

How Music Therapy Sets a Precedent for Person-Centered Healing

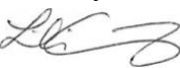
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A thesis submitted in partial fulfillment of the  
requirements for the degree, Bachelor of Arts  
(Major)

The Colorado College

April 12, 2024

Approved by  Date 4/11/2024  
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Approved by  Date 4/12/2024  
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## I. Introduction

Music and soundscapes are present everywhere and in everyone's lives. As such, it may seem bold to claim that music has profound physiological effects due to its interactions with the brain and the neurological pathways it travels. Over the past few decades, a new field has begun to emerge using music to help treat various different physical and mental conditions. Exploring the effects of music can help provide understanding of the physiology behind listening to and hearing music and how music itself can heal and aid in many different ways

I specifically was interested in how music can help alleviate the effects of Alzheimer's Disease (AD) and minimize challenges that are associated with Autism Spectrum Disorder (ASD). These two are especially apt examples as there is some pathological overlap neurally. It is estimated that AD currently affects about 4.5 million Americans and is the most common form of dementia. That number is expected to rise by about 30% by 2030 as the baby boomer generation ages. AD, once it has set in, will relentlessly progress until an affected individual needs total care and eventually dies. Before death, the average lifetime cost of caring for an individual with AD is \$254,000.<sup>1</sup> I have seen the progression and effects of AD firsthand working in skilled nursing, seeing caretaker burnout, as well as the sadness of families and friends as their loved ones stop recognizing them and decline until unable to care for themselves. It is not an easy thing to watch someone change into a completely different person as their memories fade. My experience with this inspired me to investigate how music therapy can alleviate symptoms or aid in recall.<sup>2</sup>

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<sup>1</sup> This number is adjusted for inflation.

<sup>2</sup> Kenneth Brummel-Smith, "Alzheimer's Disease and the Promise of Music and Culture as a Healing Process," in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 185–200.

My interest in Autism Spectrum Disorder is even more personal. While 1 in 36 children are diagnosed as on the spectrum, and diagnoses are 4 times more common in men than in women, my interest comes from myself more than from the facts. I am on the spectrum and I remember struggling to express feelings as I grew up, sometimes not having the words and often not wanting to try to explain what I was feeling. As I grew up this became easier with the help of music. Music was always an outlet for me. I could express emotions without having to name them and I could hear in the music what I wanted to say without having to find the words. I experienced this far less dramatically than most as I am “high-functioning” and learned how to assimilate into society in a way that was expected of me. Many children with ASD struggle with speech to the extent of being nonverbal. For them, music can be so much more than an outlet; it can become a form of communication. Remembering how important music was to me growing up, I decided to examine how music works with the brain to aid in overcoming challenges associated with neurodivergence.

Examining the physics of music reaching the brain, to it becoming a neural impulse, to it traveling along different neural pathways to enact different physiologic effects reveals commonalities in how humans hear music and react to it and how it can work neurologically to help with both physical and mental challenges. The individuality of music allows for music therapy to meet and begin healing people where they are at. Additionally, this individuality can help create a framework for person-centered holistic healing which can also open the door to other alternative medicine practices as the whole person is considered rather than just the symptoms presented. In order to understand how this can come about, the process of hearing music and how healing can happen must be understood.

## II: How we Hear Music

The physical process that allows music to reach the brain is relatively straightforward. Vibrations travel from the external ear canal through the eardrums on either side to the tiny bones, the ossicles, of the middle ear. From there, the vibrations reach the snail shaped cochlea where fluid is agitated, moving the thirty-five thousand inner hair cells and transmitting the signal to the brain where it is registered as sound.<sup>3</sup> Pitch is differentiated as different sound waves moving through space and time; lower pitches have slower waveforms, and higher pitches have waveforms that vibrate more quickly.<sup>4</sup> The perception of pitch, then, is interrelated with the experience of sounds' movement through time and space.

The physical hearing of music has a physiological effect of excitation in the body. According to a study by Blood and Zatorre (2001), subjects listening to self-selected, pleasure-inducing musical examples experienced significant changes in heart rate and breathing, as well as changes in the electrical activity of skeletal muscles. The same subjects underwent PET scans which showed the involvement of opioid systems, which regulate and release a variety of “feel-good” neurotransmitters, while listening to music. The authors observed regional cerebral blood flow increases in paralimbic regions. The paralimbic regions are areas of the brain associated with emotional and physiological arousal, and also in regions associated with motor processes. Arousal as a physiological process is defined as the activation of the autonomic nervous system (ANS), specifically the sympathetic division. The ANS is responsible for involuntary responses and is composed of the sympathetic and parasympathetic divisions. The

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<sup>3</sup> Oliver Sacks, *Musicophilia: Tales of Music and the Brain*, 2nd ed. (1971; repr., New York, New York: Vintage Books, 2007), 140–41.

