illustrates how sustained engagement with music can alter an individual's cognitive processes and thought patterns over time.

Humans exhibit remarkable sensitivity to pitches, although this sensitivity predominantly pertains to relative pitch relations^[5]. In the context of relative pitch, a song can commence on any note, and provided the intervals between the notes remain constant, the song remains recognizable. Upon hearing a sound and recognizing its source, individuals can make informed estimations about different pitches. Many music training programs emphasize the practice of pitch recognition—akin to the ability of perfect pitch—when isolated from the context of the preceding sound. As per Thompson, absolute pitch is the capacity to identify pitches without reliance on external references. The ability to recognize absolute pitch is a rare skill, with most individuals requiring extensive training to acquire it, save for a select few exceptionally gifted individuals. Given that only one in a thousand individuals possess perfect pitch, musicians often regard absolute pitch as a coveted skill. With rigorous practice, many musicians can learn to recognize pitches with near-perfect accuracy, exemplifying how music education can modify cognitive functioning. For instance, individuals striving to acquire this ability would need to engage in numerous sound recognition exercises to memorize the pitch and the relationships between various pitches. Although it confers a natural advantage, it can also impede the perception of pitch relationships. While absolute pitch may offer certain benefits for musicians, it may also complicate the mental transposition of consonances and dissonances for listeners, as melodies are defined by relationships between pitch and duration rather than absolute pitch. Consequently, relative pitch proves more beneficial for pitch processing.

The concept of music therapy is increasingly gaining recognition, with a growing number of facilities incorporating it into therapeutic settings. Moreover, numerous music therapists globally dedicate their professional lives to this field. Music possesses the ability to divert individuals' minds, as well as induce a calming effect on the heart rate and bodily rhythm. For instance, during yoga or meditation, many individuals opt to listen to soothing music, as it fosters a state of relaxation. Music therapy operates on this principle, as it can alter our mood, which subsequently influences our behavior. In music therapy, sounds and music are utilized to facilitate and enhance an individual's overall emotional, mental, and physical well-being. At times, music is integrated into

this form of therapy in a manner that assists patients in understanding their own emotions ^[1]. For example, clients may derive insights from their emotional responses and perceptions when listening to music. An individual experiencing anxiety may struggle to focus on music, and once they manage to do so, their thoughts become more settled. Furthermore, music exerts a potent influence on mood, particularly in patients with varying degrees of trauma.

A patient diagnosed with cerebral palsy and exhibiting depressive symptoms was subjected to music therapy, and was asked to rate her mood on a scale of 1 to 10, with 1 being the worst and 10 being the best, prior to each session. Her pre-session mood typically scored a 3. For comparative purposes, she was also asked to evaluate her mood post-therapy session. Almost invariably, she awarded her post-session mood a near-perfect score of 10. She derived immense enjoyment from singing along and playing the ukulele during the session, as well as engaging in creative improvisation. While evidence suggests that emotional responses are influenced by prior cognitive processing, this experience underscores the significant impact of music on feelings and emotions, even in individuals with significantly impaired cognitive levels. It also implies the potential of music as a form of cognitive training, serving as a therapeutic tool for individuals suffering from cognitive impairments and mental disorders, with the aim of enhancing their cognitive abilities.

While there may not appear to be a direct correlation between music and cognitive processes, musical stimuli have been demonstrated to influence cognition. For instance, listening to music can evoke memories of significant life events, such as family gatherings, which can elicit emotional responses ^[2]. Individuals are often emotionally affected by music they frequently listen to, and upon hearing it again, they may experience nostalgic recollections of past times. Individuals also tend to remember events that occurred in conjunction with the music they encountered. This illustrates how individuals can enhance their memory through musical experience and training. This could potentially improve individuals' overall cognitive abilities, which could prove highly beneficial in an educational context. For example, students with superior memory skills can more readily grasp concepts and information in class. Moreover, they would require less time to consolidate the information, as they can recall it more rapidly than those without musical training (Shneider, Hunter, & Bardach, 2019). The benefits of music also suggest that educational institutions should prioritize the expansion of general music instruction.

