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# The Effectiveness of Music Therapy Through Telehealth in Addressing Quality of Life and Mood in Those With Alzheimer's Disease

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THE EFFECTIVENESS OF MUSIC THERAPY THROUGH TELEHEALTH  
IN ADDRESSING QUALITY OF LIFE AND MOOD IN THOSE  
WITH ALZHEIMER'S DISEASE

TAYLOR STENGREN

77 Pages

**Background:** With the current COVID-19 pandemic, nursing homes/assisted living facilities have had to lock down their residents from the outside world. With the introduction of telehealth, music therapists are looking at how music therapy can still be offered to elderly populations to keep them safe during this stressful time. **Purpose:** The purpose of this research is to explore if music therapy through telehealth can be an effective tool in providing sessions to those diagnosed with Alzheimer's disease in nursing homes/assisted living facilities to address goals related to quality of life and overall mood. **Method:** This study consisted of three individuals, between the ages of 90 and 96 years old, diagnosed with early to middle stage Alzheimer's disease. Participants took part in three 20-minute individual telehealth music therapy sessions over the span of one week. **Results:** No statistical significance was found with mood ratings ( $p=0.23$ ;  $SD=2.32$ ), but an increase in scores was found when pre- and post-test scores were compared with each client. Two clients stated they would participate in telehealth sessions again ( $n=2$ , 66.7%) and one client said maybe ( $n=1$ ; 33.3%). **Conclusion:** While more research is needed to come to a significant conclusion, from the research that was conducted, the researcher observed strengths and areas of improvement for music therapy facilitated through telehealth with those diagnosed with Alzheimer's disease.

**KEYWORDS:** Music Therapy, telehealth, COVID-19, Alzheimer's disease, quality of life, mood

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TAYLOR STENGREN

A Thesis Submitted in Partial  
Fulfillment of the Requirements  
for the Degree of

MASTER OF MUSIC

School of Music

ILLINOIS STATE UNIVERSITY

2022

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T. S.

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## CHAPTER I: INTRODUCTION

According to BrightFocus Foundation (2019), every 65 seconds someone in America is being diagnosed or developing some form of Alzheimer's disease. Currently, it is estimated that more than 5.5 million Americans are affected by an Alzheimer's diagnosis (National Institute of Aging, 2019). With these continuously growing rates, it is believed that by 2050, somewhere close to 14 million individuals over the age of 65, in America, will be living with the everyday struggles that are presented with the diagnosis of Alzheimer's disease (BrightFocus Foundation, 2019; Alzheimer's Disease Education and Referral Center, 2008). With this constantly growing disease, it bears importance to continuously update and expand on the knowledge of treatment strategies to implement with this specific population.

Alzheimer's disease is defined as "a brain disorder that slowly destroys memory and thinking skills, and, eventually, the ability to carry out the simplest tasks" (National Institute of Aging, 2019, par. 1). Alzheimer's disease affects individuals of the elderly population, showing symptoms at around the age of 60 years old (CDC, 2019). Alzheimer's disease is the most common form of dementia, which is a "loss of cognitive functioning—thinking, remembering, and reasoning—and behavioral abilities to such an extent that it interferes with a person's daily life and activities" (National Institute of Aging, 2019, par. 3). We commonly see that in individuals diagnosed with Alzheimer's disease, symptoms that are the most prominent can include memory loss, depression, disruptive behaviors (e.g. hitting, yelling, agitation, etc.), distress, confusion, and lack of socialization (CDC, 2019; Kydd, 2001; Ridder, Stige, Qvale, & Gold, 2013; Ashida, 2000; Orgeta, Tabet, Milforooshan, & Howard, 2017). For many of these individuals, these symptoms tend to drastically fluctuate when combined with residencies in nursing homes or assisted living facilities. As of 2019, 1.4 to 1.5 million people in America are

living in nursing homes (Howley, 2019). Of those millions of people living in nursing homes and assisted living facilities, close to 42% of residents have been diagnosed with Alzheimer's disease and 48% have been diagnosed with dementia (Alzheimer's Association, n.d.c).

With the current state of the nation, these statistics should take more precedence than what they were before. As the Coronavirus (COVID-19) continues to spread across the world, those diagnosed with Alzheimer's disease who reside in assisted living facilities or nursing homes have taken the hardest hit with regard to the aggressiveness of symptoms and the drastic increase that has been seen. About 20% to 40% of COVID-19 cases in the United States have been people older than 65 years old, which is the general age of onset of Alzheimer's disease (Mok, Pendlebury, Wong, Alladi, Au, Bath, Jan Biessels, Cordonnier, Dichgan, Dominguez, Gorelick, Kim, Kwok, Greenberg, Jia, Kalaria, Kivipelto, Naegandran, Lam, Yin Ka Lam, Lee, Markus, O'Brien, Pai, Pantoni, Sachdev, Skoog, Smith, Srikanth, Suh, Wardlaw, Ko, Black, & Scheltens, 2020). Since the beginning of the spread of COVID-19, more than 62,000 residents and workers from assisted living facilities and nursing homes across the United States have died from COVID-19 (Alzheimer's Association, n.d.c). This spike in deaths due to COVID-19 has led nursing homes and assisted living facilities to close their doors to the outside world. This means that most of these facilities are cutting residents off from visitors, such as friends and family members, elimination of daily programs, and complete isolation from other residents in the facilities (Mok et al., 2020; Rochester Regional Health, 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020). The Center for Disease Control and Prevention (CDC) and facilities have had to make these difficult decisions due to the fact that those diagnosed with Alzheimer's disease and dementia have shown to have higher risks of infection due to pre-existing health conditions (Preidt, 2020; Mok et al., 2020). Because of a lack

of communication and isolation for clients that has been occurring in nursing homes and assisted living facilities, researchers have found drastic spikes in depression and anxiety, and problems with regard to socialization that have led to an increase in loneliness (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020; University of Michigan, 2020; Lowe, 2020; Gold, Rosowsky, Piryatinsky, & Sinclair, 2020). A survey was taken that asked residents diagnosed with Alzheimer's disease living in nursing homes and assisted living facilities to describe how they were currently feeling, and the majority used words such as "depressed" and "anxious" to describe their current state since the COVID-19 closures (Lowe, 2020). COVID-19 and these closures occurring in nursing homes and assisted living facilities are having a negative impact on those diagnosed with Alzheimer's disease, with regard to quality of life and socialization, and it's important to find out how we can address these areas of need safely to decrease the spread of this virus.