<sup>4</sup> Marina Roseman, “A Fourfold Framework for Cross-Cultural Integrative Research on Music and Medicine,” in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 27.

sympathetic division is responsible for fight or flight responses such as increase in heart rate, increase in breathing and other responses needed for immediate survival while the parasympathetic division is responsible for functions like digestion, slowing of the heart rate and other non-immediate survival mechanisms. Blood and Zatorre noticed that the blood flow activity in the brain is “similar to that observed in other brain imaging studies of euphoria.” From this they postulate that the reward process for musical listening, as for food and sex, involves dopamine, opioid systems, and other neurotransmitters.<sup>5</sup> Now that we have established the physical physiological interaction of music with the brain, we need to understand how it neurologically interacts with the brain.

In his book, *Musicophilia*, renowned neurologist Oliver Sacks explores some of the wide-ranging physical, psychological, emotional and even physiological impacts of music. How music interacts with the brain neurologically is essential to understanding how it can trigger seizures, appear in hallucinations or play a role in causing other more complex conditions. To understand the potential impact music has on healing, its effect on the brain and neurological processes as a whole should be considered.

Musical hallucinations provide a convenient place to study the effect of music on the brain. Oliver Sacks discovered that a surprisingly large portion of the population experiences hallucinations in the form of music.<sup>6</sup> People who experience these auditory hallucinations hear music in varying degrees of detail when there is no music playing around them. When Sacks began studying the neurological basis for these, he discovered two important things. First, sudden deafness could cause musical hallucinations. In some cases, the lack of auditory

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<sup>5</sup> Judith Becker, *Deep Listeners* (Bloomington, Indiana: Indiana University Press, 2004), 53.

<sup>6</sup> Sacks, *Musicophilia*, 57.

stimulation could cause these “release hallucinations.”<sup>7</sup> Additionally, musical hallucinations are associated with a widespread activation of the same neural networks that are normally activated during the perception of actual music.<sup>8</sup> These findings suggest a commonality between all who are listening to music and the pathways being activated in their brains.

While commonalities are present in the neurological pathways activated when processing music, there is a range of musical talent and in the perception of music across different individuals. No one person possesses all of the talents cognitively nor emotionally when it comes to music. There are differences in the “musical” part of the brain that lead to different outcomes and perceptions.<sup>9</sup> Using MRI technology, it was discovered that the corpus callosum<sup>10</sup> is enlarged in professional musicians. Additionally, a part of the auditory cortex, the planum temporale, has an asymmetric enlargement in musicians with absolute pitch.<sup>11</sup> These physiological differences show that musical experience may not be a universal, but rather a learned behavior. This is also supported by the changes that can occur in the motor cortex after five minutes of practicing piano as well as other support cited by Sacks.<sup>12</sup>

Listening to music is not necessarily a universal experience, as even just the difference between listening to a chamber recital versus a rock concert demonstrates. The difference is one of expectation and culture, so culture has to be considered when looking at the impact of music, and even the role of music in society and healing. The one cultural constant is the evocation of

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<sup>7</sup> A release hallucination is caused by the brain’s need to be incessantly active and when the auditory region was deprived of its usual stimuli it began to generate spontaneous activity of its own.

<sup>8</sup> Sacks, *Musicophilia*, 83–84.

<sup>9</sup> Sacks, *Musicophilia*, 98–99.

<sup>10</sup> The corpus callosum is the part that connects the two hemispheres of the brain

<sup>11</sup> Sacks, *Musicophilia*, 100.

<sup>12</sup> Sacks, *Musicophilia*, 101.

emotion by music, as well as the importance of creating music as a part of society for entertainment, religion, rituals, and more.

### **III: How Music and Spiritual Practices Intertwine in Healing**

In this section, the connection between music, religion and cultural practices in healing will be explored through the practices of three different religious practices. The three religious practices will be Christianity, Agama Tirtha of Bali and trancing practices. These three practices allow us to examine the impact of religion and the supernatural on healing, the way music is connected to cultural and religious practices and thereby the way music facilitates healing through supernatural means.

Understanding the relationship between music, culture and healing is dependent on spiritual beliefs. This is an aspect of healing that is traditionally undervalued in Western medicine. According to Benjamin D. Koen, “most, if not all, traditional healing contexts consider religion or the supernatural critical to the success of any intervention, which virtually always includes some form of music, specialized sound and prayer.”<sup>13</sup> In order to understand any culture’s practices surrounding healing, their spiritual beliefs and the connection therein must also be understood. However, by examining a few distinct cultures some generalizations can be made that can be applied to modern medicine and, more specifically, to modern music therapy.

Religion and music have long been connected in ritual and practice. Healing rituals in many indigenous cultures involve sound, whether it be gongs and bells, or singing to ancestors and spirits, or music played to accompany trancing and dancing. Hymnody has been an aspect of

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<sup>13</sup> Benjamin D. Koen, “Music-Prayer-Meditation Dynamics in Healing,” in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 99.

Christianity since its legalization by Constantine in 313 AD.<sup>14</sup> Psalms written to sing for the glory of the Jewish God have existed since the time of King David of Israel and Judah, who was estimated to have ruled around the time of 1000 BC. Music and religion are practiced in tandem across many different cultures.