While music exerts a profound influence on emotion, it is not inherently linked to it. Furthermore, music impacts a child's academic performance, mathematical abilities, reading skills, language proficiency, and overall intelligence. Music has even been purported to reverse hair loss, treat inflammatory bowel disease, and promote global peace (Thompson, 2015). Initially, these claims were met with skepticism, with many attributing them to excessive enthusiasm for music. Such reservations are valid, as the majority of evidence does not directly substantiate the positive effects that music can have on individuals. This is because these benefits do not accrue directly to individuals, but rather through an indirect process. Music may facilitate the aforementioned positive outcomes by enhancing overall cognitive performance.

Numerous studies have demonstrated how music enhances a range of fundamental cognitive skills, including memory, planning, and problem-solving. For instance, during music lessons, students are required to learn the arrangement of the music. They must also anticipate and devise solutions to problems as they arise. If students realize they are playing incorrect notes or lagging behind the beat, they must devise a strategy to rejoin the practice and rectify their mistakes. These cognitive skills are transferable to various contexts, such as employment and academic study. It is important to note that scientific evidence suggesting correlations between musical and nonmusical phenomena is conflicting, and individual characteristics also influence the outcomes. Due to the inability to directly demonstrate the benefits to educational institutions or boards, music education often suffers from inadequate funding. Additionally, some studies suggest that the direct transfer of cognitive skills from one domain to another, such as from music training to mathematical problem-solving, may not be as effective as commonly believed ^[1]. Nevertheless, it is indisputable that exposure to music can positively influence individuals' overall cognitive abilities, and over time, it may also confer students with numerous advantages in other academic areas.

Acquiring music as a skill can enhance children's self-esteem and sense of achievement, thereby fostering their mental and physical development. Given that many students initially grapple with producing pleasing sounds and that children often perceive practicing instruments or singing for extended durations as monotonous and tedious, the process of learning music can be a challenging experience for many pupils. Children are more inclined to engage in or explore exciting activities rather than remain stationary and practice music. However, once students surmount this challenging phase and are capable of beautifully performing a piece of music, they stand to gain from the sense of achievement and potential cognitive benefits that the music experience can confer, including enhancements in intelligence, mathematics, self-esteem, cognitive ability, and personality ^[4]. Individuals proficient in music are more likely to garner respect in academic and social contexts, as they can showcase their abilities and skills to others. Children exposed to music are more likely to exhibit empathy and compassion, as they frequently engage in intense emotional interactions with music ^[1]. They are more predisposed to engage with and experience the emotions of others. This could assist individuals engaged in music practice in cultivating a positive personality. They are more likely to be socially adept and attuned to shifts in others' emotions. However, the challenges faced by students cannot be overlooked, which may also account for why music education cannot be as widely implemented as music industry experts would desire.

One perspective posits that emotional responses are contingent on preceding cognitive processes. It is postulated that cognitive processes, encompassing the encoding, categorization, and eventual evaluation and appraisal of features, give rise to emotional responses. In discussions of cognition, the information processing paradigm has been employed as a conceptual framework ^[5]. These mental processes play a role in how individuals perceive and understand the world, and they occur as a result of experience and successful maturation, equipping us with the ability to realistically perceive the world and our place within it. The human genome does not contain a genetic code for emotions. Rather, they represent a sophisticated cognitive ability that must be learned to adapt to social situations. This cognitive ability has been regarded as a fundamental

component of social cognition ^[2]. Essentially, parents typically provide their children with a similar scaffolding of emotional knowledge as they would in other domains. In other words, an individual's educational background and environmental influences significantly impact their emotions. For example, an individual who experienced a violent and depressive upbringing is likely to exhibit emotional instability and irritability. Conversely, an individual from a happy family with a solid education typically maintains a cheerful and positive perspective on most matters, which also influences their emotional stability, as opposed to an irritable and mild demeanor.