The importance of this research is to identify if there are other ways to address areas of need, such as decreasing depression in order to increase quality of life and to increase mood, but in a safe way to keep these individuals diagnosed with Alzheimer's disease safe. Most commonly, different forms of medication are used to reduce the severity of the symptoms commonly found in Alzheimer's disease. Alzheimer's patients are commonly given multiple doses of medications in order to maintain mental functioning and reduce behavioral problems (National Institute of Aging, 2019; Orgeta, Tabet, Milforooshan, & Howard, 2017). Medication is also commonly used to reduce depressive related symptoms commonly found in those with Alzheimer's disease in order to increase their quality of life (Orgeta, Tabet, Milforooshan, & Howard, 2017). Where problems can occur is that negative side effect may occur with the use of these medications, and quality of life can begin to diminish. Symptoms not commonly seen can

begin to surface, as well as medication can even have the opposite effect on individuals and make symptoms worsen. While medication can be useful in small doses, research has also found that non-pharmacological approaches can offer just as promising methods of improving the overall quality of life in these individuals with Alzheimer's disease (Clément, Tonini, Khatir, Schiaratura, & Samson, 2012). Music therapy is just one of these examples of non-pharmacological approaches that can be used to decrease these negative symptoms and increase quality of life with those diagnosed with Alzheimer's disease. Music therapy has been used for years to work on goals, such as the ones stated previously, but most of the research provided to the field is through in-person sessions. Due to the closures in nursing homes and assisted living facilities, in-person music therapy sessions have been one of the many programs provided to these residents that have been cut. Because of these cuts, this could be a factor for those spikes in depression and loneliness that have been reported.

With the current trend in telehealth and tele-med sessions, the researcher wanted to explore if music therapy through telehealth can still provide these same benefits in addressing goals for this population in order to abide with the CDC guidelines and to keep this population safe. With technology constantly changing and advancing, and the incorporation of the COVID-19 spreading throughout the world, telehealth has begun to become more useful not only with music therapy, but with other clinical and medical formats. According to the Mayo Clinic (2020), telehealth is defined as “the use of digital information and communication technologies, such as computers and mobile devices, to assess health care services remotely and to manage your health care” (par. 3). Through telehealth services, clients are still able to receive the same service that they normally would get with in-person appointments or sessions, but in a safer way for both the individual, themselves, as well as the physician or the therapist. One of the most

important factors that has come out of telehealth is that those who may not have had the opportunity originally to go to in-person sessions or appointments, may now be given the opportunity to do so (ATA, n.d.; Godwin, Mills, Anderson, & Kunik, 2013). Telehealth is giving those in rural communities, vulnerable populations, or those who financially cannot afford in-person sessions the opportunity to experience sessions (ATA, n.d.). Research has shown that because telehealth sessions are much more affordable and cost effective, many more people are taking advantage of partaking in telehealth sessions than ever before (ATA, n.d.; Godwin, Mills, Anderson, & Kunik, 2013). With the use of telehealth continuously growing and the circumstances the world is in, a numerous number of benefits are being provided to patients and clients in a safer way than they would if having to meet in person.

While telehealth in music therapy has been used in the past, current research related to the combination of the two is limited. Research has begun to appear recently due to COVID, but not with populations that are being viewed as more vulnerable during these times, specifically elderly clients in nursing homes and assisted living facilities. Most research that looks at music therapy being facilitated through telehealth are focused on generally revolved around veterans with post-traumatic stress disorder (PTSD), adolescents, and in mental health settings (Baker & Krout, 2009; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). While research with these populations is still valid and important, with the current findings that have been presented in the decrease in quality of life with elderly individuals in nursing homes and assisted living facilities it is beneficial to understand if telehealth can be as effective as in-person sessions in order to increase their quality of life and keep them safe at the same time. Normally when facilitating in-person sessions, musical techniques that are commonly used to address goals and objectives

related to quality of life, decreasing depressive related symptoms, and increasing socialization can include group and individual singing, reminiscence-based application, music and relaxation applications, and instrument playing (Clair & Memmott, 2008). Most of these techniques are ones that require little to no assistance and can be facilitated through online telehealth platforms. While there has been limited research in these music therapy technique categories with those diagnosed with Alzheimer's disease, some researchers have looked at these techniques through a telehealth format with other populations and have found them just as successful as if they were facilitated through in-person sessions (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019). While there are challenges that occur throughout any telehealth platform, especially with regard to sound delays and feedback from computer microphones, research from other populations has shown that while telehealth can lack that close connection and relationship between the client and therapist, music can still be made together through an electronic device and show positive outcomes for clients who need an increase in quality of life due to the current circumstance COVID-19 has created for them (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Glover, 2020).

The purpose of this research is to explore if music therapy through telehealth can be an effective tool in providing sessions to those diagnosed with Alzheimer's disease in nursing homes and assisted living facilities in order to address goals related to increasing quality of life and increasing overall mood. Because most outside sources and programs that are usually provided to those in these nursing homes and assisted living facilities are not currently available, the question of how music therapy could still be provided to these clients needed to be answered.