The modalities of music and prayer should be looked at both separately and as a unified whole because, “certain genres of music *are* prayer; and certain genres of prayer exist only in a musical, chanted, intoned or sounded form.”<sup>15</sup> The relationship between music and prayer is a cross-cultural one. Three traditions provide interesting contrast in their intersections of music, faith, and healing. Christianity as a whole, and the historical and cultural beliefs about healing through faith is the first. Second, the religion practiced by the majority of the Indonesian island of Bali: Agama Hindu Dharma or Agama Tirtha.<sup>16</sup> Finally, the tradition of trancing as a healing practice associated with countless cultures and religions and how this practice affects the brain.

According to the gospels, healing has been a part of the Christian tradition since it began, beginning with the many miracles performed by Jesus Christ.<sup>17</sup> Notably, Jesus cleansing a man with leprosy,<sup>18</sup> healing a paralytic,<sup>19</sup> restoring sight to the blind,<sup>20</sup> healing a sick woman,<sup>21</sup> and

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<sup>14</sup> “Hymn | Definition, History, and Facts,” Encyclopædia Britannica, accessed January 24, 2024, <https://www.britannica.com/topic/hymn>.

<sup>15</sup> Koen, “Music-Prayer-Meditation Dynamics in Healing,” 97.

<sup>16</sup> Agama Tirtha is also known as Agama Air Suci or Agama Hindu Bali and represents a distinct form of Hindu worship incorporating local animism, ancestor worship, and reverence for Buddhist saints or Bodhisattva.

<sup>17</sup> The gospels are accounts of Jesus’ life as described by Matthew, Mark, Luke and John, four of his apostles.

<sup>18</sup> Matthew 8:1–4; Mark 1:40–45; Luke 5:12–14 (New Revised Standard Version)

<sup>19</sup> Matthew 9:1–8; Mark 2:1–12; Luke 5:17–26 (NRSV)

<sup>20</sup> Matthew 9:27–31 (NRSV)

<sup>21</sup> Matthew 9:20–22; Mark 5: 25–34; Luke 8:42–48 (NRSV)



healing a man with a severed ear<sup>22</sup>. These show different forms of healing and are corroborated by different books of the Bible, as well as other first century non-Biblical historical accounts. Jesus cites faith as being the cause for healing, for example in the case of the sick woman in the book of Mathew, “Jesus turned, and seeing her he said, ‘Take heart, daughter; your faith has made you well.’”<sup>23</sup> Of all of the 37 miracles recorded across the four gospels, faith is a key component of the majority of them, and faith is still believed to heal in Christianity today. To summarize, in Christianity, faith and the will of God are believed to be necessary for healing to miraculously occur.

The majority religion of Bali is a specific sect of Hinduism, known as Agama Tirtha. It allows for an immense variety of healing modalities to occur. These include meditation, hypnotism, herbal remedies, Western medicine, visiting a Balian, reiki, crystals, chakra, and past-life healing are all incorporated to different extents in Bali. Balian (dukuns/shamans) are traditional healers who work with divine energy to treat physical and mental illnesses, remove spells and channel energy from ancestors. Treatments often involve plant medicine, massage, or offerings that must be made. Most well-off Balinese will seek western medicinal treatment first when dealing with illness or injury, despite Bali feeling far removed at times from Western society. Those without access to Western medicine, however, will seek traditional healing with the Balian. Additionally, devout well-off Balinese will still defer to the expertise of Balian in tandem with Western medicine. There are also other healers practicing different techniques like reiki, crystals, and so on. In Bali, Balian will often enter trances when communing with their ancestors in order to determine what must be done. There are also trancing ceremonies and rituals done for healing in other settings.

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<sup>22</sup> Luke 22:50–51 (NSRV)

<sup>23</sup> Matthew 9:22, (NSRV)

Trancing is typically an event that occurs with music or dancing and there are several prerequisites or conditions that must be met for trancing to occur. The embedment of a person in a culture and believing in the process are essential prerequisites for music healing practices, such as trancing to take place. The relationship between music and trancing is somewhat different depending on cultures, however, a transformed “self” is both a hallmark of trance and a phenomenon frequently associated with musical performance.<sup>24</sup> Additionally, “the idea that melodies contain intrinsic properties, or that a particular musical timbre, such as the sound of oboes, or the playing of drums can trigger trancing has remained a popular theory of trancing from Aristotle’s day to our own.”<sup>25</sup> Most importantly though, the “entrancee” must be immersed within the beliefs of a faith, as well as having a readiness for and acceptance of a change in consciousness, or trancing will not happen. Nor will it happen without strong ANS “bottom-up” arousal, further intensified by belief. It is also magnified by reverse neural activity from the neocortex, or “top down” arousal.<sup>26,27</sup>

Trancing can be generalized as mostly occurring when “entrancees” cross-culturally experience what scientists refer to as primary emotions. Primary emotions are immediate and instinctual responses to stimuli (joy, fear, sadness). They are universal and often linked to specific events or situations. Secondary emotions are reactions to primary emotions and are more

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<sup>24</sup> Becker, *Deep Listeners*, 87.

