The Current State of Music Therapy Clinical Practice with Adults with Neurologic Disorders: A Descriptive Questionnaire

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Abstract

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The Current State of Music Therapy Clinical Practice with Adults with Neurologic Disorders: A Descriptive Questionnaire

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The purpose of this research was to describe current music therapy clinical practice with adults with neurologic disorders. Participants included current members of the American Music Therapy Association (AMTA) that designated working with clients with stroke, Parkinson’s disease, traumatic brain injury, or neurologic impairments. The researcher designed a 21-item questionnaire distributed online via Qualtrics ©2014 to 152 potential participants, with 39 qualified music therapists participating in the study, giving a usable response rate of 26%. Many questions describing music therapy clinical practice allowed multiple responses. The highest percentage responses included working with adults with neurologic disorders who are 65 or older (50%) in skilled nursing facilities (47%), with the most common diagnoses being Alzheimer’s disease (78%) and stroke (73%). Participants reported treatment is most often conducted in both group and individual sessions (61%). Many participants selected working on an interdisciplinary team (73%), with the highest percentages collaborating with nurses (70%) and social workers (59%). The highest percentage respondents reported receiving referrals from the patient’s family (59%), followed by social work (54%) and nursing (49%), most often for quality of life (86%), closely followed by communication (83%). The largest percentage of respondents selected treatment goal areas of social needs (83%), followed by
communication needs (78%) and cognitive needs (78%). Neurologic Music Therapy was the most commonly used approach (38%) and singing familiar music the most utilized technique (94%) followed by instrument play (77%). Therapeutic Singing (TS) was the most commonly used NMT technique (51%), selected by more music therapists than had received NMT training. Results demonstrated many music therapists working with adults with neurologic disorders are working with older adults. Reasons for referral as well as goal areas are focused on social, emotional, and communication needs, which are also reflected through the professions most commonly collaborating with music therapists. Due to a small, convenience sample, results cannot be generalized beyond the participants. Further descriptive research on music therapy with adults with neurologic disorders, focusing on a specific population or setting, will help to continue to define current practice. Additional implications for future research are discussed.

*Key words: neurologic disorders, stroke, traumatic brain injury, Parkinson’s disease, descriptive study, approaches, clinical practice and music therapy*
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Chapter 1: Introduction

Background

Neurologic disorders present a large public health concern, affecting a growing number of people as the world’s population ages (World Health Organization, 2007). Neurologic disorders have a high disease burden with chronic, complex symptoms that affect multiple areas of functioning (Ben-Zacharia, 2011; McGovern Institute for Brain Research at MIT, 2014). Over one third of the overall disease burden in Europe is linked to neurologic disorders, measured by “Disability Adjusted Life Years,” or years of healthy life lost to disability (Olesen & Leonardi, 2003). Neurologic disorders also have a large economic impact, including the cost of treatment in combination with loss of productivity for patients and caregivers (McGovern Institute for Brain Research at MIT, 2014).

Neurologic disorders can impact physical functioning, cognition, communication, and behavior. Primary symptoms are often accompanied by secondary and tertiary symptoms, such as pain, anxiety, and depression. Because of this complex presentation, symptoms are best managed by an interdisciplinary treatment team, involving medical treatments in combination with counseling, social support, lifestyle medication, and rehabilitation (Ben-Zacharia, 2011). With an interdisciplinary approach, members of the team work together on goals for the patient, ultimately providing more support as a united entity than each could separately (Neumann et al., 2010; Norrefalk, 2003).

Music therapists are often a part of the support team for treatment of neurologic disorders. Neurologic disorders, defined as Parkinson’s disease and neurologic
impairments, is the fifth largest population group served by music therapists (American Music Therapy Association, 2014). Music therapy can drastically improve physical and mental states for patients who are not offered a cure by the medical profession (Sacks & Tomaino, 1991). In recent years there has been an increase in music neuroscience literature to support music therapy interventions (Chanda & Levitin, 2013; Koelsch, 2009). The increased support from the scientific community has led to the development of Neurologic Music Therapy, a music therapy approach based on the connection between music and neurologic function (Thaut, 2008).

Though there is a wide range of literature testing the efficacy of music therapy interventions in the treatment of adults with neurologic disorders, there is currently no study describing the clinical practice of music therapists working with the population. This type of descriptive research is an important part of music therapy literature. Previous studies have described the current state of music therapy clinical practice with other population groups by distributing a descriptive questionnaire to music therapists that work with the population (Chase, 2004; Codding, 2002; Daykin & Bunt, 2006; Jackson, 2003; Kern, Rivera, Chandler, & Humpal, 2013; Silverman, 2007; Silverman & Hairston, 2005; Tabinowski, 2013; Wilhelm, 2004).

For example, Silverman (2007) distributed an online questionnaire to music therapists working in psychiatric settings, in order to describe music therapy with the population, as well as to draw comparisons to a similar two part study describing psychiatric music therapy, conducted by Braswell, Maranto, and Decuir in 1979 (Braswell et al., 1979a; Braswell et al., 1979b). Kern et al. (2013) also conducted a
descriptive study through an online questionnaire distributed to music therapists. The questionnaire evaluated the status of music therapy practice with Autism Spectrum Disorder (ASD), including the implementation of national ASD standards and guidelines, the awareness of changes in definition of the population, and identifying training needs of music therapists. This information was gathered to support a research initiative from the American Music Therapy Association (AMTA) for additional research on music therapy for clients with autism spectrum disorder.

Similar studies have been conducted describing music therapy with other population groups such as correctional psychiatry (Codding, 2002), children with attention deficit hyperactivity disorder (ADHD) (Jackson, 2003), assessment for developmental disabilities (Chase, 2004), music and healing in cancer care (Daykin & Bunt, 2006), private practice in music therapy (Silverman & Hairston, 2005; Wilhelm, 2004), hospice music therapy (Groen, 2007), general medical music therapy (Lam, 2007), and pediatric medical music therapy (Tabinowski, 2013). These types of studies are important to inform clinicians and researchers, as well as to describe changes in practice over time. Though surveys focusing on general medical music therapy or hospice music therapy may have included music therapists working with neurologic disorders, no descriptive study has been conducted focusing specifically on the population.

**Statement of Problem**

Neurologic disorders affect a large percentage of the world’s population and have a high level of disease burden due to the complex nature of symptoms in multiple areas of functioning (World Health Organization, 2007). Optimal treatment utilizes an
interdisciplinary team that provides an individualized plan to help the patient reach the highest possible quality of life (Neumann et al., 2010). Music therapy is often a part of the neurologic rehabilitation treatment team, with the ability to holistically address functional goals in addition to providing emotional support (Gilbertson & Aldridge, 2008). This wide range of potential functions of a music therapist results in a confusing body of literature and varying recommendations for practice.

The current body of clinical music therapy research for adults with neurologic disorders has high level of variability in approaches, theoretical models, goal areas addressed, and delivery of music therapy interventions. This variation in literature gives conflicting recommendations to clinicians on what goal areas are important and what techniques are evidence based. Without descriptive information of current clinical practice, it is unclear what the relationship is between current practice and music therapy literature for adults with neurologic disorders. Descriptive information could demonstrate if the variation in the literature is accurately reflected in working clinicians’ practice. If current literature does not accurately represent best clinical practice, it presents a problem for the clinician actively striving to use evidence-based interventions. It is essential to describe the current state of music therapy practice in order to inform clinicians and researchers, identify information which can help define trends, and track developments over time (Silverman, 2007).

**Purpose of Study**

Therefore the purpose of this study was to describe current clinical music therapy practice with adults with neurologic disorders through an online questionnaire. Results
can potentially inform clinicians and researchers by showing the distribution of work settings, types of music therapy services provided, referral sources, reasons for referral, goal areas addressed, common approaches, and music therapy techniques utilized. Results help to establish baseline information important to draw any comparisons or describe change in the future (Silverman, 2007).

**Research Questions**

The questionnaire was designed to answer the following research questions regarding music therapy clinical practice with adults with neurologic disorders:

1. What theoretical orientations and music therapy approaches do music therapists use when working with people with neurologic disorders?

2. In what settings do music therapists work with adults with neurologic disorders?

3. What are the specific neurologic diagnoses of music therapists’ current adult clients?

4. Are music therapists working with adults with neurologic disorders in group sessions, individual, or both?

5. With which interdisciplinary team members do music therapists collaborate?

6. What are the most common reasons for music therapy referrals for adults with neurologic disorders, and who is making the referrals?

7. What are the primary goal areas of focus in music therapy treatment for adults with neurologic disorders?

8. What clinical techniques do music therapists use when working with adults with neurologic disorders?
Definition of Terms

Neurologic disorders. Neurologic disorders are diseases of the nervous system, including the brain, spinal chord, and nerves (Medline Plus, 2014). Across the literature, neurologic disorders can also be referred to as brain disorders (McGovern Institute for Brain Research at MIT, 2014), neurologic impairments, or neurologic diseases (Medline Plus, 2014). For the purposes of this paper, the term neurologic disorders will be used as an umbrella term to encompass all disorders of the nervous system.

Parkinson’s disease. Merriam-Webster (2015) online medical dictionary defines Parkinson’s disease as:

a chronic progressive neurological disease chiefly of later life that is linked to decreased dopamine production in the substantia nigra and is marked especially by tremor of resting muscles, rigidity, slowness of movement, impaired balance, and a shuffling gait.

Huntington’s disease. Merriam-Webster (2015) online medical dictionary defines Huntington’s disease as:

a progressive neurodegenerative disorder that is inherited as an autosomal dominant trait, that usually begins in middle age, that is characterized especially by choreiform movements, emotional disturbances, and mental deterioration leading to dementia, and that is accompanied by atrophy of the caudate nucleus and the loss of certain brain cells with a decrease in the level of several neurotransmitters.
**Stroke.** Merriam-Webster (2015) online medical dictionary defines stroke as: sudden diminution or loss of consciousness, sensation, and voluntary motion caused by rupture or obstruction (as by a clot) of a blood vessel of the brain.

**Traumatic brain injury.** The Mayo Foundation for Medical Education and Research (2015) states:

Traumatic brain injury occurs when an external mechanical force causes brain dysfunction. Traumatic brain injury usually results from a violent blow or jolt to the head or body. An object penetrating the skull, such as a bullet or shattered piece of skull, also can cause traumatic brain injury.

**Multiple sclerosis.** Merriam-Webster (2015) online medical dictionary defines multiple sclerosis as:

a demyelinating disease marked by patches of hardened tissue in the brain or the spinal cord and associated especially with partial or complete paralysis and jerking muscle tremor.

**Neurologic rehabilitation.** According to Johns Hopkins Medicine online health library:

Neurological rehabilitation is a doctor-supervised program designed for people with diseases, trauma, or disorders of the nervous system. Neurological rehabilitation can often improve function, reduce symptoms, and improve the well-being of the patient… A neurological rehabilitation program is designed to meet the needs of the individual patient, depending on the specific problem or disease…The goal of neurological rehabilitation is to help the patient return to the
highest level of function and independence possible, while improving the overall quality of life — physically, emotionally, and socially (Johns Hopkins Medicine, 2015).

**Interdisciplinary team.** Interdisciplinary teams in medicine are comprised of professionals with different clinical expertise that work together as a group to provide individualized treatment with common goals and strategies for each patient (Semlyen, Summers, & Barnes, 1998).
Chapter 2: Literature Review

Neurologic Disorders

According to the World Health Organization (2007) over one billion people worldwide are affected by neurologic disorders, with an estimated 6.8 million people dying every year. The McGovern Institute for Brain Research at MIT indicates that the disease burden extends far beyond what is represented by mortality rate, since many neurologic disorders are chronic incurable conditions with disabling effects. These disorders also have a high economic cost, including the cost of medical treatment, combined with decreased productivity of patients and caretakers (McGovern Institute for Brain Research at MIT, 2014).

Many neurological disorders, such as stroke, Parkinson’s disease, and Alzheimer’s disease, are common in older populations, which often can require admission to a nursing home or chronic hospitalization. As the world population ages, there will be a larger impact felt from neurologic disorders in both developing and developed countries (World Health Organization, 2007). Though neurologic disorders can be considered as one category, there are a large number of neurological conditions, with varying symptoms and needs, resulting in many approaches to treatment.

**Treatment of disorders.** According to Medline Plus (2014), there are more than 600 neurologic disorders, each with their own set of complex needs. When there is impairment of the nervous system caused by disease or injury, the impairment can affect movement, communication, swallowing, breathing, learning, memory, sensation, and mood. Neurologic disorders have various causes, which can affect the outcome. Some
neurologic disorders, such as Huntington’s disease and muscular dystrophy, stem from genetic abnormalities, while others are caused by events such as stroke, traumatic brain injury (TBI), and spinal chord injury. The nature of the symptoms depends largely on the location and the extent of the neurologic damage (Medline Plus, 2014). The wide range of symptoms requires individualized treatment plans that can include medical care in combination with non-pharmacological treatments (Ben-Zacharia, 2011).