With COVID-19 continuing to grow and not show any signs of ending in the near future, many of these clients in these nursing homes are not getting the normal interactions and daily activities that they were having before the pandemic shut everything down and required residents to isolate themselves from the world. This research will provide information related to the effectiveness of music therapy provided through telehealth with this older population, as well as what goals, objectives, and musical techniques can be addressed. From this research, we hope to answer the questions of a) can music therapy be effectively facilitated via telehealth with those diagnosed with Alzheimer's disease, b) through telehealth music therapy, can outcomes related to increasing quality of life and overall mood be achieved, c) what music therapy techniques can be adapted and used through telehealth, and d) for those who may have had the opportunity to participate in in-person music therapy sessions in the past, will there be a preference of in-person or telehealth music therapy sessions?

## CHAPTER II: LITERATURE REVIEW

As stated previously, Alzheimer's disease is defined as "an irreversible, progressive brain disorder that slowly destroys memory and thinking skills, and, eventually, the ability to carry out the simplest tasks" (National Institute of Aging, 2019). Alzheimer's disease is a form of dementia that accounts for 60 to 80 percent of dementia cases (Alzheimer's Association, n.d.c). This disease affects people as they get older, with the only other known cause of it being related to genetics, or family history (Alzheimer's Association, n.d.c). Symptoms related to Alzheimer's disease can include, changes in mood, personality, or behavior, depression, memory loss, and decreased or poor judgment to name a few (CDC, 2019). These symptoms can begin to show up as early as 60 years of age and progressively get worse as time goes on. Memory loss can be the first sign of Alzheimer's disease. This is due to the fact that the disease starts with damage appearing in the hippocampus and the entorhinal cortex which control memory and organization of information (National Institute of Aging, 2019). The disease starts at the epicenter of where our memory is controlled and begins to migrate throughout the rest of the brain killing off other epicenters that control factors such as sensory identification, behavioral control, and much more. This disease affects the brain by slowly killing brain cells that transfer information from one nerve to the next. This damage is brought on by two structures called plaques and tangles (CDC, 2019; National Institute of Aging, 2019). Plaque is described as "deposits of a protein fragment called beta-amyloid that builds up in the spaces between nerve cells" and tangles are "twisted fibers of another protein called tau that builds up inside the cells" (Alzheimer's Association, n.d.c). While researchers have not yet identified what role these two structures play in Alzheimer's disease, they believe that they play a critical role in blocking the communication among the nerve cells resulting in the slow shutdown of the brain causing widespread damage



(Alzheimer's Association, n.d.c). Because the brain slowly diminishes as nerves begin to die one at a time, this is why symptoms continue to worsen, causing memory failure, personality changes, behavioral problems, and problems carrying out daily activities which in the end affects these individuals' overall quality of life.

Alzheimer's disease is made up of three major stages of development of the disease. These include the early/mild stage, the moderate stage, and the severe stage (Bondi, Edmonds, & Salmon, 2017; National Institute of Aging, 2019). In the early/mild stage, this is where memory loss and other cognitive difficulties begin to show up. People are often diagnosed during this stage due to symptoms such as wandering and getting lost, repeating questions, and taking longer to complete daily tasks that begin to become more prevalent (Bondi, Edmonds, & Salmon, 2017; National Institute of Aging, 2019). In the moderate stage of Alzheimer's disease further damage to the brain begins that occurs in the areas that control language, reasoning, sensory processing, and conscious thought (National Institute of Aging, 2019). During this stage, those diagnosed with Alzheimer's disease also have difficulty coping with new situations (Bondi, Edmonds, & Salmon, 2017; National Institute of Aging, 2019). With this information, it exacerbates the importance of this research. This is something that many of these residents currently living in nursing homes and assisted living facilities may have never dealt with, or at least dealt with while diagnosed with this disease. Coping with this current pandemic while also combining factors and symptoms associated with this disease can make things worse and research has shown that with the increases in depression and loneliness being reported in these nursing homes and assisted living facilities (Mok et al., 2020; Rochester Regional Health, 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020). During the severe stage of Alzheimer's disease, the plaques and tangles previously mentioned begin spreading

throughout the entirety of the brain causing the brain tissue to drastically shrink (National Institute of Aging, 2019). At this point of the disease, individuals can no longer communicate and are fully dependent upon other individuals and caretakers. Because of this, many individuals diagnosed with this disease become bed ridden as their bodies begin to shut down (National Institute of Aging, 2019). Overtime, the severity of these symptoms worsen due to the fact that the deterioration of the nerve cells begin to spread through the brain, attacking major areas in charge of controlling emotions, behaviors, and other factors that affect dialing living (Bondi, Edmonds, & Salmon, 2017; McCann, Gilly, Bienias, Beckett, & Evans, 2004). If we continue to isolate these individuals and not give them time to socialize and have some form of normalcy back into their daily lives, these symptoms may begin to deteriorate quicker causing a drastic decrease in their overall quality of life.

### **Quality of Life and Alzheimer's Disease**

Depression is a symptom that we commonly see among individuals diagnosed with Alzheimer's disease. Usually, depression or depressive related symptoms show up during the early and middle stages of this disease (Alzheimer's Association, n.d.a). Symptoms commonly found in those diagnosed with Alzheimer's disease and are experiencing depression can include apathy, loss of interest in activities and hobbies, social withdrawal, isolation, trouble concentrating, and impaired thinking (Alzheimer's Association, n.d.a). One major factor that makes it difficult when diagnosing depression in individuals with this disease is that many of the symptoms associated with depression also coincide with symptoms associated with dementia. Diagnosing depression in those with Alzheimer's disease can also be difficult because depression in Alzheimer's disease looks a lot different than in those without the disease. A majority of the times, depression can be less severe, symptoms can come and go, and individuals are less likely