<sup>25</sup> Rodney Needham, “Percussion and Transition”, *Man* 2: 606-614; Andrew Neher, “Auditory Driving Observed with Scalp Electrodes in Normal Subjects,” *Electroencephalography and Clinical Neurophysiology*, 13: 449-451; Andrew Neher, “A Physiological Explanation of Unusual Behavior in Ceremonies Involving Drums,” *Human Biology* 34: 151-160; Becker, “Deep Listeners,” 37.

<sup>26</sup> Bottom-up mechanisms are initiated by stimulation of various somato-, viscer-, and chemo-sensory receptors or in other words are triggered by sensations whereas top-down mechanisms are those initiated via mental processing at the level of the cerebral cortex or more simply, by thinking. Ann Gill Taylor, et al., “Top-down and Bottom-up Mechanisms in Mind-Body Medicine: Development of an Integrative Framework for Psychophysiological Research,” *Explore* 6, no. 1 (January 2010): 29–41, <https://doi.org/10.1016/j.explore.2009.10.004>.

<sup>27</sup> Becker, *Deep Listeners*, 56.

complex, often influenced by personal experiences, beliefs, and thoughts. These primary emotions are high arousal emotions, hence the ANS activation. This activation has been found to occur in essentially all instances of trancing from Pentecostal trancing to Balinese trancing to Islamic Sufi trancing and more.

The Rangda/Barong trancing ceremony of Bali is an event invoked to restore the balance between the world of humans and the supernatural world.<sup>28</sup> The imbalance of these worlds is believed to cause illness, infertility, failure of crops and more. In the ceremony many members of a village enter into a trance state and act out a drama. The gamelan plays continuously throughout,<sup>29</sup> creating the aura of a differing reality, a sound mediated reality that renders plausible the appearance of deities and demons in the realm of humans.<sup>30</sup> The largely tone-less, cyclical pattern of the gong/drum ensemble becomes iconic for the supernatural in various different areas of Indonesia, while the same underlying musical structure accompanies rituals and trancing in the same way.

The Western distrust of such supernatural and foreign rituals is deeply entrenched, and has been for generations. Causes of this include the history of the relationship of the Catholic Church and spiritual possession, combined with the lack of decorum, as most trancing instances involve convulsing, falling to the floor or other uncontrollable events.<sup>31</sup> It is challenging for someone in Western society to accept that “someone who trances at a Pentecostal church on

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<sup>28</sup> Becker, *Deep Listeners*, 82–85.

<sup>29</sup> Gamelan is the traditional ensemble music of the Javanese, Sundanese, and Balinese peoples of Indonesia, made up predominantly of percussive instruments. The most common instruments used are the metallophones (played with mallets) by the gangsa (primary ensemble) and a set of hand-drums called kendang, which keep the beat as well as the tawa-tawa and gong, also used to keep time and mark cycles.

<sup>30</sup> Becker, *Deep Listeners*, 84.

<sup>31</sup> Becker, *Deep Listeners*, 89.

Sunday can function in a rational and controlled manner in a responsible job all week.”<sup>32</sup> In addition to the religious distrust, there is the distrust and distaste of perceived lack of self control born out of Enlightenment philosophers like Descartes.<sup>33</sup> Worth noting is that the belief of onlookers is not relevant to these practices. Whether or not they occur, unexplainable events have happened and mysterious healings have taken place. There is no foolproof way to discern between genuine and fake trancing, hence faith may be the ultimate touchstone. No amount of evidence can persuade the confirmed skeptic, nor can believers be dissuaded by any degree of contestation.<sup>34</sup> Consistent through the different tracking traditions is the belief that a greater power is speaking through someone and taking control over their body temporarily. Therefore, entering into a trance means allowing oneself to be seen as a certain kind of person which is interpreted differently depending on cultural context.

There are some generalizations that can be drawn from change of consciousness rituals and healing. The Persian ritual of Maddâh (literally translated as praise) is a rare genre of devotional music, prayer, meditation, and Persian mystical poetry that is performed for multiple cultural purposes, including the maintenance of health and healing.<sup>35</sup> During these rituals participants enter what is described as “an ineffable state of spirituality” during which their surrender of self is necessary in order to enter a “higher, more spiritual” state.<sup>36</sup> There are some physiological constants in this as well as in other trancing rituals. The activation of the ANS results in a temporary increase in heart-rate and a long term lowering systolic blood pressure. To

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<sup>32</sup> Becker, *Deep Listeners*, 89.

<sup>33</sup> Becker, *Deep Listeners*, 91.

<sup>34</sup> Becker, *Deep Listeners*, 34.

<sup>35</sup> Koen, “Music-Prayer-Meditation Dynamics in Healing,” 94.