Treatment for neurological disorders can include surgeries to remove tissue or repair damage as well as various medications. Medications are often not a cure, but can help manage symptoms. While medical treatments such as medications and surgery are often components of treatment for neurologic disorders, many symptoms are managed with non-pharmacological treatment, including rehabilitation (Ben-Zacharia, 2011).

Though the term rehabilitation implies restoration of function, rehabilitation in terms of neurologic disorders can be used in a broader sense to include habilitation or adaptation for disorders that are progressive or degenerative. For example, with disorders that are progressive in nature, such as multiple sclerosis, Alzheimer’s disease, Huntington’s disease, or Parkinson’s disease, management of symptoms to increase quality of life is often the primary focus of treatment (Ben-Zacharia, 2011; Dorsey et al., 2010), whereas with neurological injuries, such as stroke and TBI, rehabilitation is usually focused on restoration of functioning (Lefebvre & Levert, 2012).

Cases of brain injury such as TBI, spinal chord injury, and stroke, are different from progressive or neurodegenerative diseases, in that they have a sudden onset that causes neuronal damage. The severity of the damage largely impacts the potential
outcome, but the focus of rehabilitation is on restoring function as much as possible. Individuals with mild TBI have a strong chance of recovering fully within three months after injury, whereas individuals with moderate to severe injuries face many life long challenges such as cognitive impairments, communication disorders, emotional instability, and fatigue (Lefebvre & Levert, 2012).

**Emotional impact.** Though the focus of neurologic rehabilitation is often on physical, communication, and cognitive deficits, neurologic disorders can have a strong negative emotional impact as well. According to Dr. James Gardiner (2008), physical, cognitive, and emotional functioning are intertwined. A patient needs to work through the “shaken sense of self” (p. 182) that often comes with neurologic impairment, accepting his or her condition, before successfully participating in functional rehabilitation (Gardiner, 2008).

Though rehabilitation works to restore function, many people with moderate to severe damage will never return to the level of previous functioning. These changes in daily life can affect patients and caretakers. Following inpatient rehabilitation, many patients with a TBI feel isolated and are at risk for mental health problems, violence, drug addiction, and homelessness. Studies documenting needs of patients with TBI and their loved ones have identified emotional support to be among the three most important global needs (Lefebvre & Levert, 2012).

Sometimes the emotional impact of neurologic disorders is so strong, it can result in the onset of depression. Depression is a common comorbidity with neurologic disorders, facing 15-40% of patients, depending on the particular study (Forkmann,
Norra, Wirtz, Gauggel, & Boecker, 2010). In a study which administered the Beck Scale for Suicide Ideation (BSS) in 150 patients with either epilepsy, multiple sclerosis, or parkinsonism, depression was present in 72% of parkinsonism patients, and 52% in epilepsy and multiple sclerosis (Andrijic, Alajbegovic, & Loga-Zec, 2013). One and three individuals with Parkinson’s disease are affected by depression, which leads to increased disability in patients, affecting activities of daily living, quality of life, and functionality.

An additional problem with depression in Parkinson’s disease is that antidepressant medications can increase the physical symptoms of Parkinson’s (Yang, Sajatovic, & Walter, 2012). In a recent survey of patients with Parkinson’s disease measuring overall satisfaction with medical care, only 28% of participants were satisfied with the availability of non-pharmaceutical interventions in their treatment (Dorsey et al., 2010). This was the lowest satisfaction rating out of seven items pertaining to treatment including time spent with the provider, information received about Parkinson’s disease, information received on medications, emotional support received from provider visits, and information received about prognosis. This emphasizes the importance of non-pharmacological treatments, such as music therapy, to be available to patients.

**Interdisciplinary teams.** According to Norrefalk (2003), “Teamwork is one of the most fundamental factors in rehabilitation medicine” (p. 100). Following discussion of literature and practice at a national meeting of the Union of European Medical Specialists delegates in 2008, the Physical and Rehabilitation Medicine Professional Practice Committee stated effective team working in physical and rehabilitation medicine produces better patient outcomes including higher survival rates (Neumann et al., 2010).
In physical and rehabilitative medicine, interdisciplinary teams comprised of professionals with different clinical expertise united with common goals and a shared strategy are the preferred approach (Semlyen et al., 1998). Interdisciplinary teams differ from multidisciplinary teams in that the members work together as a group, providing holistic treatment for each patient. To help support the complex nature of neurologic disorders, interdisciplinary teams work together to provide individualized treatment for patients, consisting of medical evaluation, lifestyle modification, rehabilitation, counseling, and social support (Ben-Zacharia, 2011).

The interdisciplinary team together accomplishes more than each individual could separately (Norrefalk, 2003). Studies have shown superior outcomes for patients with TBI (Semlyen et al., 1998), stroke, and other various neurologic disorders treated by units with interdisciplinary teams as compared to other settings (Neumann et al., 2010). Beyond neurologists and medical staff, the team can include physical therapists, occupational therapists, speech therapists, vision therapists, neuropsychologists and psychologists, social workers, counselors, recreational therapists, and music therapists (Neumann et al., 2010; Texas Institute for Research and Rehabilitation, 2014; University of California Los Angeles, 2014).

**Music Therapy with Neurologic Disorders**

Music therapists often work as part of an interdisciplinary treatment team with patients with neurologic disorders. According to the 2014 American Music Therapy Workforce Analysis, 6% of music therapists report working with patients with neurologic disorders, making it the fifth largest population category served (American Music
Therapy Association Inc., 2014). The original connections of music therapy and neurologic disorders were made due to phenomena related to music’s affect on neurologic injury. Examples include a person with Broca’s aphasia who can no longer speak still having the ability to sing, someone with rigidity of movement due to Parkinson’s disease dancing to music, or someone with dementia accessing a memory through purposeful music selection (Sacks & Tomaino, 1991; Thaut, 2008). Recent advancements in neuroscience have helped explain these musical phenomena, resulting in the field of study, music cognition.

Support from neuroscience evidence. Neuropsychological questions related to music have been of interest since the early 20th century, but systematic scientific investigations have been limited until recent scientific developments (Peretz & Zatorre, 2003). With advancements in functional neuroimaging of the brain, such as Positron Emission Tomography (PET) and Functional Magnetic Resonance Imaging (fMRI), it is now possible to see neurological activity in live time. PET and fMRI can show what part of the brain is active during a certain mental process or behavior, as well as interactions between areas of the brain (Berns, 1999).

Functional neuroimaging tests work by measuring molecules in the brain that fuel neurologic activity. PET measures neural metabolic activity by injecting a compound into the blood stream that indicates through the neural reaction, increased glucose consumption, meaning increased neural activity. fMRI uses a strong magnetic force to measure the blood oxygen levels in the brain, showing areas with higher levels of blood flow, which indicates increased neural activity. Technology of the machines then
transfers this information into colorful images that show variations in neural activity level throughout the brain (Aguirre, 2014).

There are advantages and disadvantages to each type of neurologic test. PET and fMRI have higher spatial resolution than previous neurologic tests such as electroencephalogram (EEG), the measurement of electric activity in the brain. This means they more accurately show where in the brain there is activity. EEG, however, has higher temporal resolution, meaning the timing of neurologic activity is more accurate (Aguirre, 2014). Though there are limitations in functional neuroimaging, advancements in technology have made it possible to study the brain’s responses to music, leading to a large increase in research in the past 20 years (Peretz & Zatorre, 2003).

By studying neural responses to music, neuroscientists can better understand the brain’s organization, as well as why music can assist in creating new neurologic pathways during neurologic recovery (Koelsch, 2009; Levitin, 2013; Patel, 2008; Peretz & Zatorre, 2003; Tan, Pfordresher, & Harre, 2010; Taylor, 2010; Thaut, 2008). This body of research has led to the development of the field music cognition, focusing on the scientific understanding of music (Society of Music Perception and Cognition, 2014). Music cognition research helps to support music therapy interventions, as well as develop new evidence-based techniques.

In addition to fMRI and PET imaging technology, processes are emerging to measure neurochemical changes in the brain. For example Chanda and Levitin (2013) discuss how measuring a specific neurochemical in the brain before and after a music intervention can potentially demonstrate neurologic change in response to music. They
suggest further examination on music’s affect on reward systems, stress, immunity, arousal, and social affiliation by measuring the corresponding chemical systems, dopamine, cortisol, serotonin, and oxytocin respectively (Chanda & Levitin, 2013). This type of research could further add to the evidence base for music therapy and bring scientific support to interventions for emotional well being where it has previously been difficult to quantify change. Neuroscience evidence is now used to support multiple music therapy interventions with various populations as well as many therapy approaches.

**Clinical approaches.** There are a number of music therapy approaches represented in literature for neurologic disorders. Some approaches that will be described further include Neurologic Music Therapy (NMT), Nordoff-Robbins Music Therapy, Holistic Approach to Music Therapy, and Meta-Model of Music Therapy in Neurodisability (MIND) (Darrow, 2008; Daveson, 2008; Gilbertson & Aldridge, 2008; Thaut, 2008). Within these approaches, there are fundamental differences in philosophy, as well as some overlap in language, goals, interventions, and theoretical outlook. This can potentially cause confusion within the literature regarding what the most appropriate approach is for the population.

**Neurologic Music Therapy.** Neurologic Music Therapy (NMT) is a music therapy approach with the fundamental belief that scientific evidence can help to establish music therapy within the medical community. Dr. Michael Thaut and colleagues developed the approach at the Center for Biomedical Research in Music at Colorado State University. There they have been conducting research investigating the effects of
music perception and production on the nonmusical brain and behavior since 1993. This effort has resulted in standardized therapeutic music interventions targeted for specific functional therapeutic goals in sensorimotor, cognitive, and communication rehabilitation. These interventions are founded on research in physical therapy, speech therapy, psychology, music neuroscience, and music therapy (Thaut, 2008). In 2002, the Robert F. Unkefer Academy of Neurologic Music Therapy was established to provide training institutes each year (Clair, Pasiali, & LaGasse, 2008).

Specific guidelines for developing evidence-based music interventions have been outlined through the Rational Scientific Mediating Model (R-SMM) and Transformational Design Model (TDM) (Thaut, 2008). The R-SMM process begins with the study of musical behavior or cognition. The second step is to look at non-music parallel models, examining a similar process or behavioral in the brain without music. The third step is to create the mediating model, finding the potential influence of music on the behavior. This evidence can be used to develop a clinical intervention for a certain behavior or situation that can be tested through clinical research (Clair et al., 2008). The TDM was developed as a system for music therapists to engage in evidence based practice. After an assessment and development of goals and objectives, a standardized non-music intervention must first be considered from another discipline before developing a music intervention. The music therapist then translates the non-music experience into a functional therapeutic music experience (Thaut, 2008).

NMT interventions are largely based on evidence of the links between rhythm and motor control, using rhythm as a means for organization and optimization of movement.
in the brain (Thaut, 2008). Much of NMT research is centered on the idea of entrainment, a universal phenomenon where one motion or signal frequency begins to match exactly the frequency of another system (Thaut, 2013).

Entrainment was originally discovered in the 1660’s when a Dutch physicist noticed the frequencies of two pendulum clocks mounted next to each other on the wall synchronized over time. When set on different surfaces, the synchronization did not occur. Study of this phenomenon led to the defined concept of entrainment in physics, the frequency locking of two oscillating bodies. Entrainment can be seen in various aspects of nature such as fireflies flashing their light signals or circadian rhythms entraining to the light dark cycle (Thaut, 2013).

Several studies have shown human movements naturally entrain to the period of a rhythmic stimulus providing anticipatory cues for the brain to organize movement (Large, Jones, & Kelso, 2002; Nozaradan, Peretz, Missal, & Mouraux, 2011; Thaut & Kenyon, 2003; Thaut, Bin, & Azimi-Sadjadi, 1998, Thaut, Miller & Schauer, 1998). Additional studies have established that there are many fiber connections between the auditory system and motor system, including the spinal chord, brainstem, subcortex, and cortex (Felix, Fridberger, Leijon, Berrebi, & Magnusson, 2011; Schmahmann & Pandya, 2006; Thaut, 2013). This combination of direct connections helps explain the impact of music on movement.

Temporal rhythmic entrainment not only changes timing of movement, but spatial parameters and force (Thaut, 2013). Rhythmic entrainment is an important underlying mechanism for functional rehabilitation in sensorimotor, communication, and cognitive
domains for rehabilitation of stroke, Parkinson’s disease, TBI, cerebral palsy, and other neurologic disorders (Thaut, 2013).

**Nordoff-Robbins Music Therapy.** In contrast, Nordoff-Robbins Music Therapy is an approach largely based in music improvisation techniques and humanistic philosophy. Nordoff-Robbins Music Therapy is founded in the work of Carol and Clive Robbins as well as the partnership of Clive Robbins and Paul Nordoff (Darrow, 2008). The approach was initially used primarily with children with developmental disabilities (Guerrero, Turry, Geller, & Raghavan, 2014). As Nordoff-Robbins Music Therapy has developed, it is now used with varying clinical populations, including adults with neurologic disorders. With Nordoff-Robbins Music Therapy, rehabilitation goals are addressed in the context of overall well being, with a goal of empowering patients to take an active role in rehabilitation. Interactive music making through group improvisation is thought to simultaneously enhance participants’ physical, cognitive, and social engagement (Guerrero et al., 2014).