to attempt suicide in those with Alzheimer's disease (Alzheimer's Association, n.d.a). While it can be difficult to diagnose depression in those with Alzheimer's disease, researchers estimate that close to 40% of individuals with Alzheimer's disease also suffer from significant depression (Alzheimer's Association, n.d.a). Most commonly, depression in those with Alzheimer's disease is treated with the use of medicine. Several types of antidepressant can be used, but the most popular antidepressant used is Selective Serotonin Reuptake Inhibitors (SSRIs) (Alzheimer's Association, n.d.a). While these antidepressants have a lower risk factor regarding negative side effects, medication can affect everyone differently in both negative and positive ways. The Alzheimer's Association (n.d.a) website lists numerous other non-drug approaches that incorporate counseling and gradually reconnecting individuals with Alzheimer's disease to activities and socializing with people who bring them happiness in order to decrease those levels of depression. Many residents with this diagnosis are showing signs of depression because of new surroundings that they are not accustomed to and less interactions with their family members and friends (Rochester Regional Health, 2020). When combined with the isolation that is occurring with the current COVID-19 pandemic, there is no surprise as to why spikes in depression and depressive related symptoms are occurring at a higher rate in these nursing homes and assisted living facilities (Mok et al., 2020; Rochester Regional Health, 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020).

According to the Alzheimer's Association website, "social engagement is associated with reduced rates of disability and mortality and may also reduce risk for depression" (Alzheimer's Association, n.d.b). Research has shown that staying socially active at an older age can support overall brain health and possibly delay or reduce the onset of dementia (Alzheimer's Association, n.d.b). Similar findings have also shown that those in an early stage of Alzheimer's

disease are able to slow down the deterioration of memory loss more when having a good social network and having constant socialization with others around them (Anthem Memory Care, 2016). There are many benefits that come to socialization and Alzheimer's disease. Some of these can include gaining a greater sense of belonging, improving brain health, strengthening the connection to time and place, and enhancing and maintaining focus (Anthem Memory Care, 2016). Socialization is looked at as a necessity for quality of life, similar to the importance of a healthy diet and exercise. In a study conducted by Ali, Khalil, Elariny, and Abu-Elfotuh (2017), they looked at how social isolation affected the development of Alzheimer's disease in rats. They found that brain neurological damage was more severe in those where isolated compared to those who were not (Ali et al., 2017). From this, we can make the connection that by increasing social isolation in those diagnosed with Alzheimer's disease, symptoms can become more severe and the degeneration and damage to the brain that occurs from this disease can be increased.

When socialization is ignored and residents in nursing homes and assisted living facilities are put into isolation, depression and loneliness can spike and quality of life diminishes. Specifically looking at loneliness, there are three dimensions that can form when put into social isolation, similar to what is currently happening with the COVID-19 pandemic at nursing homes and assisted living facilities. The three dimensions include personal loneliness, absence of a sympathy group, and lack of an active network (Simard & Volicer, 2020). Personal loneliness related to the loss or absence of a partner who provides emotional support and provides affirmation towards that individual (Simard & Volicer, 2020). Many individuals diagnosed with Alzheimer's disease struggle with this form of loneliness due to the fact that a significant other has already passed away or because they are living in a nursing home or assisted living facility without that partner. The second dimension, the absence of a sympathy group, relates to groups

of 15 to 50 people, similar to groups who spend time together in program groups (e.g. bingo or card groups) regularly (Simard & Volicer, 2020). Many individuals living in nursing homes or assisted living facilities take part in numerous programs that are put on by the facilities and through those programs they begin to form groups based off of those programs and the activities involved in them. The third and last dimension, the lack of an active network group, relates to a group of 150 to 1500 people who provide support by just being together as a congregation (Simard & Volicer, 2020). With the current shutdown brought about by COVID-19, the first two dimensions of loneliness are being affected in a more drastic way. Visitor restrictions are being put in places, meaning that many residents are not being given the opportunity to see family members or significant others, and facility isolations are occurring causing programs to be canceled and restricting residents from having contacts with others living at these nursing homes (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020). Through these forms of isolation and loneliness as a result, this is then leading to depression and depressive related symptoms to become prevalent and quality of life in these individuals to decrease.

### **COVID-19 and Alzheimer's Disease**

COVID-19 has made a drastic impact on the world, specifically with regard to those currently residing in nursing homes and assisted living facilities. According to the Center of Disease Control and Prevention (CDC) (2020b), the Coronavirus (COVID-19) is a respiratory illness that can be spread from one person to another through close contact. Symptoms that are commonly seen in those diagnosed with COVID-19 can include fever, chills, shortness of breath or difficulty breathing, fatigue, headache, new loss of taste or smell, sore throat, and many others that can range in severity from mild to extremely severe (CDC, 2020b). As of the beginning of

October 2020, according to the CDC (2020a), there have been over 200,000 deaths in the United States due to COVID-19. Of these 200,000 plus deaths that have occurred in the United States, more than 62,000 nursing home and assisted living facility residents and workers have died from COVID-19. Higher rates in COVID related deaths with the elderly population have occurred because research has shown that older adults and people diagnosed with severe underlying medical conditions are at a higher risk of developing a much more severe case of COVID-19 resulting in death (CDC, 2020b). Those diagnosed with Alzheimer's disease can have a greater risk of contracting this virus due to the factor of cognitive impairments (Rochester Regional Health, 2020). Because of cognitive impairments, these individuals diagnosed with Alzheimer's disease are less likely to report symptoms due to the fact that they may not understand or comprehend the risk of the disease or remember the safety precautions that must be made to limit the spread of the virus (Rochester Regional Health, 2020; Mok et al., 2020).