<sup>36</sup> Koen, “Music-Prayer-Meditation Dynamics in Healing,” 95.

a lesser extent, it also lowers diastolic blood pressure through familiar music engaging cognitive networks trained through enculturation to create relaxed and healthful states. The familiarity of music and instrumentation is also necessary to more easily allow for entering a different state of consciousness.<sup>37</sup> Finally, there are the consistencies between ‘entrancees’ that are congruent cross-culturally: unorthodox sense of self, openness to the experience and willingness to give up control and surrender self to a more abiding, more powerful force. Unfortunately, a relationship between religious practices and healing is not accepted, or a reality in modern Western medicine.

#### **IV: A Brief History of Western Medicine**

The notion that a relationship exists between religion and health has been strongly resisted by Western biomedical science for nearly 100 years.<sup>38</sup> In spite of recent studies documenting a connection between immune functioning and religious involvement, there is still a stigma held over from the Age of Enlightenment that religion has no place in science.<sup>39</sup> In modern medicine in the Western world there is a process: the patient presents with a problem, physicians test until they find the source of the problem, and then they treat it. However, often the source of the symptoms is deeper than the immediate physical source. As an example, if a patient is having pain associated with neurological issues, it is not enough to just treat the pain, as the underlying problem will persist unless addressed. The obvious symptoms do not always show everything and treating them is not enough to resolve the medical issues plaguing today’s society.

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<sup>37</sup> Koen, “Music-Prayer-Meditation Dynamics in Healing,” 109–117.

<sup>38</sup> Harold G. Koenig, “Religion, Spirituality, and Healing: Research, Dialogue and Directions,” in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 47.

<sup>39</sup> Susan K. Lutgendorf, et al., “Religious Participation, Interleukin-6, and Mortality in Older Adults,” *Health Psychology* 23, no. 5 (2004): 465–75, <https://doi.org/10.1037/0278-6133.23.5.465>.

The history behind modern medicine can provide context for this divide. Medical centers largely began as religious institutions created to care for the underprivileged sick. However, the contribution of religion to medicine started to change between the Protestant Reformation and the 20th century. Prior to that, disease and health were considered to be the provenance of the spiritual. Disease was believed to be a punishment for sin and healing could be achieved through penance. After the Scientific Revolution and Enlightenment period, the science of infection and pathology began to be researched and understood.<sup>40</sup> This secularization changed the relationship between religion and medicine. In some cases these disciplines were compatible, however, in most cases, they clashed due to differences in belief about the root cause of disease and the differences in approaches to healing.<sup>41</sup>

This separation was not historically a negative thing, as it is important to acknowledge the advances made in health care that came out of discoveries like germ theory. However, this was taken too far and now, in the modern age, stress and emotions are no longer even part of the conversation when attempting healing. The Enlightenment was the source of huge strides made in the treatment of diseases based on science, as can be seen through dramatically dropping death rates in the first world at the end of the 19th century and start of the 20th century.<sup>42</sup> As new diseases emerged from new work patterns and environments at the start of the 20th century, from respiratory infections to STIs, new treatments and innovations had to be developed. Most notably, drug therapy became important and a first line of defense in first world countries during this time.<sup>43</sup> With the popularization of drugs as a treatment, and as medical centers grew apart

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<sup>40</sup> Keir Waddington, *An Introduction to the Social History of Medicine: Europe since 1500* (Houndsmill, Basingstoke, Hampshire, New York: Palgrave Macmillan, 2011), 39.

<sup>41</sup> Waddington, *An Introduction to the Social History of Medicine: Europe since 1500*, 49–50.

<sup>42</sup> Waddington, *An Introduction to the Social History of Medicine: Europe since 1500*, 24.

<sup>43</sup> Waddington, *An Introduction to the Social History of Medicine: Europe since 1500*, 28.

from religious institutions to become state-subsidized and no longer charity based, commercial medicine and medicine for profit should be considered in relation to how they shaped modern western medicine.

Medicine for profit created a new model for treatment of patients. When medical centers were charity based, they treated everyone and provided treatment regardless of ability to pay. Now that they are state subsidized, it is expensive to receive care. The government and insurance companies began to have a say in medical treatment because they are the ones paying for it. For-profit organizations like these want issues to be solved quickly with minimal intervention in order to avoid expensive procedures. This led to the practice of treating symptoms with highly effective drugs rather than acknowledging the root cause, which is almost always more complicated and multi-faceted than the symptoms presented. While these drugs are extremely helpful and responsible for relief in many cases, they also can have side-effects that lead to other drugs being prescribed. By the time people have reached an older age, they are prescribed a plethora of medications that often cover up problems that could potentially be successfully treated just once for the patient's benefit.

The pedagogy that continues in Western medicine today tends to perpetuate bias against alternative medicine. This has led to the issue already discussed where treatments that are not purely based in the hard sciences are ignored. Also, in some cases, certain religions disapprove of or forbid medical intervention because it is seen as opposing the will of higher powers.<sup>44</sup> This total separation of hard science and humanities-based disciplines can account for the limited role alternative treatments are allowed in Western medicine today despite evidence of their effectiveness. Specifically, music therapy has a wide range of applications and a basis in science, but is only recently growing to be considered a valid branch of medicine.