Music therapists are also now using Music-Centered Music Therapy, an approach developed from Nordoff-Robbins Music Therapy, in the differential diagnosis between vegetative state and minimally conscious states (Lichtensztejn, Machhi, & Lischinsky, 2014). Lichtensztejn et al. (2014) state, “Using such a personalized and creative approach to music therapy scientifically informed with recent findings in music and brain research has revealed advantages for persons in an altered state of consciousness (p. 49).” This exemplifies how neuroscientific evidence can be used not only to support NMT, but also Nordoff-Robbins Music Therapy.
Holistic approach to music therapy. Similar to the Nordoff-Robbins view on rehabilitation, a holistic approach focuses on the state of a person in a whole sense. Gilbertson and Aldridge (2008) in their book on music therapy and traumatic brain injury, advocate for the use of a holistic approach to music therapy with adults with neurologic disorders, focusing on not only the functional needs, but also the emotional needs of the patient and family. They discuss the ability of music interventions to meet not only the cognitive and physical needs of a patient but also the psychosocial and emotional needs that come with trauma and hospitalization (Gilbertson & Aldridge, 2008).

Magee and Davidson (2004) similarly state how a music therapist has the unique potential to holistically address sensorimotor, communication, and cognitive needs as well as emotional and spiritual. In a study with patients with multiple sclerosis, Aldridge, Schmid, Kaeder, Schmidt, and Ostermann (2005) recommend music therapy treatment that not only focuses on medical needs, but also aesthetic and functional performance in every day life. Authors discuss utilizing songwriting, singing familiar music, and spontaneous improvisation to offer psychological support, relieve anxiety, and improve self-concept.

Meta-Model of Music Therapy in Neuro-disability. Not only are there multiple approaches represented in the neurologic rehabilitation literature, but they seem to vary largely, with some focusing on overall well being (Gilbertson & Aldridge, 2008; Guerrero et al., 2014) and others focusing on functional recovery (Thaut, 2008). The one common thread is the support of music neuroscience literature for music intervention.
(Lichtensztejn et al., 2014; Thaut, 2008). For these reasons, Daveson (2008), from The Royal Hospital for Neurodisability in London, United Kingdom, argues music therapy treatment for adults with neurologic disorders cannot be done by one isolated approach. Daveson noticed there were multiple approaches and techniques represented in clinical literature. Using this information, combined with experience, Daveson developed the Meta-Model of Music Therapy in Neuro-disability (MIND) as a flexible, eclectic approach, with a process for setting goals and measuring outcomes. The MIND was developed to incorporate the various models represented in clinical literature, allowing for an integration of approaches depending on the situation (Daveson, 2008).

The method begins with three approaches to care: music therapy to restore function, music therapy to compensate for loss, and music therapy to attend to psychosocial and emotional needs. Music therapy to restore function is primarily aimed at rehabilitative functional goals. An example of an approach in this category is NMT. Music therapy to compensate for loss is used in a situation with a neurodegenerative condition, or with an injury, where a compensation strategy is more appropriate than restoration of function. Music therapy for psychosocial or emotional support is appropriate when a patient is not able to complete restorative or compensatory work due to psychological, emotional, or social withdrawal. In this situation, a therapist may use improvisational techniques, as well as psychodynamic or behavioral music therapy (Daveson, 2008).

The therapist chooses the appropriate category depending on the patient and the situation, and then moves forward with defining goals and measuring outcomes. This
flexible model provides a structure for how to choose the best approach and appropriate goal for a situation. It also provides an opportunity for multiple clinical techniques and approaches to have a place neurologic rehabilitation (Daveson, 2008).

**Clinical interventions and goal areas.** In addition to current literature representing multiple approaches and perspectives, there are also a wide variety of goal areas addressed. These goal areas primarily include physical, communication, cognitive, social, and emotional. Some clinical interventions are tested for outcomes in multiple goal areas, such as improvement in gait as well as mood (Clark, Baker, & Taylor, 2012). Literature additionally shows variation in delivery of interventions, some in groups and some individually (Magee, Brumfitt, Freeman & Davidson, 2006; Yinger & Lapointe, 2012). Within the literature, there is a split between quantitative research with focus on functional rehabilitation outcomes (Lindaman & Abiru, 2013) and qualitative research supporting emotional support (Aldridge et al., 2005). These differences will be discussed by focusing on music therapy literature in each goal area.

**Physical goals.** Much of the music therapy research in physical rehabilitation is on NMT techniques, primarily Rhythmic Auditory Stimulation (RAS). RAS has been shown to improve gait training in patients with stroke, multiple sclerosis, Parkinson’s disease, and traumatic brain injury (Thaut, 2008). Lindaman and Abiru (2013) conducted a review of current research on the effects of RAS for gait disturbance of stroke, Parkinson’s disease, and other rehabilitation populations. Researchers concluded RAS was very effective for stroke patients and patients with Parkinson’s disease. RAS has also been applied with people with TBI, multiple sclerosis, spinal chord injury, Huntington’s
and cerebral palsy, but research with these populations is limited due to fewer studies and small sample sizes (Kim et al., 2011; Lindaman & Abiru, 2013).

Patterned Sensory Enhancement (PSE) and Therapeutic Instrumental Music Performance (TIMP) are additional NMT interventions for physical rehabilitation represented in the literature (Clark et al., 2012; Lim, Miller, & Fabian, 2012; Yoo, 2009). Clark et al. (2012) looked at the effect of PSE on group participation and mood for older adults in rehabilitation. Results did not show any significant differences for exercise outcome measures or mood, though participants’ comments and behaviors represented positive experiences during live PSE (Clark et al., 2012). This is an example of the use of a sensorimotor rehabilitation technique for a participation and mood goal, though outcomes were not significant.

Rice & Johnson (2013) discuss using NMT sensorimotor rehabilitation techniques in an outpatient community therapy group setting. They describe a group exercise model as a rehabilitation and wellness strategy to promote increased mobility and improve functional outcomes, as well as target potential social isolation and depression. Authors encourage collaboration between physical, occupational, speech, and music therapists, as well as emphasize a continuum of care from inpatient to outpatient rehabilitation to promote maintenance of outcomes (Rice & Johnson, 2013).

Weller and Baker (2011) conducted systematic literature review on music therapy in physical rehabilitation that was inclusive of NMT and non-NMT techniques. Findings concluded music therapy enhanced not only physical outcomes such as gait parameters, but psychological, cognitive, and emotional functioning within physical rehabilitation.
(Weller & Baker, 2010). Additional studies using non-NMT interventions include music therapy to improve sensorimotor plasticity with chronic stroke patients (Amengual et al., 2013), and training in mental singing while walking to improve gait disturbance in patients with Parkinson’s (Satoh & Kuzuhara, 2008). Though music therapy research in physical rehabilitation is primarily of NMT interventions, literature on communication rehabilitation contains more studies that do not specify an approach.

**Communication goals.** There are many studies that support the use of music therapy for communication rehabilitation, primarily with patients with Parkinson’s disease and stroke. Studies are conducted in both group and individual settings. Yinger and Lapointe (2012) examined the effects of a group music therapy voice protocol on patients with Parkinson’s disease. Group sessions were conducted as a Parkinson’s choir rehearsal, with physical warm ups, breathing exercises, speech exercises, vocal warm ups, and singing. Results showed an increase in intensity of conversational speech.

In a similar study, Elefant, Baker, Lotan, Lagesen, and Skeie (2012) examined the effects of group music therapy on mood, speech, and singing in individuals with Parkinson’s disease. Interventions included breathing exercises, vocal exercises, and singing exercises, of participant chosen music. Strong improvements were found in singing quality and vocal range with an absence of decline in speaking quality, which due to the progressive nature of Parkinson’s disease, can be positive.

Magee et al. (2006) presented a case of collaboration between speech therapy and music therapy for a person with pseudo-Parkinsonian vascular disease after suffering from a series of strokes. Using a single case design, the treatment consisted of exercises
for physical relaxation, breath control, vocal exercises for phonation and articulation, pitch variation through exercises and songs, and use of familiar patient preferred music for motivation and pleasure. Results indicated improvements in prosody, phonation, with improvements in participation and well being measures.

Another common application of music therapy in a communication rehabilitation setting is treating non-fluent aphasia. This started with the realization that people with non-fluent aphasia can often sing when they cannot speak (Tomaino, 2012). Tomaino examined the effectiveness of music-based speech therapy techniques with patients post stroke non-fluent aphasia. Techniques included singing familiar songs, breathing into single-syllable sounds, rhythmic speech cuing, musically assisted speech, dynamically cued singing, oral motor exercises, and vocal intonation. Tomaino emphasized how matching musical rhythms to speech rhythms can improve word retrieval, prosody, and articulation. An additional important factor in aphasia rehabilitation is utilizing pre-learned songs the patient knows the words to in order to work on word retrieval.

Though many of the techniques described by Tomaino (2012) are similar to NMT techniques, both in name and in description, Tomaino never mentioned NMT as an approach in her writing. It is unclear whether she is referencing the NMT techniques, or describing music therapy techniques in general. This is an example of the overlap in language between differing approaches within music therapy literature that can potentially cause confusion among readers. This overlap in language supports the need to better define clinical practice. Knowing what interventions music therapists are currently using and how they are defining them will potentially help to clarify future research.
Arousal, orientation, and agitation. Music therapy is also used in a neurologic rehabilitation setting to address cognitive goals such as orientation and arousal. These are often goals with patients who have had TBI. Magee et al. (2011) published a paper examining the use of music therapy with neurobehavioral disorders after brain injury. Magee et al. discussed through various case studies how live music has the unique ability to be adjusted according to the behavioral state or responses of the patient. Magee et al. recommends that a music recording may be over stimulating to a patient in acute rehabilitation, but when music is live, accompaniment style, volume, tempo, and texture can be modified to meet the patient’s needs. Music has the ability to interact with the patient in a non-threatening way, providing opportunities for arousal, orientation, and relaxation.

Music therapy has been increasingly used with patients in low awareness states, for differential diagnosis between coma and persistent vegetative state, as well as to stimulate arousal and increase orientation (Daveson, Magee, Crewe, Beaumont, & Keanely, 2007; Lichtensztejn et al., 2014; Magee, 2007; O’Kelly et al., 2013; O’Kelly & Magee, 2013). Baker (2001) performed a study with multiple patients in posttraumatic amnesia, a state of low awareness and confusion immediately following brain injury where a person cannot form new memories. Patients previously displayed excessive psychomotor activity, wandering, and self-stimulation due to agitation, but while listening to live familiar music in music therapy sessions, behaviors became more purposeful, appropriate and intentional (Baker, 2001). Just as music therapy can decrease agitation, it can also have a positive emotional impact on a patient in treatment.
**Social and emotional goals.** Many studies look at the emotional effects of music on populations with neurologic disorders. Often this is an additional variable in a study with another primary goal (Elefant et al., 2012; Haneishi, 2001; Hayashi, Nagaoka, & Mizuno, 2006) or a qualitative exploration. A recent project between the Nordoff Robbins Center for Music Therapy and the Rusk Institute for Rehabilitative medicine used Creative Music Therapy techniques with a collaborative team of music therapists and occupational therapists for group work with adult stroke survivors. Sessions primarily utilized group improvisation as the music therapy technique. Researchers stated the creation of naturalistic music making with group improvisation heightened emotional awareness and expression, which empowers patients to take control of their rehabilitation and supports overall well being (Guerrero et al., 2014).

Aldridge et al. (2005) conducted a study exploring how symptoms of multiple sclerosis are affected by music therapy as compared to standard medical treatment alone. Aldridge et al. found implications that music therapy can improve mood, fatigue, and self-acceptance. Authors recommend expressive songwriting, singing familiar music, and spontaneous improvisation as techniques to support emotional wellbeing (Aldridge et al., 2005). These findings suggest that music therapy may be able to address emotional needs during rehabilitation not addressed by other medical professionals.

Though studies exploring emotional effects of music are primarily qualitative, Magee & Davidson (2002) have one of the only quantitative studies that explore music therapy’s affect on mood states of patients with neurologic impairment. Using the Bipolar form of the Profile of Mood States as the measure, they examined pre and posttest mood
scores for fourteen participants with varying diagnoses. Even with a short intervention, there were significant improvements in many of the mood states in a positive direction. Interpretation of results is limited due to the small sample size that was mixed of patients with multiple sclerosis, stroke, anoxia, and traumatic brain injury. Researchers recommend additional studies with specific population groups.

Gilbertson & Aldridge (2008), in *Music Therapy and Traumatic Brain Injury*, identify that research on music therapy with patients with TBI has primarily focused on functional outcomes and is not representing the emotional processing used in clinical practice. Authors suggest this is often due to the difficulty of quantifying emotional impact, as seen in Magee and Davidson (2002). As a solution, they recommend the use of case study research to explore the individuality of each patient, and most accurately document not only visible functional gains, but also social and emotional gains during music therapy (Gilbertson & Aldridge, 2008).