Due to the increase in COVID deaths with the elderly population, nursing homes and assisted living facilities have been required to isolate residents and cancel daily activities (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020). Because of this widespread isolation occurring in many nursing homes and assisted living facilities, many individuals diagnosed with Alzheimer's disease are being isolated for long periods of time without any understanding as to why this is happening. Even when made aware of the purpose of the isolation occurring, because of memory loss being a main symptom associated with Alzheimer's disease, many residents can forget causing confusion, anxiety, depression, and behavioral problems (Rochester Regional Health, 2020). In order to prevent the risk of spreading COVID-19, almost all group activities have had to be canceled. Daily group programs are no longer happening, residents are being isolated in their rooms, residents no longer can eat together

due to communal dining being stopped, and outside visitor restriction has been canceled as well (Simard & Volicer, 2020). Residents no longer have a daily routine to go through which is causing depression to spike and many other Alzheimer's disease related symptoms, such as cognitive, behavioral, and physical conditions of the residents, to worsen over shorter periods of time (Mok et al., 2020).

Because of these restrictions and resident isolation occurring in numerous nursing homes and assisted living facilities around the United States, researchers have been interested to see how these factors have been affecting residents in these facilities. From the research that is being conducted, the three main commonalities that are showing up with these residents living in nursing homes and assisted living facilities are the feelings of depression, anxiety, and loneliness (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020; University of Michigan (2020); Lowe, 2020; Alzheimer's Association, n.d.b). With regard to depression, a study that was conducted by El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj (2020), researchers looked at anxiety and depression rates in individuals diagnosed with middle stage Alzheimer's disease living in retirement homes during the current COVID-19 pandemic. Surveys from a multitude of researchers have found that residents and caregivers have reported that residents have showed higher increases in loneliness and anxiety due to the extended periods of isolation that have been put in place (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020; Lowe, 2020; Weaver, 2020). With the social isolation that has been put in place, many of these residents are scared for their own health and are going through this by themselves when normally they are used to connecting with other residents that are going through the same things they are dealing with related to Alzheimer's disease (Lowe, 2020). Like many other facilities, this retirement home prohibited physical

contact between resident visitors, as well as physical contact between other residents. Through reports and assessments done by on-site caregivers, the researchers found that participants reported higher depression and anxiety since the beginning of the COVID-19 pandemic (El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020). The researchers associated these high rates due to the isolation that residents at the retirement home were being put into and a drastic change in their daily routine and care they were receiving (El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020). Spikes in depression are common, especially after or during traumatic events similar to the current COVID-19 pandemic that is happening (University of Michigan, 2020). With these continuing spikes in depression, if left untreated, memory and cognitive problems can worsen over time (Weaver, 2020). Loneliness plays a major factor in the onset of depression in these individuals diagnosed with Alzheimer's disease. As stated previously, there are three main dimensions of loneliness. The first two, personal loneliness and absence of a sympathy group, are being negatively affected the most in these individuals residing in nursing homes and assisted living facilities due to the fact that visitors are no longer being allowed to come visit these residents, as well as the residents are being isolated in their rooms even while eating meals (Simard & Volicer, 2020). While isolating these individuals in nursing homes and assisted living facilities are keeping them safe from contracting this deadly COVID-19 virus, we in contrast are making pre-existing symptoms related to Alzheimer's disease even worse and decreasing their quality of life. While medication can help with these depressive related symptoms that are brought on by these feelings of loneliness and social isolation, there needs to be research to see if non-drug related forms of treatment, such as music therapy, can be provided safely through a telehealth platform.



In more recent studies that has been done resulting in the isolation occurring in nursing homes and assisted living facilities, researchers have found that there may be a gene connected to the reasoning behind why those diagnosed with Alzheimer's disease might be at a higher risk of contracting COVID-19. Researchers believe that the gene APOE e4e4 is suggested to increase Alzheimer's risk up to 14 times, as well as increase the risk of heart disease (Preidt, 2020). A medical school of researchers between two universities analyzed data from more than 382,000 people and found that 2.4% of the participants had this gene, and of that 2.4% of people, 5.1% tested positive for the COVID-19 (Preidt, 2020). Researchers suggested that those with this gene have twice the risk of infection for COVID-19 (Preidt, 2020). While more research is needed in this area to fully correlate a connection between higher risk of contracting COVID-19 and this gene linked to Alzheimer's disease, this is still pertinent information to keep in mind when considering the importance of providing telehealth forms of communication and therapeutic treatment for those diagnosed with Alzheimer's disease. Even with the predispositions of older age and impaired cognition, we need to understand how we can work around these restrictions and continue to provide the help to this population in order to extend their internal time clock, as well as their overall quality of life.

### **Telehealth and Alzheimer's Disease**

As more facilities, not just nursing homes and assisted living facilities, begin to limit the amount of traffic in their facilities, telehealth as a format of reaching patients and clients is becoming more common due to the impact of COVID-19. Telehealth is defined as "the use of digital information and communication technologies, such as computer and mobile devices, to access health care services remotely and manage your health care" (Mayo Clinic Staff, 2020). Although telehealth has been around and used for over thirty years, just recently, due to COVID-

19, has it become more popular with multiple populations. Through telehealth, doctors, clinicians, counselors, and therapists can reach their patients or clients in a quicker and safer way in order to eliminate the possibility of spreading COVID-19. Telehealth comes in many different formats. Some of these can include virtual visits, chat-based interactions, remote patient monitoring, and technology-enabled modalities (ATA, n.d.). Virtual visits are the most commonly used format for providing telehealth. Virtual visits are live, synchronous, interactions between the healthcare provider and the client or patient via a telephone or video (ATA, n.d.).

When it comes to telehealth, there are a lot of benefits that it provides to clients and patients don't get through in person appointments or sessions. Some of these benefits include improved access, being cost effective, improved quality, and consumer demand (ATA, n.d.). Especially in the case of music therapy, telehealth can reach more people and give those in rural areas more access to sessions that they may not have had in the past. Probably the biggest benefit of telehealth is that it is cost effective. Telehealth can be done directly from home or where the client lives. Telehealth reduces the overall cost of healthcare and increases the efficiency of treating clients (ATA, n.d.).