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<sup>44</sup> Waddington, *An Introduction to the Social History of Medicine: Europe since 1500*, 207.

## V: Music Therapy as a Methodology of Healing

Music therapy has come into prominence as a form of treatment at the commencement of the 21st century. Research literature began to be published in the 1980s in which music therapists used the model of psychotherapy to understand how music can facilitate healing. Music therapy is not only adding music to psychological treatment, but it is combining music and therapy. As such, music therapy theory cannot originate from any other discipline. Instead, it comes directly from experiences in clinical work in order to enhance understanding of the musical processes, interventions and interactions in music therapy.<sup>45</sup> Clinical examples showcasing the efficacy of music therapy are many and varied, from cultural re-memorying, to the trancing rituals discussed previously, to such things as musical savantism, provide evidence of the powerful effect music can have on both the conscious, and especially the unconscious mind.

The goal of holistic medicine is to pursue the well-being of the total person as such, “The total person – mind, body and spirit – must be brought to the healing table”.<sup>46</sup> Biofeedback interventions and music therapy show how traditionally overlooked disciplines actually aid in healing through their impact in various physiological systems, specifically the mind.

Biofeedback as an intervention shows how physiological signals can be converted into auditory and visual cues to reduce sympathetic arousal. This type of intervention shows how music can have the same effects and how it can impact physiological and neurological conditions.

There are two main forms of biofeedback used in clinical settings. In order to understand how biofeedback is related to music therapy, they must both be discussed in brief. Operant conditioning and feedback learning is the first model. The individual being treated is connected

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<sup>45</sup> Dorit Amir, “Music Therapy--Holistic Model,” *Music Therapy* 14, no. 1 (1996): 44–60, <https://doi.org/10.1093/mt/14.1.44>.

<sup>46</sup> Helen L. Bonny, “Music and Healing,” *Music Therapy* 6, no. 1 (1986): 3–12, <https://doi.org/10.1093/mt/6.1.3>.



to a screen and the therapist explains various different forms of biofeedback<sup>47</sup> as the individual attempts to bring these processes under their control. The second model is referred to as psychophysiological psychotherapy. In this form of treatment, a psychophysiological assessment and a psychological evaluation are combined to help the patient understand the impact of chronic stress in their lives and begin to manage it.<sup>48</sup>

Both of these models have met with success in treating various clinically diagnosed diseases and disorders including: tension headache, chronic pain, spasmodic torticollis, temporomandibular joint dysfunction, ADHD, epilepsy, hypertension and anxiety. The primary principle behind biofeedback treatment is that by understanding involuntary processes, patients can begin to consciously autoregulate. The primary principle behind music therapy is that unconscious processes and the neuropsychological effects of listening to music can facilitate healing. As biofeedback has proved, the conscious mind has a greater role in controlling bodily functions than may previously have been suspected.

Within music, practices vary widely between cultures, therefore, some considerations about music therapy must be established. Primarily, pitch-relationship established by therapists typically reflects Western European tonal practice. Secondarily, and perhaps conversely, most sonic environments associated with music therapy sessions are out of tune when compared with Western European tonal practice.<sup>49</sup> That itself is part of what lends individuality to music therapy. It is dependent upon the individual playing the music. The therapist can then react to the

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<sup>47</sup> Biofeedback are physiological reactions such as Surface electromyography, Electroencephalography, heart rate, skin temperature, skin conductance and more.

<sup>48</sup> Dana L. Frank, et al., "Biofeedback in Medicine: Who, When, Why and How?," *Mental Health in Family Medicine* 7 (June 2010): 85–91.

<sup>49</sup> Michael Rohrbacher, "The Application of Hood's Nine Levels to the Practice of Music Therapy," in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 273.

individual based on what they hear during the sessions. “Consonance, dissonance, tension, and resolution are all important components in music. Care should be taken when assigning meaning, especially in the context of therapy.”<sup>50</sup> Consonance, dissonance, tension and resolutions are conventions of tradition, and while Western tonality may be standard in music therapy, the cultural background of the individual must be considered for interpretation. Mastery is not needed in order to produce pleasant, unpleasant, or anxious sounds, rather only a couple minutes of experimentation with an instrument is needed for an individual to attempt expression of their primary emotions and use the instrument as a vessel through which to convey these. This shows how individuality comes into play in every aspect of music and by extension, music therapy.

Music therapy’s neurological effects are based on activation of various neurological pathways discussed earlier. The physical effects of music allow for music therapy to move into the field of Western medicine with more acceptance than other alternative medicine. Such things as brain scans directly show the impact of sound. The individuality of music therapy allows for a person-centered approach to healing. As this becomes more accepted, holistic healing and other forms of alternative medicine will gradually come into play. In this way, music therapy provides a framework in which healing as a function of mental and physical health through a cultural lens can begin to take place. Some examples of the effects of music therapy can be helpful in seeing exactly what kind of physical effects music can have.