Though much of the research in Neurologic Music Therapy has focused on functional rehabilitation goals, Music Psychosocial Training and Counseling (MPC), is the one psychosocial intervention. For this technique, Thaut describes possible protocols such as guided music listening, musical role-playing, expressive improvisation, or composition. Potential goals include mood control, affective expression, reality orientation, and appropriate social interaction (Thaut, 2008). Though MPC was not identified in any research, there has been some NMT research that addresses emotional outcomes. Thaut et al. (2009), in a preliminary study on NMT interventions for executive function rehabilitation for patients with TBI, found interventions focusing on executive
function also made improvements in emotional adjustment lessening depression, sensation seeking, and anxiety (Thaut et al., 2009; Thaut, 2010). With a large body of clinical research on the efficacy of music therapy interventions, it is also important to study the current practices of music therapists.

**Descriptive Research in Music Therapy**

There has been a recent increase in survey studies describing music therapy practice with specific clinical populations. These studies are important to provide clinicians and researchers information on the current status of the profession, helping to identify trends, and track developments as studies are compared over time (Silverman, 2007).

Examples of descriptive studies on various populations within music therapy clinical work include autism spectrum disorder (Kern et al., 2013), correctional psychiatry (Codding, 2002), children with ADHD (Jackson, 2003), assessment for developmental disabilities (Chase, 2004), music and healing in cancer care (Daykin & Bunt, 2006), private practice in music therapy (Silverman & Hairston, 2005; Wilhelm, 2004), psychiatric hospitals (Silverman, 2007), hospice music therapy (Groen, 2007), general medical music therapy (Lam, 2007), and pediatric medical music therapy (Tabinowski, 2013). These studies explore various aspects of music therapy with the populations including but not limited to demographics, approaches, reason for referral, assessment process, goals addressed, salary information, and description of setting.

Although music therapists that work with adults with neurologic disorders may have been included in studies on private practice music therapy (Silverman & Hairston,
2005; Wilhelm, 2004), hospice music therapy (Groen, 2007), or general medical music therapy (Lam, 2007), no descriptive study to date has specifically looked at music therapy clinical practice with this population.

Addressing the Need

The variety of neurologic disorder diagnoses, approaches, goal areas, and techniques represented in music therapy literature for adults with neurologic disorders presents a confusing body of information for the clinician. Though there are over 600 neurologic disorders (Medline, 2014), only a few disorders such as Parkinson’s disease, stroke, TBI, and multiple sclerosis are frequently mentioned in current music therapy literature. It is unknown whether this is an accurate representation of clinical work or limited literature.

Though NMT is a prominent approach in music therapy texts with this population (Thaut, Thaut, & LaGasse, 2008), it is primarily tested as an intervention in sensorimotor rehabilitation literature, with the majority of research being for RAS. Additionally, in much of the literature, it is not clear if a technique is an NMT technique, or a non-NMT technique using similar language (Tomaino, 2012). While most of the quantitative research focuses on functional physical outcomes, anecdotal qualitative literature often focuses on emotional and social support (Aldridge & Davidson, 2008; Magee & Davidson, 2004). This variation in literature gives conflicting recommendations to clinicians on what goal areas are important and what techniques are evidence based.

Therefore, it is important to the music therapy field to describe the current state of clinical practice with adults with neurologic disorders. Establishing this baseline
information will help inform the clinician and the researcher. Having a clearer picture of current practice, including diagnoses of clients served, settings of employment, collaborating professions, reasons for referrals, goal areas addressed, and music therapy techniques, will help inform practice and assist in the direction of future research.
Chapter 3: Methods

Numerous quantitative and qualitative studies have been conducted testing the effectiveness of music therapy clinical interventions with adults with neurologic disorders, yet there has been no descriptive study regarding current practice. Previous descriptive studies using a survey design have examined music therapy practice with other populations. In these studies, researchers designed instruments based on literature and clinical experience (Chase, 2004; Codding, 2002; Daykin & Bunt, 2006; Jackson, 2003; Kern et al., 2013; Silverman, 2007; Silverman & Hairston, 2005; Tabinowski, 2013; Wilhelm, 2004). In this study, the researcher developed a questionnaire to describe current trends in music therapy practice with adults with neurologic disorders.

Research Design

The study used a descriptive design in the form of a questionnaire, which is intended to provide a quantitative description of trends of a population by studying a convenience sample of the population (Creswell, 2009). Data was collected using a web-based survey program Qualtrics © 2014, provided by Ohio University. Previous music therapy studies have used web-based models for survey research (AMTA, 2013; Kern et al., 2013; Silverman, 2007; Tabinowski, 2013).

The Population and Sample

The population for this study was professional music therapists currently working with adults with neurologic disorders. This study used convenience sampling, where respondents were chosen based on availability (Creswell, 2009). The convenience sample was music therapists who were current members of AMTA who indicated that they...
worked with adults with neurologic disorders. The researcher requested the emails of current AMTA members that designated working with one of the following population categories in their membership profile: neurologically impaired, head injured, Parkinson’s disease, or stroke. This process has been used in prior music therapy research to determine an appropriate sample for a descriptive study (Kern et al., 2013; Silverman, 2007; Tabinowski, 2013).

**Development of the Instrument**

The researcher developed a 21-item questionnaire (See Appendix A) to answer the eight research questions regarding clinical music therapy practice with adults with neurologic disorders. Items on the questionnaire were developed from current literature, experience, and previous descriptive studies on music therapy practice with various clinical populations (Kern et al., 2013; Silverman, 2007; Tabinowski, 2013). The instrument included the content areas *Qualifying Questions, Demographic Information,* and *Music Therapy Clinical Practice.* These content areas are similar to those of previous questionnaires designed to describe the current state of music therapy practice with a specific population (Kern et al., 2013; Silverman, 2007; Tabinowski, 2013).

Questions were multiple-choice, with some questions allowing multiple responses. Choices for responses to each question were chosen from current music therapy literature as well as experience. Questionnaire items 1-2, part of the *Qualifying Questions* section, were screening questions used to determine if participants were eligible for the study. Items 3-10 were part of the *Demographic Information* section developed to better describe the sample. This section contained questions regarding
participants’ gender, age range, level of education, additional trainings, years experience as a music therapist, experience working with adults with neurologic disorders, AMTA region of employment, and theoretical orientation. Choices for theoretical orientations were taken from Silverman’s (2007) survey on psychiatric music therapy and Music Therapy in the Treatment of Adults with Mental Disorders (Scovel & Gardstrom, 2002).

Items 11-21 on the questionnaire were part of the Music Therapy Clinical Practice section. These items directly corresponded with the research questions, which aim to describe music therapy clinical practice with adults with neurologic disorders. Research question one regarding theoretical orientations and approaches utilized by current music therapists working with adults with neurologic disorders corresponded with items 10 and 20 on the questionnaire. Possible selections for music therapy approaches were taken from Music Therapy Approaches (Darrow, 2008), in combination with approaches mentioned in literature (Aldridge et al., 2005; Daveson, 2008; Gilberston & Aldridge, 2008; Magee & Davidson, 2004).

Research question two regarding current setting of employment corresponded with questionnaire item 11. Choices for potential settings of employment came from the researcher’s experiential knowledge. Research question three regarding neurologic disorder diagnoses of current music therapy clients corresponded with questionnaire item 14, where participants selected the neurologic diagnoses of current music therapy clients. Choices for neurologic disorders came from MedLine Plus (2014). Questionnaire item 12, which related to research question four, asked whether music therapy services are delivered in group sessions, individual sessions, or both. Research questions five and six,
which focus on collaboration with other professionals, corresponded with questionnaire items 16-18, which asked which professionals the participants collaborate with most often, who is making music therapy referrals, and why the referrals are made.

Research questions seven and eight focus on goals and techniques utilized in music therapy treatment. These questions are explored in questionnaire items 19 and 21, asking participants to select their primary goal areas of focus in treatment sessions and most commonly used music therapy techniques. Choices for goals and techniques were taken from a combination of literature on clinical interventions, goals and techniques from previous descriptive studies, and the list of NMT techniques (Thaut, 2008).

The questionnaire was placed into the online tool Qualtrics © 2014. The researcher utilized skip logic, the automatic skipping of a question based on a response to a previous question, throughout the questionnaire. If a participant answered NO to either of the first two screening questions he or she was taken to the end of the questionnaire and results were not included in analysis. Skip logic was also used for the question regarding the reason for music therapy referrals. If a participant indicated he or she did not receive referrals, the following question regarding reasons for music therapy referrals was skipped.

Establishing Validity and Reliability of the Instrument

Levels of review. Data collected from the questionnaire was intended to describe the current state of clinical music therapy practice in the treatment of adults with neurologic disorders. Because this was a researcher-developed questionnaire, it went through several levels of review to strengthen content validity. Throughout the
development of the questionnaire, the researcher insured content areas and questions matched the research questions, and that content was supported by the literature (Creswell, 2009; Netemeyer, Bearden, & Sharma, 2003). After initial development, three additional thesis committee members including a music therapy professor, music history professor, and research methodology professor, reviewed the questionnaire. Aspects such as clarity of questions, content within questions and responses, length, and order, were reviewed and approved.

**Peer review of questionnaire.** In order to further increase content validity the instrument was reviewed in the electronic form by a group of nine music therapists selected by the researcher. This included music therapists who were professors, worked in hospitals, hospice, skilled nursing facilities, and private practice. Two different versions of the questionnaire were reviewed at this stage to help determine if group and individual treatment practice needed to be examined separately or if they could be combined as one category.

The first version of the questionnaire contained 26 questions and did not distinguish whether questions regarding treatment practice were for individuals or groups, and the second contained 31 questions and separated group and individual treatment into two categories. Each music therapist that participated in the review was given one version of the questionnaire, resulting in four music therapists reviewing the first version, and five music therapists reviewing the second. Participants answered their version of the online questionnaire, noting any questions that were unclear as well as
responses that seemed inappropriate or incomplete. They also reported overall impression and gave feedback on the length.

Data collected during the peer review phase was not analyzed as part of the results of the study and participants were removed from the list of potential participants from AMTA in order to not contaminate the sample. All comments were taken into consideration by the researcher and the thesis advisor to determine revisions. After receiving feedback, the researcher decided to combine group and individual treatment into one category. This was to focus the questionnaire on music therapy treatment with adults with neurologic disorders, rather than focusing on the differences between individual practice and group practice. Originally the categories had been divided to avoid confusion, but no participants in the test expressed confusion from having them combined. To continue to focus the purpose of the questionnaire, four additional items were eliminated. These included:

1. In your work with adults with neurologic disorders, what department is music therapy housed in?
2. What is your job title?
3. Which best describes the funding source for music therapy in your current setting of employment?
4. Specify the type of third party reimbursement (item shown if participant selected receiving third party reimbursement in previous question)

These changes were made to focus the questionnaire on aspects of clinical practice highlighted in the research questions. Revisions also included adding social workers as a
potential collaborating profession and referring profession, and adding quality of life as a reason for referral.

**Reliability.** It is difficult to determine reliability of the data because it is the first use of a researcher developed tool. Several levels of review of the instrument helped to strengthen the potential reliability. In addition to strengthening content validity, improved clarity in the questionnaire encourages consistent and reliable results. Similar instruments have been used in previous music therapy studies, but reliability was not calculated (Kern et al., 2013; Silverman, 2007; Tabinowski, 2013).

**Implementation of Study**

Following peer review of the instrument, the researcher submitted the description of the study and the finalized 21-item questionnaire to the Ohio University Institutional Review Board (IRB). The researcher simultaneously submitted the Label Request Form (See Appendix B) to the American Music Therapy Association (AMTA), requesting the email addresses for current members who indicated working with neurologic impairments, stroke, head injured, or Parkinson’s disease. Along with the Label Request Form, the letter of consent that would be sent to potential participants and the questionnaire were included.

The Executive Director of AMTA reviewed the study and requested some changes in wording to the questionnaire and the letter of consent. The first screening question was changed from, “Are you a credentialed music therapist? (MT-BC, CMT, ACMT, RMT)” to “Do you currently hold a credential or designation? (MT-BC, CMT, ACMT, RMT).” Additionally, the statement "Your name is being used with the
permission of the American Music Therapy Association following their review of the study,” was inserted into the letter of consent. After these changes were made, AMTA approved the study pending IRB approval (See Appendix C). IRB approved the study (See Appendix D) finding it exempt from full review. The wording changes requested by AMTA were submitted to IRB as an amendment and were approved (See Appendix E).

AMTA sent the researcher 162 names and emails that met the requested criteria. After removing the researchers own email and two music therapists who participated in the peer review, there were 159 potential participants. The researcher invited the 159 music therapists to take the questionnaire via email through Qualtrics ©2014. The message contained the letter of consent and an active individualized link to the questionnaire. The letter of consent was formatted using the Ohio University IRB template, and included information on the researcher, purpose of the study, confidentiality, and known risks or benefits to participation (See Appendix F). When participants entered the online window, they were again informed they were consenting to participate in the study. The questionnaire was available for four weeks. Email reminders were sent through Qualtrics ©2014 to participants who had not responded to the questionnaire once a week until closing.