When it comes to elderly folks, specifically those diagnosed with Alzheimer's disease, many assumptions are made that telehealth won't be an effective tool to use with this population due to the fact that they may not know how to use this form of electronics. On the contrary, many researchers have found that using a form of telehealth with those diagnosed with Alzheimer's disease or another form of dementia have found it just as successful, or sometimes even more successful, as in-person appointments or sessions (Burton & O'Connell, 2018; Godwin, Mills, Anderson, & Kunik, 2013; Martínez-Alcalá, Pliego-Pastrana, Rosales-Lagarde, Lopez-Noguerola, & Molina-Trinidad, 2016). In a study conducted by Burton and O'Connell

(2018), they looked at the effectiveness of facilitating rehabilitation of cognitive impairment via telehealth in those diagnosed with Alzheimer's disease. Through tele-rehabilitation via video conferencing, they found that participants randomly assigned to the telehealth condition improved on 6 out of 6 goal areas compared to those in the in-person group who only completed 7 out of the 9 goal areas that were addressed (Burton & O'Connell, 2018). While rehabilitation techniques were used to address cognitive impairments just as effectively as those in the in-person sessions, the one complication was having to make adaptations and modifications that required more assistance from caregivers during the telehealth sessions (Burton & O'Connell, 2018; Brotons & Marti, 2003). Another study conducted by Martínez-Alcalá et al. (2016), reviewed multiple information sources on the effectiveness of technologies used with elderly diagnosed with Alzheimer's disease or another form of dementia. Based on the research that was collected from Martínez-Alcalá et al. (2016), incorporating technology into the lifestyle of those diagnosed with Alzheimer's disease is recommended in order to improve their quality of life. Most treatment strategies require assistance from caregivers due to the fact that most individuals with Alzheimer's disease are completely dependent on others. By caregivers participating and helping with these telehealth appointments and sessions, research has also shown a decrease in depression, stress, and anxiety in caregivers as well (Martínez-Alcalá et al., 2016; Godwin, Mills, Anderson, & Kunik, 2013). By incorporating these new therapy and healthcare formats into this population's life, it is keeping their brain and mind stimulating by having them learn how to navigate this new healthcare platform and technology as a whole (Glover, 2020).

### **Electronic Usage and Elderly Populations**

When it comes to the idea of using electronic devices with an older population, such as those residing in a nursing home or assisted living facility, there can commonly be a stereotype

placed onto these residents with the fact that because they are older, they do not know how to work these devices and do not want to take the time to learn how to use them. Research has shown otherwise and that older populations have shown an interest in the usage of electronic devices and that positive health benefits of learning to use these devices are connected as well (Hildebrandt, 2019; Vaportzis, Clausen, & Gow, 2018). In a study conducted by Vaportzis, Clausen, and Gow (2018), they looked to understand what older adults' experiences were to learn how to use tablet computers, as well as understanding what the participants found helpful or unhelpful. From the research that was conducted, of those that participated in the group that included the usage of tablet computers, all 22 participants expressed positive responses towards the tablet training (Vaportzis, Clausen, & Gow, 2018). While some of the participants expressed that they felt challenged at times, positive responses outweighed the negative, one of these being that they enjoyed it because it connected themselves with others socially (Vaportzis, Clausen, & Gow, 2018). A majority of the participants expressed that they would like to continue using the tablets and felt the advantages of using these tablets more would help to keep in touch with family and friends (Vaportzis, Clausen, & Gow, 2018). By working with these older populations and helping them to understand how electronic devices work and to incorporate the use of them more into their daily lives, they can begin using them more to increase socialization, especially in the time of COVID that we are currently dealing with. While there can be frustrations that occur when beginning to use these devices, by working with this population they can become more confident in use them and can increase socialization with their friends and families outside of these nursing homes and associated living facilities.

## **Music Therapy and Alzheimer's Disease**

When it comes to the treatment or reduction of symptoms associated with Alzheimer's disease, music therapy is a source that is used, especially to decrease the over usage of medication. Music therapy is "the clinical and evidence-based use of music intervention to accomplish individualized goals within a therapeutic relationship by a credential professional who has completed an approved music therapy program" (AMTA, n.d.). Especially those who are just starting their lives in these nursing homes and living facilities combined with Alzheimer's symptoms that may be new to them, these situations and symptoms can be a lot to take in and music therapy is there to alleviate those burdens (Gómez-Gallego & Gómez-García, 2017). Music therapy has been used as a tool to help those with Alzheimer's disease adjust to new living environments in nursing homes and assisted living facilities. In a study conducted by Kydd (2001), researchers looked at how music therapy was used in adjusting a patient into a long-term care (LTC) facility. During sessions, the music therapist would play preferred music chosen by the client, while the client played along on different instruments, and the results showed that this client showed drastic improvements in quality of life (Kydd, 2001; Cevasco & Grant, 2006). The client was showing a more positive affect, positive changes in behavior, and a decrease in depressive related symptoms compared to where they first started when they began music therapy sessions (Kydd, 2001). Especially with the current circumstance nursing homes and those diagnosed with Alzheimer's disease are dealing with due to COVID-19, there is a new environment at daily schedule of living that these residents have to become accustomed to that are drastically different from what they were before the pandemic (Rochester Regional Health, 2020). With the combination of no daily programs and activities, and social isolation, these residents are confused as to what is going on, which is then resulting in these depressive related

symptoms. This research shows that with group instrumental play combined with preferred music, a technique that can easily be facilitated via telehealth, these depressive symptoms can be reduced, and overall quality of life can be increased.