Alzheimer's Disease (AD) is a neurodegenerative disease with several stages. It first involves the parts of the brain that control thought, memory, and language. People with AD may have trouble remembering things that happened recently or the names of people they know. Later, individuals with AD may not recognize family members or have trouble speaking, reading, or writing. They may forget how to brush their teeth or comb their hair. They may then

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<sup>50</sup> Rohrbacher, “The Application of Hood’s Nine Levles to the Practice of Music Therapy,” 275.

become anxious or aggressive or wander away from home. Eventually, they will need total care.<sup>51</sup> There is no cure, while drugs have been developed that slow the progress of the disease, individuals who suffer from it will never get better.

Several theoretical possibilities suggest that music can be beneficial in treating agitation associated with AD. “Although language is often impaired as the AD progresses, the cognitive processing of music and language appear to be conducted independently.”<sup>52</sup> Because of this, music can be an effective method of communicating once normal conversation is impossible. Additionally, AD affects the hippocampus<sup>53</sup> and it has been proven that music can facilitate reminiscence and help recall both pleasant and unpleasant memories. In these cases, the music would need to be individualized and specific to one’s experiences.<sup>54</sup> Various studies have shown the effect of music and music therapy on individuals with Alzheimer’s Disease to be highly significant.<sup>55</sup> Other studies have shown reduced agitation, improved facial recognition and even improved language abilities in individuals with AD.<sup>56</sup>

There are many studies which demonstrate the significance of music in dementia healing. There are a myriad of studies showing decreases in agitation in demented individuals post-music

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<sup>51</sup> “Alzheimer’s Disease | AD,” MedlinePlus, accessed February 17, 2024, <https://medlineplus.gov/alzheimersdisease.html>.

<sup>52</sup> David Aldridge, “Music and Alzheimer’s Disease-Assessment and Therapy: Discussion Paper,” *Journal of the Royal Society of Medicine* 86 (1993): 93–95.

<sup>53</sup> The hippocampus is a brain structure essential to memory.

<sup>54</sup> Linda A. Gerdner, “Effects of Individualized versus Classical ‘Relaxation’ Music on the Frequency of Agitation in Elderly Persons with Alzheimer’s Disease and Related Disorders,” *International Psychogeriatrics* 12 (2000): 46–95.

<sup>55</sup> Brummel-Smith, “Alzheimer’s Disease and the Promise of Music and Culture as a Healing Process,” 189.

<sup>56</sup> Brummel-Smith, , “Alzheimer’s Disease and the Promise of Music and Culture as a Healing Process,” 189–190.

therapy.<sup>57</sup> There have also been studies that demonstrated improved mental functioning and decreased aggressive behaviors when subjects were exposed to music therapy.<sup>58</sup> Finally, there was a study showing a patient's ability to recall the identity of staff members by adding music to a spaced retrieval memory task.<sup>59</sup> These are just a couple of studies showing the impact music therapy can have on individuals suffering from dementia. There are hundreds more demonstrating the importance of recognizing music as a valuable intervention for AD.

Autism Spectrum Disorder (ASD) is a widely stigmatized neurodevelopmental disorder. Prior to discussing it, I want to note the use of focusing on the person rather than the pathology of the disorder. I would also like to remove the negative connotation formulations of identity associated with autism and focus on what are, rightly considered, challenges of function with life tasks or related cognitive, developmental, and social-interactive dynamics and behavior. Individuals with autism, specifically children,<sup>60</sup> face developmental challenges in the areas of social and communicative reciprocal interaction.

The Music-Play Project is a program that children with ASD, and their parents, participate in. It shows the effects of music as it is used as a communication and expression tool for children who struggle to communicate and express their feelings and emotions. The instruments used are primarily metallophones and percussion so that minimal training is needed

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<sup>57</sup> Jan Goddaerand Ivo L. Abraham, "Effects of Relaxing Music on Agitation during Meals among Nursing Home Residents with Severe Cognitive Impairment," *Archives of Psychiatric Nursing* 8, no. 3 (1994): 150–158, [https://doi.org/10.1016/0883-9417\(94\)90048-5](https://doi.org/10.1016/0883-9417(94)90048-5).

Patricia A. Tabloski, Leah McKinnon-Howe, and Ruth Remington. (1995). Effects of calming music on the level of agitation in cognitively impaired nursing home residents. *American Journal of Alzheimer's Disease and Related Disorders Research*, January/February, 10–17.

<sup>58</sup> Michael E. Clark, Anne W. Lipe, and Melinda Bilbrey. (1998). Use of music to decrease aggressive behaviors in people with dementia. *Journal of Gerontological Nursing*. 24(7), 10–17.

<sup>59</sup> Ellen K. Carruth. (1997). The Effects of Singing and Spaced Retrieval Technique on improving face-name recognition in nursing-home residents with memory loss. *Journal of Music Therapy*, (34), 165–186.