Given that adults can typically retain approximately seven "chunks" of information, plus or minus two chunks, it is universally acknowledged that an octave comprises five to seven notes (Miller, 1956). Consequently, music composed using scales with more than seven tones may pose comprehension challenges for certain listeners. The difficulty many individuals experience when listening to music composed on a 12-tone scale can be attributed to memory for scales. In music based on the twelve-tone scale, an octave is evenly divided into twelve equal parts, and the twelve notes are subsequently rearranged into a novel sequence. Music composed on the twelve-tone scale often appears disjointed and discordant to many listeners. Human neonates are born with several crucial abilities, including frequency coding processes and multisensory connections, which facilitate a range of musical activities. These abilities can be traced back to the acquisition of music in infants ^[1]. Specific musical therapies administered by music therapists in the neonatal intensive care unit (NICU) can significantly enhance a preterm infant's heart rate, respiration rate, stress level, and oral feeding volume. Furthermore, "In essence, music therapy begins in the womb" ^[3]. This also suggests that "the prenatal infant is exposed to a variety of sounds originating from the mother" (Thompson, 2009). Children and newborns can leverage music to foster cognitive development in both the physical and mental domains. Additionally, music cultivates knowledge that can be applied to other subjects, enhancing infants' learning and understanding of the external world.

In summation, music holds a pivotal role in individuals' lives and wields profound influence in both educational and therapeutic contexts. Music education can enhance individuals' cognitive abilities, encompassing memory, problem-solving skills, among others. It also impacts individuals' emotional responses, hence those with a musical background are more likely to discern others' emotions and exhibit empathy. Consequently, Thompson (2009) posits that music may even contribute to the promotion of global peace, a value that is increasingly cherished. Music aids in the recovery of patients suffering from mental and physical ailments, and it may also facilitate students in achieving superior academic outcomes. Despite the fact that the potential changes induced by music in humans may not be immediate or rapid, scientific studies have explored these possibilities. In light of this, it is prudent to strongly advocate for music education and therapy, with the aim of expanding access to music and harnessing the positive effects that music can confer upon society.

3 Conclusion

Music education permeates every stage of an individual's life. From the prenatal period, when our mothers expose us to music, to our childhood when our grandparents sing us lullabies, music is a constant presence. As we progress to school, we engage in music classes, share music videos with friends, participate in music competitions, learn to play an instrument, and perhaps even pursue music in college. This pervasive presence of music education underscores its importance; our lives are inextricably intertwined with music. Only by acknowledging the significance of music and music education can we become effective music educators.

Prior to initiating a music class, every teacher should establish their own philosophy of music. Activities should be designed according to different musical objectives to foster students' interest and cultivate aesthetic and musical skills. Given the varying musical proficiency levels of students, music activities should be designed to engage the majority of students, complemented by comprehensive and appropriate assessment methods. These not only facilitate students' learning in subsequent classes but also assist teachers in formulating future teaching objectives.

Reference

1. Rolvsjord, Randi. "Therapy as empowerment: Clinical and political implications of empowerment philosophy in mental health practises of music therapy." *Nordic journal of music therapy* 13.2 (2004): 99-111.
2. McCaffrey, Triona. "Music therapists' experience of self in clinical improvisation in music therapy: A phenomenological investigation." *The Arts in Psychotherapy* 40.3 (2013): 306-311.
3. Kenny, Dianna, Tim Driscoll, and Bronwen Ackermann. "Psychological well-being in professional orchestral musicians in Australia: A descriptive population study." *Psychology of Music* 42.2 (2014): 210-232.
4. MacDonald, Raymond AR, David J. Hargreaves, and Dorothy Miell, eds. *Musical identities*. OUP Oxford, 2002.
5. Crowe, Barbara J., and Robin Rio. "Implications of technology in music therapy practice and research for music therapy education: A review of literature." *Journal of music therapy* 41.4 (2004): 282-320.

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