When it comes to addressing depression found in those with Alzheimer's disease, music therapy has been found to be beneficial in decreasing these symptoms (Ashida, 2000; Olderog-Millard & Smith, 1989; Guétin, Portet, Pommié, Messaoudi, Djabelkir, Olsen, Cano, Lecourt, & Touchon, 2009). In a study conducted by Ashida (2000), they examined the effectiveness of reminiscence-based music therapy treatment on depressive symptoms in elderly people diagnosed with dementia. Twenty participants were randomly assigned to one of four music therapy groups that met for a total five days. Each session consisted of instrument playing applications that incorporated the use of drums, as well as reminiscing applications that were accompanied by singing and playing guitar by the music therapist. From this research, Ashida (2000) found that through small group reminiscences focused music therapy, depressive levels were reduced in elderly patients diagnosed with dementia. With reminiscing applications, these applications do not necessarily need in-person assistance which would make them possible to facilitate via a telehealth format. Group singing has been shown to bring overall positive benefits to those showing depressive related symptoms with regard to Alzheimer's disease (Ashida, 2000; Olderog-Millard & Smith, 1989). In a study conducted by Olderog-Millard and Smith (1989), the researchers looked at the influence of group singing therapy on the behavior of Alzheimer's disease. A total of 10 participants took part in group music therapy sessions two times a week for a total of five weeks. These participants were randomly assigned to groups that included music therapy (i.e. experimental group) and those that incorporated discussion without the use of music (i.e. control group). The results showed that there was significantly higher verbal participation in

those who took part in the music therapy groups than those who did not, as well as a decrease in negative behaviors (Olderog-Millard & Smith, 1989). Group singing is something that can also be done via a telehealth format. While there can be delays and feedback created through an online platform, sharing that connection through music can bring people together even if it through a computer screen. A majority of musical techniques that have been successful through in-person sessions but can also be effectively facilitated through telehealth as well due to the fact that they require little to no assistance from the music therapist that sometimes is required of other music-based techniques commonly used during in person sessions.

Similar results through music therapy, related to improvements in emotional well-being related to socialization, has played a role in creating positive outcomes as well (Clément, Tonini, Khatir, Schiaratura, & Samson, 2012; Pollack & Namazi, 1992). As stated previously, group music therapy sessions have been shown to help decrease depressive related symptoms in those diagnosed with Alzheimer's disease (Ashida, 2000; Olderog-Millard & Smith, 1989; Guétin et al., 2009; Mohammadi, Shahabi, & Panah, 2011). This could be due to the incorporation of the social interaction between those participating in music therapy together. It has been found that social isolation and loneliness can play a role in the onset or increase in depressive related symptoms shown in those diagnosed with Alzheimer's disease (Ali, Khalil, Elariny, & Abu-Elfotuh, 2017). In a study conducted by Dassa and Amir (2014), they wanted to understand the role of singing familiar songs and how that encouraged conversation among individuals with middle to late stage Alzheimer's disease. The researchers used songs from the participants' past and found that songs related to social and national identity elicited the most memories (Dassa & Amir, 2014). Group singing also elicited conversation among the participants and encouraged them to share their memories with others in the group without prompting from the music

therapist (Dassa & Amir, 2014). After the sessions were finished, group members expressed to the therapist and caregivers that they had positive feelings, a sense of accomplishment, and belonging (Dassa & Amir, 2014). This shows that through group singing and reminiscence-based applications, clients can connect with each other and form a sense of belonging with one another through music and conversations encouraged through music. Similar results were also found in a study conducted by Pollack and Namazi (1992) but looked at individualized music therapy sessions and its effect on social behavior in those diagnosed with Alzheimer's disease. All participants were bed ridden which required the facilitation of individual sessions (Pollack & Namazi, 1992). Positive outcomes were a result of these individual music therapy sessions that included increased participation, smiling, eye contact, and verbal feedback expressing pleasure in the music therapy activities (Pollack & Namazi, 1992). Especially with these participants being isolated in their rooms due to the condition of their Alzheimer's disease, this shows that through music therapy, those socially isolated from other can benefit from these music therapy sessions related to increasing social behavior (Pollack & Namazi, 1992; Dassa & Amir, 2014; Clair & Memmott, 2008). While this study focused on individual music therapy sessions, it would be interesting to see if there were changes in the results found if they were able to participate as a group. Through telehealth this is something that could be possible. Even without COVID, there are still individuals that are isolated to the rooms due to the fact that their health conditions do not let them get out of bed. If research can be provided showing that music therapy can be effectively facilitated through a telehealth format, these individuals can still have social interaction with others through the computer.



## **Music Therapy and Telehealth**

Due to most populations that music therapists work with being those of higher risk of contracting COVID-19 and high risk of more severe symptoms, many music therapists are adapting and switching over to telehealth in order to continue working with the clients (Baker & Krout, 2009; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020; Knott & Block, 2020). With telehealth music therapy sessions, or telemusictherapy sessions, a similar structure in comparison to in-person sessions can still be implemented (Knott & Block, 2020; Bailey, 2020a). Common music therapy techniques that have been successful via a telehealth platform have included songwriting, active music playing, improvisation, music-assisted relaxation, and reminiscence-based applications (Bailey, 2020a). A lot of what music therapists do during in-person sessions can easily be adapted to the telehealth format. When it comes to benefits and implications of providing music therapy through a telehealth platform, there are many with both cases in mind. Providing music therapy via a telehealth platform gives almost everyone throughout the country accessibility to people who, geographically, may not have access to in-person music therapy facilities (Glover, 2020). Telehealth music therapy sessions also provide a sense of comfort in clients due to the fact they are able to stay at home and in an environment that they are comfortable in rather than coming into a facility that they might not feel comfortable and willing to share information about themselves (Bailey, 2020a; Glover, 2020). With music therapy telehealth still being so new, limitations can sometimes feel like they outweigh the benefits. Between technology issues, concerns about confidentiality, lack of physical presence, and lack of access to instruments, music therapists have to adapt to this new way of facilitation in order to provide the best service to their clients as they possibly can

(Bailey, 2020b; Glover, 2020). With these limitations though, to provide more support for this research. By continuing to understand what works, what doesn't work, and how we can adapt our sessions to the best fit our client's needs, telehealth can become a stronger platform to use and incorporate more in order to provide music therapy to everyone who can benefit from it.