Data Analysis

Data analysis was performed through Qualtrics © 2014. The two screening questions were not included in analysis. The additional 19 questions regarding demographics and music therapy clinical practice were analyzed by frequency of
response. Frequencies were converted into percentages and placed into tables when appropriate to show distribution across the sample.
Chapter 4: Results

Response Rate

Of the 162 email addresses received from AMTA, three were removed including the researcher as well as two participants in the peer review. Email invitations encompassing the letter of consent were sent to 159 potential participants. Two music therapists who received the invitation sent the researcher an email stating they did not currently work with clients with neurologic disorders. Of the 44 music therapists who participated in the study, five indicated in the qualifying questions they did not currently work with at least one adult with a neurologic disorder, therefore their results were not considered. From the adjusted group of potential participants (N = 152), 39 music therapists participated in the online study, creating a usable response rate of 26%. This is a lower response rate than previous music therapy online descriptive studies (Silverman, 2005; Silverman, 2007; Tabinowski, 2013).

Response Data

Responses to the 21-item questionnaire were analyzed by frequency and converted into percentages using the Qualtrics ©2014 software. The two preliminary screening questions were not included in analysis. Questions three through ten determined the demographics and music therapy experience of the participants, and are described through frequency of response. Responses to questions 11-21 answer the research questions regarding music therapy clinical practice with adults with neurologic disorders. Data regarding these questions was displayed in tables to better understand the
distribution of responses among participating music therapists. Participants were not required to answer all questions.

**Demographic information.** Of the 39 participants ($N = 39$), 35 were female and four were male. No participants selected “Other.” Participants represented all age groups, with 21% being 20-29 years of age ($n = 8$), 26% being 30-39 ($n = 10$), 23% being 40-49 ($n = 9$), 15% being 50-59 ($n = 6$), and 15% being 60-69 ($n = 6$). Thirty-eight people responded to the question indicating the AMTA region where he or she worked as a music therapist. All AMTA regions were represented by the participants with the most being from Great Lakes (24%, $n = 9$) and Mid-Atlantic (21%, $n = 8$), followed by Midwestern (16%, $n = 6$), Western (13%, $n = 5$), Southwestern (11%, $n = 4$), New England (8%, $n = 3$), and Southeastern (8%, $n = 3$). No participants who responded worked internationally.

**Music therapy training and education.** The largest group of respondents had completed master’s degrees as their highest level of education (54%, $n = 21$), closely followed by bachelor’s degrees (41%, $n = 16$), with only two participants completing a doctoral degree (5%). Of the 37 music therapists who responded to the question regarding additional training and certification, 59% completed some training in addition to board certification. Nine music therapists indicated being a Neurologic Music Therapist (24%), and five music therapists indicated being a Neurologic Music Therapy Fellow (14%). Other certifications included the Bonny Method of Guided Imagery in Music (Level I or Level II) (8%, $n = 3$), Nordoff Robbins Music Therapy (3%, $n = 1$), and counselor (3%, $n = 1$). Nine music therapists (24%) selected “Other” The other categories listed by
respondents were special education teacher ($n = 1$), Activity Professional Board Certified (AP-BC) ($n = 2$), Hospice and Palliative Care Music Therapist (HPMT) ($n = 3$), Certified Brain Injury Specialist ($n = 2$), and music educator ($n = 1$).

**Music therapy experience.** Of the 39 respondents, the largest number of music therapists had been in the profession 1-5 years (44%, $n = 17$), followed by 6-10 years (15%, $n = 6$), more than 30 years (15%, $n = 6$), 11-20 years (13%, $n = 5$), and 21-30 years (10%, $n = 4$). Only one participant indicated working less than one year (3%). When asked how many years he or she has worked as a music therapist with adults with neurologic disorders, the largest percentage selected 1-5 years (46%, $n = 18$) followed by 6-10 years (23%, $n = 9$), 11-20 years (13%, $n = 5$), and less than 1 year (8%, $n = 3$). Two participants (5%) indicated working with the population for 21-30 years, and two participants (5%) worked with the population more than 30 years. It may be important to consider when looking at results that the largest number of respondents (46%) have worked with the population five years or less.

**Music therapy clinical practice.** The following data regarding music therapy clinical practice with adults with neurologic disorders is organized by how it informs the research questions.

**Music therapy approaches.** Research question one: What theoretical orientations and music therapy approaches do music therapists use when working with people with neurologic disorders?

This research question corresponded with two items on the questionnaire, one of which was part of the demographics section. Theoretical orientation and approach were
paired together in the research question because of the foundation many approaches have in a particular orientation.

Thirty-seven participants indicated their theoretical orientations from a list of choices. The most selected response was eclectic (49%). Respondents were given space to describe eclectic when selected (See Table 1). Humanistic was the next highest response (24%). No music therapists selected psychodynamic, behavioral, or cognitive, suggesting those may not be common theoretical orientations with this sample. Table 1 displays the full set of responses, helping to visually describe the distribution of theoretical orientations among the 37 music therapists.
Table 1

Theoretical Orientations of Music Therapists (N = 37)

<table>
<thead>
<tr>
<th>Orientation</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eclectic (^a)</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>Humanistic</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Cognitive-Behavioral</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Biomedical</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Holistic</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Other (^b)</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Psychodynamic</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Behavioral</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cognitive</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

\(^a\) humanistic, biomedical, behavioral, cognitive-behavioral
humanistic and feminist
humanistic and biomedical
humanistic, cognitive, biomedical

I believe in placing my clients needs above strict philosophical doctrine so I utilize both neurological and psychodynamic interventions for the most part.
This always depends on the needs of the client
Person centered based on patient need. Cognitive-behavioral and humanistic primarily.
I refer to all of the above theoretical models in my practice as needed to meet the needs of the client.
humanistic, cognitive, and cognitive-behavioral.
person-centered, biomedical, humanistic
humanistic and cognitive-behavioral
humanistic, psychodynamic, evidence based neuroscience
cognitive-behavioral and humanistic
humanistic and cognitive

\(^b\) Neurologic Music Therapy

Neurologic Music Therapy

Thirty-four participants selected the music therapy approach they use when working with adults with neurologic disorders from a list of possible responses. The largest response was Neurologic Music Therapy (38%), followed by eclectic (29%).

When participants chose eclectic, they were given the option to describe what it meant (See Table 2). In both theoretical orientation as well as approach, eclectic was among the
most selected responses, and may be a concept that merits further examination in future research.

Additional approaches selected were Nordoff Robbins Music Therapy, behavioral, cognitive behavioral, psychodynamic, and Orff Schulwerk. Responses not chosen by any participants included The Bonny-Method for Guided Imagery and Music (GIM), Dalcroze Eurhythmics, Kodaly Approach to Music Education, and Meta-Model of Music Therapy in Neuro-disability (MIND). A complete list of approaches and the frequencies of response is shown in Table 2.

Table 2

<table>
<thead>
<tr>
<th>Music Therapy Approach</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurologic Music Therapy (NMT)</td>
<td>13</td>
<td>38</td>
</tr>
<tr>
<td>Eclectic a</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Nordoff-Robbins Music Therapy</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Cognitive Behavioral</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Behavioral</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Psychodynamic</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Orff-Schulwerk</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Other b</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>The Bonny Method of Guided Imagery and Music (GIM)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dalcroze Eurhythmics</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Kodaly Approach to Music Education</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Meta-Model of Music Therapy in Neuro-disability (MIND)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

a Nordoff-Robbins Music Therapy (NRMT), Behavioral, Psychodynamic
This depends on the needs of the client and the treatment program already in place. I use parts of the above that fit my client music-centered and person-centered incorporate elements of NMT my own
b Hospice and Palliative Care Music Therapist (HPMT)
**Treatment setting.** Research question two: In what settings do music therapists work with adults with neurologic disorders?

Music therapists can work with adults with neurologic disorders in a variety of settings. Participants were asked to select the settings in which they currently work with adults with neurologic disorders from a list of choices, selecting multiple responses when appropriate. From the thirty-eight music therapists that responded, the highest number of selected working with the population in a skilled nursing facility (47%). The second most selected setting was in the clients’ homes (37%), followed by assisted living (34%) and hospice (21%). Five respondents (13%) indicated working in a specialty hospital and five (13%) indicated working in a therapeutic day program. Table 3 displays the full list of settings, frequencies of response, participant provided descriptions of categories, as well as other categories listed by respondents.
Table 3

*Settings of Employment (N = 38)*

<table>
<thead>
<tr>
<th>Setting</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skilled nursing facility</td>
<td>18</td>
<td>47</td>
</tr>
<tr>
<td>In clients’ homes</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>Assisted living</td>
<td>13</td>
<td>34</td>
</tr>
<tr>
<td>Hospice</td>
<td>8</td>
<td>21</td>
</tr>
<tr>
<td>Other <em>a</em></td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Specialty hospital <em>b</em></td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Therapeutic day program</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>Private music therapy clinic</td>
<td>5</td>
<td>13</td>
</tr>
<tr>
<td>General inpatient hospital <em>c</em></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Outpatient medical center <em>d</em></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Private non music therapy clinic</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

*Note.* Due to multiple responses, total of responses (n) is greater than N = 38, and total of percentages is greater than 100.

*a* Residential program
Rehabilitation facility-inpatient
Community based program
Adult daycare
Community music school
Residential living for brain injury
*b* Skilled nursing center: includes brain injury specialty program
Physical rehabilitation
Post-acute brain injury rehab
Rehabilitation hospital
Sub acute rehab
*c* ICU and medical floors
*d* Post acute brain injury rehab
Behavioral health

**Neurologic disorder diagnoses.** Research question three: What are the specific neurologic diagnoses of music therapists’ current clients?

Participants were given a comprehensive list of neurologic diagnoses and asked to select all diagnoses of their current music therapy clients. The 37 music therapists that responded to this question reported serving clients with a large variety of neurologic
disorder diagnoses, but there were some that had a very high percentage response. The highest percentages of respondents selected Alzheimer’s disease and dementia (78%), followed by stroke (73%), traumatic brain injury (57%), and Parkinson’s disease (57%). These diagnoses are also commonly represented in music therapy literature with neurologic disorders. The full list of available diagnoses and the frequencies of response can be seen in Table 4.

Participants were also asked to select the primary age range of current clients. Out of the 36 responses to the question, half of the participants primarily serve clients 65 and older (50%, n = 18). The next largest groups of respondents selected 30-49 years of age (19%, n = 7) and 50-64 years of age (14%, n = 5). Only one participant (3%) selected 18-29 years of age. Five participants (14%) selected “Other,” adding the categories “equally mixed,” “50 and older,” “20-59,” “From adult (30-49) to older adult (65 and older),” and “adults of all ages.” The large percentage of participants working with older adults corresponds with the large percentage of participants’ clients having diagnoses commonly found in older adults, such as Alzheimer’s disease, Parkinson’s disease, and stroke. This idea will be explored further in the discussion section.
Table 4

*Neurologic Disorder Diagnoses of Clients Seen by Music Therapists (N = 37)*

<table>
<thead>
<tr>
<th>Neurologic Disorder</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alzheimer's disease/dementia</td>
<td>29</td>
<td>78</td>
</tr>
<tr>
<td>Stroke</td>
<td>27</td>
<td>73</td>
</tr>
<tr>
<td>Traumatic Brain Injury</td>
<td>21</td>
<td>57</td>
</tr>
<tr>
<td>Parkinson's disease and/or other movement disorders</td>
<td>21</td>
<td>57</td>
</tr>
<tr>
<td>Autism Spectrum Disorder</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Seizure Disorder/Epilepsy</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Cerebral Palsy</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Brain Tumor</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Multiple Sclerosis</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Spinal Chord Injury</td>
<td>8</td>
<td>22</td>
</tr>
<tr>
<td>Low awareness states</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Amyotrophic lateral sclerosis (ALS)</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Sleep disorders</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Other a</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Huntington's disease</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Spina Bifida</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Muscular Dystrophy</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

*Note.* Due to multiple responses, the total number of responses equals greater than N = 37, and the total percentage of response is greater than 100.

*a* Aneurysm, alcoholism

Adult-onset Tay Sach’s

*Type of music therapy services.* Research question four: Are music therapists working with adults with neurologic disorders in group sessions, individual, or both?

Out of 38 participants who responded to the question regarding type of services provided, 23 indicated providing music therapy in both group and individual sessions (61%).

Fourteen respondents only provide individual music therapy (37%), and one respondent provides only group sessions (3%). This indicates the majority of music therapists working with adults with neurologic disorders provided both group and individual services.
**Collaboration with other professionals.** Research question five: With which interdisciplinary team members do music therapists collaborate?