<sup>60</sup> Autism Spectrum Disorder is usually diagnosed when individuals are children.

in order to produce pleasing sounds from them. The children lead the sessions, while their parents and two ethnomusicologists serve to facilitate learning and understanding of the world around them. Parents have reported various positive effects of these sessions of music. One mother reported that her son, who struggled a great deal with social activities, looked forward to and was willing to participate in the music sessions, going so far as to translate playing on drums to interacting with other children with other toys in other settings. Equally important was this child's growing ability to self-regulate when he began to be overstimulated by temporarily leaving the room. Other parents noted similar results where either the musical environment itself, or other situations related to the Music-Play Project, allowed parents to engage more effectively with their children, enabling their children to understand social settings in a different light.<sup>61</sup>

The music facilitated a process of understanding that can be very difficult for individuals with autism to grasp. It provided insight about the relationship between actions and outcomes, awareness of social context, and agency and control. In a musical setting you hit the instrument and a sound is produced, if you are playing while other people are playing those sounds can interact or one can drown the other out, and you can choose what instrument to play and how to play it. While these may seem simplistic and easy to understand, for individuals with autism, similar processes in social settings are not clear and are not easy to comprehend. As previously mentioned, processing of music and language happen separately. For individuals on the spectrum, language is often understood exclusively at the most literal level. It is often challenging to relate words to self, much less notice all of the nuances in language that are so present in society in the form of nonverbal communication. Another aspect of the Music-Play

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<sup>61</sup> Benjamin D. Koen, et al., "Personhood Consciousness: A Child-Ability-Centered Approach to Sociomusical Healing and Autism Spectrum 'Disorders'," in *The Oxford Handbook of Medical Ethnomusicology*, ed. Benjamin D. Koen (New York, New York: Oxford University Press, Inc., 2008), 189.

Project are the rules which are taught, such as children learning not to step over gamelan instruments, as well as the way children are not told when they make a musical “mistake”. The “music is foremost an expression of the invisible within a child, a window into a child’s lifeworld, and a potential bridge of shared experience and social interaction.”<sup>62</sup> It is difficult to express how valuable this is when children on the spectrum struggle with language, sometimes to the extent of being nonverbal. A different method of communication that allows for interaction with others in what is often a less overwhelming way is extraordinary.

This individual nature of music therapy allows for meeting patients where they are. It helps to overcome challenges specific to the person. The nature of music therapy in focusing on the individual and assisting with specific needs shows the benefits of a person-centered healing practice, because what works for one individual may not work for another. This can help open the door to other alternative-medicine practices and holistic healing in which the whole person is considered rather than just the symptoms presented. Biofeedback is centered around the idea of controlling fight-or-flight responses (sympathetic tone). Patients using biofeedback are trained to control things like heart rate, skin temperature, skin conductance, etc. Music therapy is also largely concentrated around reducing anxious responses and engaging brain centers concerned with recall and higher functions rather than emergency responses associated with sympathetic tone.

## **VI: How Music can Provide a Framework/Precedent for Person-Centered Healing**

In the course of this study, I have walked through how music reaches our brain, how the brain interprets that signal, and how it affects the body. Then I discussed how music is associated with religious and cultural healing practices, and how those are relevant to music therapy.

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<sup>62</sup> Koen, et al., “Personhood Consciousness,” 189.

Finally, I demonstrated the application of music therapy in the world of modern Western medicine. This has all led to the conclusion that music therapy provides a precedent for person-centered and holistic healing in the world of modern medicine.

There is a great deal of overlap between the neurodegenerative disorder of Alzheimer's Disease and Autism Spectrum Disorder. Primarily, as more was learned about the pathology of these conditions, the person-centered approach was overlooked and later, as more knowledge was gained, the idea of personhood was realized to be central to both of these conditions. In AD, individuals are losing their sense of self, they are forgetting who they were. With ASD, individuals are struggling to express themselves while also understanding the selves put forward by others. Both of these conditions involve parts of the brain not working in the same way as the general population. Music engages different parts of the brain so that different methods of understanding, remembering and interaction become accessible to individuals with neurodivergent thought patterns.

Person-centered healing links to the idea of healing holistically rather than focusing on treating symptoms without addressing the root cause. Additionally, it considers the beliefs and individuality of the person, allowing spirituality and culture to play a part in helping with symptoms and challenges. Music therapy facilitates both holistic healing and individual expression, while also having a clear scientific basis in how the brain processes music. Musical healing is a series of inextricably interlaced transformative processes, Musical and medical, both of which include cultural, physical, psychobiological, and neuro-immunological processes.<sup>63</sup> While music therapy has been accepted in medical settings more willingly than alternative healing practices, at the same time, its allowances for individuality can open the door to spiritual

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<sup>63</sup> Roseman, "A Fourfold Framework for Cross-Cultural Integrative Research on Music and Medicine," 34.

and cultural healing practices in the future, helping medicine to move towards a more person-centered and holistic view of treatment.



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