Of the 37 respondents that answered whether they worked as part of an interdisciplinary team, 27 selected “yes” (73%), while 10 selected “no” (27%). Thirty-seven participants selected other professions with whom they collaborate in their music therapy work from a given list. The highest percentage response was nurses (70%, \( n = 26 \)), followed by social workers (59%, \( n = 22 \)). Only one participant selected “I do not collaborate with other professionals,” showing most music therapists work with a number of other disciplines, even if they do not consider themselves a part of an interdisciplinary team. The full list of professions with frequencies of response can be seen in Table 5.
Table 5

Music Therapists’ Collaboration with Other Professionals (N = 37)

<table>
<thead>
<tr>
<th>Professions</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses</td>
<td>26</td>
<td>70</td>
</tr>
<tr>
<td>Social Workers</td>
<td>22</td>
<td>59</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>16</td>
<td>43</td>
</tr>
<tr>
<td>Recreational Therapists</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>Speech Language Pathologists</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>Pathologists</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Therapists</td>
<td>15</td>
<td>41</td>
</tr>
<tr>
<td>Spiritual Care</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Administrators</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Physicians (MD, DO)</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Other Music Therapists</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Other a</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Psychologists</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>Psychiatrists</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Art Therapists</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>I do not collaborate with</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>other professionals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Due to multiple responses, the total number of responses is greater than N = 37, and the total percentage of response is greater than 100.

a Dance therapists
Drama and dance and movement therapists
Certified nursing assistants
Behavioral analysts
Family of client
Direct care staff
Residential staff
General staff
Patient’s wife creates team and acts as intermediary between disciplines

Music therapy referrals. Research question six: What are the most common reasons for music therapy referrals for adults with neurologic disorders, and who is making the referrals?

This research question was answered by two corresponding items on the questionnaire. Participants were first asked to select from whom they commonly receive
music therapy referrals from a given list. Participants were allowed to select multiple responses. Then participants who indicated receiving referrals were asked to select the most common reasons for referral from a list of choices, again selecting multiple responses as appropriate.

Of the 37 music therapists that answered the question regarding referral source, the highest percentage respondents reported receiving referrals from the patient’s family (59%), social workers (54%), and nurses (49%). Many music therapy referrals come directly from the patient (38%). Music therapists reported receiving referrals from other therapists such as speech language pathologists, occupational therapists, recreational therapists, physical therapists, psychologists, and other music therapists. Other referral sources included administrators, physicians, spiritual care, psychiatrist, and art therapists. Nineteen percent of respondents indicated they do not receive referrals. The full set of responses is shown in Table 6.
Table 6

Sources of Music Therapy Referrals \( (N = 37) \)

<table>
<thead>
<tr>
<th>Referral Source</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient's family</td>
<td>22</td>
<td>59</td>
</tr>
<tr>
<td>Social Workers</td>
<td>20</td>
<td>54</td>
</tr>
<tr>
<td>Nurses</td>
<td>18</td>
<td>49</td>
</tr>
<tr>
<td>Patient</td>
<td>14</td>
<td>38</td>
</tr>
<tr>
<td>Recreational therapists</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Speech Language Pathologists</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>Occupational Therapists</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Physicians (MD, DO)</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Administrators</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Spiritual Care</td>
<td>9</td>
<td>24</td>
</tr>
<tr>
<td>I do not receive referrals</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Other Music Therapist</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Psychologist</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Physical Therapists</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Art Therapist</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Psychiatrist</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Other (^a)</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Due to multiple responses, the total number of responses is greater than \( N = 37 \), and the total percentage of response is greater than 100.

\(^a\) Certified nursing assistants

Of music therapists that indicated receiving referrals, 29 music therapists selected the primary reasons they receive referrals for adults with neurologic disorders from a list of choices. The highest percentage of response reported receiving referrals for quality of life (86%). The next highest percentage response was support for communication goals (83%). This was much higher than support for physical goals (38%), which is a prominent focus in literature. There were also high percentages of response for support for cognitive goals (72%), to provide sensory stimulation (69%), socialization (76%), emotional support (69%), and client enjoys music (69%). Additional results are shown in
Table 7. The potential relationship between reasons for referrals and the referral source will be explored further in the discussion section.

Table 7

<table>
<thead>
<tr>
<th>Reason for Referral</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of life</td>
<td>25</td>
<td>86</td>
</tr>
<tr>
<td>Support for communication goal</td>
<td>24</td>
<td>83</td>
</tr>
<tr>
<td>Socialization</td>
<td>22</td>
<td>76</td>
</tr>
<tr>
<td>Support for cognitive goal</td>
<td>21</td>
<td>72</td>
</tr>
<tr>
<td>Provide sensory stimulation</td>
<td>20</td>
<td>69</td>
</tr>
<tr>
<td>Emotional support</td>
<td>20</td>
<td>69</td>
</tr>
<tr>
<td>Client enjoys music</td>
<td>20</td>
<td>69</td>
</tr>
<tr>
<td>Decrease anxiety</td>
<td>17</td>
<td>59</td>
</tr>
<tr>
<td>Decrease negative behaviors</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Pain management</td>
<td>15</td>
<td>52</td>
</tr>
<tr>
<td>Stress reduction</td>
<td>12</td>
<td>41</td>
</tr>
<tr>
<td>Support for physical goal</td>
<td>11</td>
<td>38</td>
</tr>
<tr>
<td>Motivation</td>
<td>10</td>
<td>34</td>
</tr>
<tr>
<td>Spiritual support</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>To promote arousal from low awareness state</td>
<td>9</td>
<td>31</td>
</tr>
<tr>
<td>Distraction</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Difficulty breathing</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td>To help in differential diagnosis</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I do not know</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. Due to multiple responses, the total of responses is greater than N = 37, and total percentage is greater than 100.

Goal areas of focus. Research question seven: What are the primary goal areas of focus in music therapy treatment for adults with neurologic disorders?

When asked to select goal area(s) worked on most often in music therapy sessions with adults with neurologic disorders, respondents indicated working in multiple goal areas, corresponding with the wide variety of goal areas addressed in literature (N = 36). The goal area with the highest percentage response was social (83%) followed by
communication (78%), cognitive (78%), and emotional (67%). Physical, behavioral, spiritual and musical each had less than a 50% response. Responses are shown in Table 8.

Table 8

<table>
<thead>
<tr>
<th>Goal Area</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social</td>
<td>30</td>
<td>83</td>
</tr>
<tr>
<td>Communication</td>
<td>28</td>
<td>78</td>
</tr>
<tr>
<td>Cognitive</td>
<td>28</td>
<td>78</td>
</tr>
<tr>
<td>Emotional</td>
<td>24</td>
<td>67</td>
</tr>
<tr>
<td>Physical</td>
<td>16</td>
<td>44</td>
</tr>
<tr>
<td>Musical</td>
<td>13</td>
<td>36</td>
</tr>
<tr>
<td>Behavioral</td>
<td>12</td>
<td>33</td>
</tr>
<tr>
<td>Spiritual</td>
<td>7</td>
<td>19</td>
</tr>
<tr>
<td>Other a</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. Due to multiple responses, the total response is greater than \( N = 36 \), and total percentage is greater than 100.

\( a \) quality of life

**Clinical music therapy techniques.** Research question eight: What clinical techniques do music therapists use when working with adults with neurologic disorders?

Music therapists reported using a wide variety of clinical techniques in sessions with adults with neurologic disorders. Participants were asked to select the techniques used most often in sessions from a list of 34 possible responses. It was explained in the instructions that the list had a combination of NMT techniques and non-NMT techniques of a similar nature. Participants were to choose whichever responses most represented his or her practice. With the 35 participants that responded to the question, the most selected response was singing to familiar music (94%). The second highest percentage response was instrument play (77%), followed by reminiscence through music (74%). Other
frequently used techniques included music-assisted movement (69%), music assisted relaxation (60%), music improvisation (63%), and listening to live music (66%).

NMT techniques had lower percentage responses than the other non-approach specific techniques. Reduced frequencies in NMT techniques were expected with only 38% selecting NMT as their music therapy approach. Out of the NMT techniques, the highest percentage response was Therapeutic Singing (51%), with more participants reporting using Therapeutic Singing \(n = 18\), than who had reported being a Neurologic Music Therapist \(n = 9\) or Neurologic Music Therapy Fellow \(n = 5\). This discrepancy will be explored further in the Discussion section. Additionally among the NMT techniques, Therapeutic Instrumental Music Performance (TIMP) and Melodic Intonation Therapy (MIT) were frequently selected responses, followed by Vocal Intonation Therapy (VIT), Rhythmic Speech Cueing (RSC), Musical Speech Stimulation (MUSTIM), and Rhythmic Auditory Stimulation (RAS). The complete results of frequency of use of music therapy techniques in the treatment of adults with neurologic disorders can be seen in Table 9.
## Table 9

*Music Therapy Techniques in Treatment of Adults with Neurologic Disorders (N = 35)*

<table>
<thead>
<tr>
<th>MT Technique</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singing familiar music</td>
<td>33</td>
<td>94</td>
</tr>
<tr>
<td>Instrument play</td>
<td>27</td>
<td>77</td>
</tr>
<tr>
<td>Reminiscence through music</td>
<td>26</td>
<td>74</td>
</tr>
<tr>
<td>Music assisted movement</td>
<td>24</td>
<td>69</td>
</tr>
<tr>
<td>Listening to live music</td>
<td>23</td>
<td>66</td>
</tr>
<tr>
<td>Music improvisation</td>
<td>22</td>
<td>63</td>
</tr>
<tr>
<td>Music assisted relaxation</td>
<td>21</td>
<td>60</td>
</tr>
<tr>
<td>Listening to recorded music</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td><em>Therapeutic Singing (TS)</em></td>
<td>18</td>
<td>51</td>
</tr>
<tr>
<td>Songwriting</td>
<td>16</td>
<td>46</td>
</tr>
<tr>
<td>Vocal exercises</td>
<td>15</td>
<td>43</td>
</tr>
<tr>
<td>Music assisted speech exercises</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Lyric analysis</td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td><em>Therapeutic Instrumental Music Performance (TIMP)</em></td>
<td>12</td>
<td>34</td>
</tr>
<tr>
<td>Melodic Intonation Therapy (MIT)</td>
<td>11</td>
<td>31</td>
</tr>
<tr>
<td>Vocal Intonation Therapy (VIT)</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Rhythmic Speech Cueing (RSC)</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Musical Speech Stimulation (MUSTIM)</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Rhythmic Auditory Stimulation (RAS)</td>
<td>10</td>
<td>29</td>
</tr>
<tr>
<td>Music with counseling techniques</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td><em>Patterned Sensory Enhancement (PSE)</em></td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Oral Motor and Respiratory Exercises (OMREX)</td>
<td>9</td>
<td>26</td>
</tr>
<tr>
<td>Musical Attention Control Training (MACT)</td>
<td>8</td>
<td>23</td>
</tr>
<tr>
<td>Musical Mnemonics Training (MMT)</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>Music Therapy and Counseling (MPC)</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Musical Executive Function Training (MEFT)</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Musical Sensory Orientation Training (MSOT)</td>
<td>6</td>
<td>17</td>
</tr>
<tr>
<td>Associative Mood and Memory Training (AMMT)</td>
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<td>Auditory Perception Training (APT)</td>
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<td><em>Symbolic Communication Training Through Music (SYCOM)</em></td>
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<td>Musical Neglect Training (MNT)</td>
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<td>Musical role playing</td>
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<td>Other                                              a</td>
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<td>3</td>
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*Note.* Italics indicate a Neurologic Music Therapy (NMT) technique. Due to multiple responses, response total is greater than N = 35, and total percentage is greater than 100.

a Adapted music lessons
Chapter 5: Discussion

The current body of music therapy literature regarding clinical practice with adults with neurologic disorders contains a high level of variability within approaches, theoretical models, goal areas addressed, and delivery and definition of music therapy interventions. The purpose of this study was to describe current clinical music therapy practice with adults with neurologic disorders in order to better inform future research as well as clinical practice. Though the descriptive data represents a small sample of music therapists working with the population, results showed much of the variation observed in the literature appears to be true in clinical practice. The following discussion will explore these concepts further by examining how the data described areas of clinical practice, highlighting consistencies among the highest percentage responses, and potential areas for further research.

Exploring Areas of Clinical Practice

Much of the variation found in music therapy literature on adults with neurologic disorders was reflected in the results of the study. This includes identifying the use of multiple approaches within practice with adults with neurologic disorders, the wide range of goal areas addressed in treatment, and confusion in the language describing music therapy techniques. Even with the wide range of responses, certain consistencies were seen among the highest percentage responses for various questions, such as the large amount of music therapists working with older adults in this population and the importance of music therapy for psychosocial and communication support in treatment. Potential relationships between these areas of practice are discussed below.
**Approaches within practice.** In the literature review, there were multiple approaches mentioned in connection with music therapy and adults with neurologic disorders, with the strongest association being with Neurologic Music Therapy (NMT). One of the research questions asked what approaches and theoretical orientations music therapists working with this population were using. In this study, NMT was the most selected approach used in treatment of adults with neurologic disorders (38%, n = 13). It is important to consider that though NMT is a highly utilized approach with neurologic disorders, many respondents (62%) did not select it as their primary approach. This distribution explains the variation in the existing literature. Though NMT has a large presence, there are many music therapists that do not align with the approach.

Many clinical studies regarding the efficacy of music therapy in the treatment of neurologic disorders are specifically testing NMT techniques, but in many studies the approach or technique is not clear. Nordoff Robbins Music Therapy was one of the only other approaches specifically discussed in literature on music therapy with neurologic disorders. There were not many participants who chose this approach in this study (n = 3), but it does confirm some music therapists practicing with adults with neurologic disorders utilize a Nordoff-Robbins approach.

In this study, an eclectic approach was the most identified theoretical orientation (49%, n = 18) and the second most commonly selected music therapy approach (29%, n = 10). Through these results, it appears many music therapists connect with the concept of not identifying with a specific theoretical orientation or approach, which also corresponds with the lack of specific approaches identified in the literature. In both questions, when
eclectic was selected, participants were given space to describe what it meant. Participants described eclectic by listing multiple philosophies and approaches, as well as phrases such as depending on the “needs of the client,” or “the situation” (See Table 1 and Table 2). Though this was a small piece of this study, descriptions of eclectic philosophies of music therapy could be explored further through qualitative analysis, defining what eclectic approaches look like in practice.

No music therapists selected the Meta-Model of Music Therapy in Neurodisability (MIND) as an approach. This is likely because it was published in Europe (Daveson, 2008) and there were no international participants in this study. It would be interesting if more music therapists in the United Stated became aware of the MIND because it was developed to combine models and approaches that exist within clinical literature, recognizing the choice for approach largely depends on the situation (Daveson, 2008). This idea closely aligns with some of the comments made within the questionnaire describing an eclectic approach and philosophy.

**Emphasis on older adults.** From the results of this study, it appears a large group of music therapists working with adults with neurologic disorders work primarily with older adults. Music therapists indicated working in a wide variety of settings, with the highest percentage response being skilled nursing facilities (47%). The most common age range of clients was an adult 65 an older (50%), and the highest percentage of music therapists selected working with clients with stroke (73%), Alzheimer’s disease (78%), traumatic brain injury (57%), and Parkinson’s disease (57%). Alzheimer’s disease, stroke, and Parkinson’s disease are often considered disorders of older adults (World
Health Organization, 2007). From these results, it seems many music therapists working with adults with neurologic disorders are working in an environment focused on eldercare.

Even though in this study, the highest number of music therapists work in skilled nursing facilities, much of the literature on music therapy with neurologic disorders is focused on rehabilitation. The music therapy setting may largely determine the goals and techniques utilized with the population. Due to the design of the study, relationships between these variables cannot be determined, but it is an important consideration in future research of music therapy with adults with neurologic disorders to include research that focuses on older adults in long-term care environments.

**Role within treatment team.** Just as music therapy setting likely has an influence on treatment practice, it is also potentially affected by the role of the music therapist within the treatment team. In this study, music therapists reported collaborating with a number of professionals. The highest percentage of participants reported collaborating with nurses (70%) followed by social work (59%). One might presume that the professionals who collaborate most often with music therapists would be making the most referrals. This appears to be true according to the results of this study. The highest percentage of music therapists reported receiving referrals from the patient’s family (59%), followed by social workers (54%), and then nurses (49%).

The most frequently selected reasons for referral were quality of life (86%), support for communication goals (83%), socialization (76%), cognitive goals (72%), and emotional support (69%). There was a much smaller percentage response for support of
physical goals (44%), even though much of the music therapy literature with the population focuses on physical rehabilitation. Among other therapy professions (speech therapy, occupational therapy, and physical therapy) speech therapists (35%) and recreational therapists (35%) had the highest percentage response for referring for music therapy.

In this study, the professionals reported by the most respondents to be submitting referrals (nurses, social workers, speech therapists, recreational therapists) align with the emphasis on support for communication and socialization in the reasons for referral. Though analysis of relationships between these variables cannot be performed, there potentially is a connection between the highest percentage responses for collaborating professionals, referral sources, and reasons for referral. The focus on the social, emotional, and communication domains continue when looking at the goal areas and techniques in treatment.

**Goals of treatment.** After a music therapist receives a referral, an assessment is performed, determining the appropriate goals for music therapy and techniques that will be utilized (American Music Therapy Association, 2015). Though reasons for referral do not necessarily determine the treatment goal, there is likely a relationship between the two categories. Just as the most selected reasons for referral were quality of life, communication goals, socialization, cognitive goals, and emotional support, the goal areas the most respondents reported focusing on in treatment were social (83%), communication (78%), cognitive (78%), and emotional (67%). Again, there were a smaller percentage of music therapists focusing on physical goals (44%) in treatment.
There is a large body of research for music therapy and sensorimotor rehabilitation, but according to these results it appears to not be as common in clinical practice as focus on communication and psychosocial goals. This is important for researchers to consider when planning future research. More studies are needed testing the efficacy of music therapy for communication and psychosocial support.

As mentioned earlier, it is important to consider the settings in which music therapists are working. Because this group of participants was primarily working in skilled nursing facilities, it is likely affecting the responses regarding treatment practice. If the responses were restricted to music therapists working in rehabilitation facilities, results for reasons for referral and goal areas in treatment would possibly look different. Due to the design of this study, it was not possible to isolate responses for a specific diagnosis or setting, but it is important to look into in future research.

**Selection of music therapy techniques.** According to the music therapy Scope of Practice, when forming a treatment plan, music therapists determine the goal area as well as the intervention or techniques that will be used (American Music Therapy Association, 2015). This means the goal area of focus would likely influence the chosen technique. In this study, it is difficult to determine how techniques correspond with the chosen goal areas or specific population. NMT techniques by definition are all tied to a corresponding goal area and deficit, where as non-NMT techniques tend to describe the music experience. In terms of the NMT techniques, five out of the seven most selected responses were from the communication rehabilitation domain: Therapeutic Singing, Melodic Intonation Therapy, Vocal Intonation Therapy, Rhythmic Speech Cuing, and
Musical Speech Stimulation. This corresponds with the highest percentage of music therapists receiving referrals for communication goals (83%), and the many music therapists that selected focusing on communication goals in treatment (78%).

From the percentage responses for non-NMT techniques, it seems music therapists select singing of familiar music (94%) and instrument play (77%) as techniques with every treatment goal. It is likely there is a reason for this choice and an explanation for how singing or instrument play will be used in treatment, but this is not reflected through the title of the technique. This presents a potential problem in the music therapy profession with the language used to describe music therapy techniques. There is a break in the line of clinical practice where the goal determined for treatment through an assessment is not clearly articulated through the title of the selected treatment intervention. This type of language also can create additional confusion within music therapy literature, due to a lack of clarity of what the exact technique is in a study and what approach is being utilized.

**Defining music therapy techniques.** In the literature review, it was stated that the body of research for music therapy with neurologic disorders contains a combination of NMT techniques and non-NMT techniques with similar language that could potentially cause confusion. This idea was demonstrated in the results of the clinical techniques question. It was expected that NMT techniques would have a smaller percentage response than non-NMT techniques, however, 51% of participants selecting using Therapeutic Singing (TS), a NMT technique, in treatment of adults with neurologic
disorders. With only 38% of participants receiving NMT training, this means music therapists who did not receive NMT training were claiming to use TS.

Additionally the non-NMT techniques, singing familiar music, instrument play, music improvisation, music-assisted movement, listening to live music, and reminiscence through music, were selected as commonly used by more than 62% of respondents. This means that music therapists who use an NMT approach (38%) were also stating they commonly use non-NMT techniques. This could mean they feel they use non-NMT techniques in certain situations in addition to the NMT techniques, or it could be a result of confusion in language. It is possible one might feel PSE is also music assisted movement, or TIMP is also instrument play. Though these exact determinations cannot be made with this data, there is a need for more examination of music therapy techniques and the variety of language within literature and practice. Music therapists must begin to agree upon a common language in order to make literature and practice more clear.

**Directions for Future Research**

There are many implications for further research from the results of this study. The first recommendation is to replicate this study in the future, using another method for sampling to encourage a larger response. Once additional descriptive data is gathered, results could be systematically compared to research to provide an accurate picture of what is known intellectually versus what is seen clinically. If this process of obtaining descriptive information is repeated over time, potential trends in practice can be discussed.
A second recommendation for future research is conduct a descriptive study on a specific population or setting within the greater population of neurologic disorders. Looking at clinical practice with a more narrow scope, such as music therapy with Alzheimer’s disease, or music therapy within a neurologic rehabilitation facility, could help provide a clearer picture of where aspects of practice are differentiated. A potential challenge would be finding a large enough sample when the potential participants are reduced. Due to the high number of music therapists indicating working with Alzheimer’s disease and stroke in this study, these populations may be good selections for a future descriptive study of clinical practice.

A third recommendation for future research is to increase the evidence based for music therapy interventions in communication rehabilitation. Five of the seven most selected NMT techniques were focused on communication rehabilitation. In the literature review, not many specific studies were found testing the efficacy of these techniques. Because of their common use in clinical practice, more research should be done regarding the use of specific NMT communication rehabilitation techniques in music therapy practice with adults with neurologic disorders.

Lastly, there are also implications for additional research regarding theoretical orientations and approaches. In this study, the most common approach used with neurologic disorders was Neurologic Music Therapy, closely followed by an eclectic approach. Though respondents were encouraged to describe an eclectic approach, a content analysis was not performed on the descriptions. Eclectic was also the most common response for theoretical orientation. There seems to be a commonality that many
music therapists align themselves with multiple approaches and philosophies depending on the client and the situation. The definition of eclectic and how that affects clinical music therapy practice could be explored further in a qualitative study.

**Limitations of the Study**

It is important to understand that though the data provides opportunities for discussion and directions for future research, there are limitations within the study. The first limitation to discuss is sample size. Because many music therapists do not immediately renew their AMTA memberships at the start of the new year, there was a large decrease in the potential participants from 396 qualifying AMTA members at the time of the initial research proposal in September 2014, to 162 qualifying members in January 2015, 10 of which were later determined to be ineligible. With 152 emails invitations sent, only 39 music therapists participated in the study, resulting in a 26% usable response rate. This is a lower response rate than previous music therapy online descriptive studies (Silverman, 2005; Silverman, 2007; Tabinowski, 2013). Due to the descriptive design, results cannot be generalized beyond the sample.

In the future in order to increase potential respondents, the researcher recommends that descriptive studies using AMTA membership as a sample should take place at the end of a calendar year when membership is the highest. Additionally, other methods for sample selection should be considered to reach the largest number of potential participants. Past studies have used methods in addition to AMTA membership lists such as distributing through social media (Kern et al., 2013) and distributing to music therapists found through web searches and word of mouth (Tabinowski, 2013).
Though these methods were shown to increase sample size and number of responses, they present additional problems such as not being able to determine the response rate and removing control over who has received and taken the questionnaire through individualized email invitations.

**Questionnaire design.** The nature of the instrument design also limits the potential data collected. The questionnaire included many questions where the participant could select multiple responses. This type of question is useful to show distribution across the sample as well as accurately represent music therapists who work in multiple settings and situations, but the type of potential analyses is limited due to not being able to separate responses.

**Conclusion**

Due to the complex nature of neurologic disorders, music therapy clinical practice in this area is full of variation. The results of this study demonstrate there are a large number of music therapists working with adults with neurologic disorders in settings primarily with older adults. The study also showed common focuses on psychosocial and communication goals within treatment. Whether this is due to the settings of employment of music therapists specifically involved in this study or representative of music therapy with the population in general is unable to be determined. More research is needed before any specific relationships can be defined.
References


http://www.hopkinsmedicine.org/healthlibrary/conditions/physical_medicine_and_rehabilitation/neurological_rehabilitation_85,P01163/


University of California Los Angeles. (2014). *Neurological Rehabilitation*. Retrieved from
http://www.uclahealth.org/body.cfm?id=453&action=detail&limit_department=16&limit_division=1053&limit_program=5184&CFID=109821890&CFTOKEN=56930325


Appendix A: Instrument

Qualifying Questions

CONSENT
By filling out this questionnaire, you are consenting to participate in the study. You do not need to answer all questions.

QUALIFYING QUESTIONS
The following questions will determine if you are qualified for the study. If you are not qualified, you will be directed to the end of the survey and your responses will not be recorded.

Do you currently hold a music therapy credential or designation? (MT-BC, CMT, ACMT, RMT)

☐ Yes
☐ No

Are you currently working as a music therapist with at least one adult who has been diagnosed with a neurologic disorder?

(Neurologic disorders are disorders of the nervous system such as Stroke, Traumatic Brain Injury, Multiple Sclerosis, Parkinson’s disease, etc.)

☐ Yes
☐ No

Demographic Information

Based on your responses, you have qualified for the study. The following set of questions ask about demographic information as well as music therapy experience.

What is your gender?
Male
Female
Other

What is your age range?
- 20-29
- 30-39
- 40-49
- 50-59
- 60 and older

Select the highest level of education you have completed
- Bachelor's Degree
- Master's Degree
- Doctoral Degree

Select any additional trainings or current certifications you hold. (Select all that apply)
- Bonny Method of Guided Imagery in Music (Level I or Level II)
- Fellow in the Association of Music and Imagery (FAMI)
- Neurologic Music Therapist (NMT)
- Neurologic Music Therapy Fellow (NMT-F)
- Neonatal Intensive Care Unit - Music Therapist (NICU-MT)
- Nordoff Robbins Music Therapy
- Speech Language Pathologist
- Occupational Therapist
- Physical Therapist
- Social Worker
- Counselor
- Other
- None
How many years have you worked as a music therapist?

- Less than 1
- 1-5
- 6-10
- 11-20
- 21-30
- More than 30

How many years have you worked as a music therapist with adults with neurologic disorders?

- Less than 1
- 1-5
- 6-10
- 11-20
- 21-30
- More than 30

What best describes your theoretical orientation?

- Humanistic
- Psychodynamic
- Behavioral
- Cognitive
- Cognitive-Behavioral
- Holistic
- Biomedical
- Eclectic (a combination of multiple philosophies), please describe
  
- Other

Select the American Music Therapy Association (AMTA) region in which you work

- Great Lakes (IL, IN, MI, MN, OH, WI)
Music Therapy Practice

MUSIC THERAPY PRACTICE FOR ADULTS WITH NEUROLOGIC DISORDERS

Please answer the following set of questions in regards to your music therapy treatment practices for adults with neurologic disorders.

In what setting(s) do you currently work with adults with neurologic disorders? (If you work in multiple settings, select all that apply)

- General inpatient hospital (specify units)
- Specialty hospital (specify type of hospital)
- Outpatient medical center (specify type of facility)
- Therapeutic day program
- Skilled Nursing Facility
- Assisted living
- Hospice
- Private music therapy clinic
- Private non-music therapy clinic
- In clients’ homes
- Other

What type of music therapy services do you provide for adults with neurologic disorders?

- Individual music therapy ONLY
- Group music therapy ONLY
Group AND Individual music therapy
- Other

What is the primary age range of your adult clients with neurologic disorders?
- Young adult (18-29)
- Adult (30-49)
- Mature adult (50-64)
- Older adult (65 and older)
- Other

What are the neurologic disorder diagnoses of adult clients you are CURRENTLY working with as a music therapist? (Select all that apply)
- Stroke
- Multiple Sclerosis
- Traumatic Brain Injury
- Parkinson's disease and/or other movement disorders
- Amyotrophic lateral sclerosis (ALS)
- Huntington's disease
- Alzheimer's disease/dementia
- Low awareness states (coma, persistent vegetative state, etc.)
- Muscular Dystrophy
- Spina Bifida
- Spinal Chord Injury
- Brain Tumor
- Seizure Disorder/Epilepsy
- Cerebral Palsy
- Autism Spectrum Disorder
- Sleep disorders
- Other

Do you work as part of an interdisciplinary team?
An interdisciplinary team is a group of professionals from different backgrounds (doctor, nurse, social worker, therapists, etc.) working together on common goals for a patient.

- Yes
- No

With whom do you collaborate in your music therapy work? (Select all that apply)

- Physicians (MD, DO)
- Nurses
- Social Workers
- Spiritual Care
- Physical Therapists
- Occupational Therapists
- Speech Language Pathologists
- Administrators
- Psychiatrists
- Psychologists
- Recreational Therapists
- Art Therapists
- Other Music Therapists
- Other

- I do not collaborate with other professionals

From whom do you receive music therapy referrals? (Select all that apply)

- Physicians (MD, DO)
- Nurses
- Social Workers
- Spiritual Care
- Physical Therapists
- Occupational Therapists
- Speech Language Pathologists
- Administrators
- Psychiatrist
- Psychologist
Recreational therapists
- Art Therapist
- Other Music Therapist
- Patient
- Patient's family
- Other
- I do not receive referrals

What are the primary reasons you receive music therapy referrals for adults with neurologic disorders? (Select all that apply)
- Support for physical goal
- Support for communication goal
- Support for cognitive goal
- Decrease negative behaviors
- Provide sensory stimulation
- Difficulty breathing
- To help in differential diagnosis
- To promote arousal from low awareness state
- Pain management
- Motivation
- Socialization
- Distraction
- Decrease anxiety
- Stress reduction
- Emotional support
- Spiritual support
- Quality of life
- Client enjoys music
- Other
- I do not know

What goal area(s) do you work on most often in music therapy sessions with adults with neurologic disorders? (Select all that apply)
- Physical
When working with individuals with neurologic disorders, what is the primary music therapy approach you apply?

- The Bonny Method of Guided Imagery and Music (GIM)
- Nordoff Robbins Music Therapy
- Neurologic Music Therapy (NMT)
- Behavioral Approach to Music Therapy
- Cognitive Behavioral Music Therapy
- Psychodynamic Approach to Music Therapy
- Orff-Schulwerk
- Dalcroze Eurythmics
- Kodaly Approach to Music Education
- Meta-Model of Music Therapy in Neuro-disability (MIND)
- Eclectic Approach (please describe)
- Other

Select the music therapy techniques you use most often in sessions with adults with neurologic disorders. (Select all that apply)

Note that there are Neurologic Music Therapy and non-Neurologic Music Therapy techniques listed that may be similar in nature. Please select whatever responses you feel most appropriately represent your practice.

- Singing familiar music
- Vocal exercises
- Music assisted speech exercises
- Instrument play
- Music improvisation (instrumental or vocal)
- Music assisted movement
- Music assisted relaxation
- Songwriting
- Listening to recorded music
- Listening to live music
- Lyric analysis (sometimes referred to as song analysis)
- Music with counseling techniques
- Musical role playing
- Reminiscence through music
- Rhythmic Auditory Stimulation (RAS)
- Therapeutic Instrumental Music Performance (TIMP)
- Patterned Sensory Enhancement (PSE)
- Melodic Intonation Therapy (MIT)
- Musical Speech Stimulation (MUSTIM)
- Therapeutic Singing (TS)
- Oral Motor and Respiratory Exercises (OMREX)
- Symbolic Communication Training Through Music (SYCOM)
- Rhythmic Speech Cueing (RSC)
- Vocal Intonation Therapy (VIT)
- Musical Sensory Orientation Training (MSOT)
- Musical Neglect Training (MNT)
- Auditory Perception Training (APT)
- Musical Attention Control Training (MACT)
- Musical Mnemonics Training (MMT)
- Associative Mood and Memory Training (AMMT)
- Musical Executive Function Training (MEFT)
- Music Therapy and Counseling (MPC)
- Other
Appendix B: AMTA Label Request Form

AMTA Mailing Label/List Request Form

Please fill out all sections of this form completely and mail, email or fax to AMTA at 301-589-3300.

1. Bill to: (for regions, your regional treasurer)

   Julie Alton
   7037 Campbell Creek Ln.
   Charlotte, NC 28212

2. Purpose of Mailing: To distribute online questionnaire for Master's thesis research
   (Please include a sample/copy of what you will be mailing. All requests are subject to approval by AMTA.)

3. Format: (please check one)
   [ ] Mailing (postal) addresses in electronic file
   [x] Email addresses in electronic file - for AMTA official business, research purposes, & special conference offers only

4. Labels Requested:

   REGION/AREA:
   [ ] Entire US (no international)
   [x] Entire US & International
   [ ] Following States Only:
   [ ] Other:

   CURRENT MEMBER TYPE:
   [x] All Current AMTA Members
   [ ] Current Professional Members
   [ ] Current Grad & Student Members
   [ ] Prof. members w/MT designation/credential only
   [ ] Other

   Other Current Member Types:
   [ ] Associate
   [ ] Retired
   [ ] Student
   [ ] Honorary Life & Life
   [ ] Patron
   [ ] Graduate Student
   [ ] Educational Affiliate
   [ ] Affiliate
   [ ] All Affiliate
   [ ] Other

   For regional business only:
   [ ] Non-members who were members last year
   [ ] Non-member music therapists

   OTHER:
   [ ] AMTA Executive Director (1)
   [ ] AMTA President (1)
   [ ] Regional Newsletter Editors (10)
   [ ] Other search criteria (setting/population/etc., please specify): Neurologically impaired, Stroke, Head injured, and Parkinson's

5. Sorted by: (if nothing is checked default will be Last name, First name)
   [x] Last name, First name
   [ ] Zip Code, Last, First
   [ ] City, State
   [ ] Other:

6. Date needed: 01 (month) / 28 (day) / 15 (year) Must provide at least 5 working days for processing.

7. Signature:

   I have reviewed the AMTA label policy. I agree to use these labels once only and to pay for labels I am requesting with this form.

   Signature: [Signature]
   Print name: Julie Ruth Alton
   Phone #: 614-216-3788
   Date: 3/18/15

2/8/14
Appendix C: AMTA Letter of Approval

January 7, 2015

To Whom it May Concern:

Please be advised that the music therapy descriptive study proposed by Julie Alton has been reviewed and approved by the American Music Therapy Association (AMTA). Pending IRB approval, Ms. Alton will be allowed to use AMTA mailing labels for her research.

Should you have any questions, please contact me.

Sincerely,

Dr. Andrea Farbman
Executive Director
Appendix D: IRB Approval

**Ohio University**
Office of the Vice President for Research

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**15E002**

A determination has been made that the following research study is exempt from IRB review because it involves:

**Category:** Research involving the use of educational tests, survey procedures, interview procedures or observation of public behavior.

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**Project Title:** The Current State of Music Therapy Clinical Practice with Adults with Neurologic Disorders: A Descriptive Questionnaire

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**Primary Investigator:** Julie Ruth Alton

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**Co-Investigator(s):**

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**Advisor:** Kamile Geist

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**Department:** Music Therapy

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Robin Stack, CIP, Human Subjects Research Coordinator
Office of Research Compliance

Jan. 7, 2015

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The approval remains in effect provided the study is conducted exactly as described in your application for review. Any additions or modifications to the project must be approved (as an amendment) prior to implementation.
Appendix E: IRB Amendment Approval

The amendment, detailed below, and submitted for the following research study has been reviewed and approved by a designate of the Institutional Review Board at Ohio University.

**Project:** The Current State of Music Therapy Clinical Practice with Adults with Neurologic Disorders: A Descriptive Questionnaire

**Amendment:** Minor wording changes to survey questions.

**Primary Investigator:** Julie Ruth Alton

**Co-Investigator(s):**

**Advisor:** Kamile Geist

**Department:** Music Therapy

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Robin Stack, CIP, Human Subjects Research Coordinator
Office of Research Compliance

Jan. 26, 2015
Appendix F: Letter of Consent

Title of Research: The Current State of Music Therapy Clinical Practice with Adults with Neurologic Disorders: A Descriptive Questionnaire

Researcher: Julie Alton, MT-BC, Master’s student in Music Therapy, Ohio University

You are being asked to participate in research. Your name is being used with the permission of the American Music Therapy Association following their review of the study. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you are allowed to participate in the study. Because the study is online, consent will be assumed if you choose to participate.

Explanation of Study
In the current body of music therapy clinical research with adults with neurologic disorders, there are many different techniques, goals, and approaches that have been examined, yet there is currently no study describing current clinical practice. The researcher has designed a 21-item questionnaire that asks questions on demographic information, as well as characteristics of setting, reasons for referral, music therapy approach, treatment goals, and techniques used within music therapy practice. A questionnaire describing current clinical practice will help inform clinicians as well as researchers of the characteristics of practice with this population.

In order to qualify for the study you must currently be a board certified music therapist, and currently providing music therapy treatment for at least one adult with a neurologic disorder in any setting.

If you agree to participate, you will be asked to complete the 21 item online questionnaire. The questionnaire is expected to take approximately 10 minutes to complete and can be found by following the link below.

Risks and Discomforts
No risks or discomforts are anticipated by participating in the study.

Benefits
Though you may not benefit personally from this study, it is important to science/society because it will provide information for researchers and clinicians, as well as develop baseline information on current practice important for discussing trends over time.
Confidentiality and Records
Your study information will be kept confidential through the survey software, Qualtrics. The researcher will have access to which email addresses invited have and have not completed the survey, but results will be kept confidential. The researcher will make no effort to match email addresses to people, and therefore will not know who has participated.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

- Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;
- Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU;

Contact Information
If you have any questions regarding this study, please contact the researcher, Julie Alton, 614-216-3788, ja354407@ohio.edu, or research advisor, Kamile Geist, geistk@ohio.edu, 740-593-4249.

If you have any questions regarding your rights as a research participant, please contact Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740) 593-0664 or hayhow@ohio.edu.

To access the online questionnaire, please select the following link, or copy and paste the web address in your browser.

***INSERT LINK TO SURVEY ON QUALTRICS***

By completing the online questionnaire, you are agreeing that:

- you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered
- you have been informed of potential risks and they have been explained to your satisfaction.
- you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study
- you are 18 years of age or older
- your participation in this research is completely voluntary
- you may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

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