When it comes to using telehealth music therapy with those diagnosed with Alzheimer's disease, there is almost no information to support whether or not it is an effective way to facilitate music therapy with this population. While it has not been used specifically with the population we plan on researching, there has still been past research that has looked at the effectiveness of telehealth music therapy in other populations using music therapy techniques that can be incorporated with those diagnosed with Alzheimer's disease. Most of the previous research has been done with younger children and veterans diagnosed with post-traumatic stress disorder (PTSD) (Baker & Krout, 2009; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). In a study conducted by Baker and Krout (2009), researchers looked to see how effective telehealth music therapy was in enhancing social skills in an adolescent diagnosed with Asperger's Syndrome. Through a video conferencing software, the music therapist and the client focused on using songwriting applications to address increasing social skills (Baker & Krout, 2009). What they found was that the client was highly engaged during the entire session, offered more eye contact, was more creative in his creation of lyrics, and was more confident in offering and discussing sections of the song created in comparison to in-person sessions (Baker & Krout, 2009). While this population that was looked at is completely different compared to those diagnosed with Alzheimer's disease, this still shows an effective music therapy technique that

can be used to address social skills and socialization that showed positive results while being facilitated through a telehealth format.

One of the most researched populations that has implemented telehealth music therapy is with veterans diagnosed with post-traumatic stress disorder (PTSD) (Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). Telehealth can be a common platform for those with PTSD due to the fact that many individuals struggle with leaving their homes due to negative symptoms associated with this disorder (Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). In a study conducted by Vaudreuil et al. (2020), researchers looked at how effective telehealth music therapy was with the military population. Most of the music therapy experiences used for this research included singing and dancing, drumming, lyric adaption/songwriting, and music-based relaxation (Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). The results from this research was that participants positively responded to the use of music therapy facilitated through telehealth. Participants reported a decrease in pain, anxiety, and depression after their music therapy sessions in comparison to when they first started them (Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). Similar results were also found in other studies that identified that participants did not believe that the telehealth platform hindered from the music therapy facilitation and overall experience, and the common symptom that decreased across the board was depression (Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). Again, while this population is not the same as those diagnosed with Alzheimer's disease, this research shows that there are music therapy techniques that can be effectively facilitated through a telehealth

platform and can effectively address goals and show positive results in decreasing depression of depressive related symptoms.

As stated previously, the researcher is currently unaware of any published reports of the effectiveness of telehealth music therapy being conducted with individuals diagnosed with Alzheimer's disease. The closest research that has touched on telehealth music therapy with Alzheimer's disease is a study conducted from Glover (2020) that interviewed three board-certified music therapist who had been facilitating telehealth music therapy sessions for over 5 years to look at if forming a therapeutic relationship via a telehealth platform was achievable. One of the music therapists interviewed for this research worked with Alzheimer's patients (Glover, 2020). This music therapist mentioned that one of things he was able to work on with his client who was diagnosed with Alzheimer's disease was social interaction and trusting others (Glover, 2020). During sessions, this music therapist was able to address this by working through technical challenges together that were presented during the sessions. By working together, the client was able to recognize his patterns of thinking and then apply those skills later in order to deal with interpersonal challenges (Glover, 2020). Overall, the three music therapists identified that a therapeutic relationship can still be formed, but it isn't the same as one made through in-person sessions (Glover, 2020). This is something that many music therapists have to come to terms with though. This format of facilitating music therapy is going to be different and modifications are going to be made, but the only way to understand what will and won't work is through research. This research by Glover (2020), shows that music therapy can be facilitated for those diagnosed with Alzheimer's disease and that a therapeutic relationship can be formed. With more research to back up if telehealth music therapy can be an effective tool with those diagnosed with Alzheimer's disease, we can better understand if goals such as overall quality of

life and socialization can be addressed especially with the increase in depression and social isolation that is occurring due to the current COVID-19 pandemic.

## CHAPTER III: METHOD

### **Participants**

Participants in the study included 3 individuals that were currently residing in a local assisted living facility in an urban Midwest community in the United States of America. Participants included 2 females (66.7%) and 1 male (33.3%) and were between the ages of 90 years old and 96 years old (M= 92.6 years old). Criteria for participants included having a diagnosis of early to middle stage Alzheimer's disease and could express emotions verbally. Having taken part in an in-person or telehealth music therapy session prior to the research being conducted was not a criteria requirement and did not result in participants being excluded from this study.

### **Measures**

For the research that was conducted, most materials used during telehealth music therapy sessions included electronics and musical instruments. A guitar was used as the primary accompaniment instrument during the telehealth music therapy sessions due to research that suggested guitar be used with older populations and was the preferred instrument of choice by the population who took part in the research (Clair & Memmott, 2008). Other instruments used during the music therapy sessions, by both the student music therapist and the participants, included egg shakers and rhythm sticks. Instruments used by the clients during the music therapy sessions were provided by the facility. A laptop computer was used by the student music therapist and one tablet was used at the assisted living facility by the clients during the music therapy sessions. All devices already had Zoom downloaded onto the device that was then used to conduct the telehealth music therapy sessions (Yuan, 2012). Prior to the telehealth music therapy sessions being facilitated, information about the research (see appendix A) was emailed

to the site supervisors at the assisted living facility for each participant to have in front of them during the consent meeting over Zoom with the student researcher. A Likert rating scale (see appendix C) was used during sessions to rate moods of clients from 1 to 10 (1 being sad, depressed, or down; 5 neither happy nor sad; 10 being happy, great, or excited). These scales were used at the beginning of the sessions and the end of the sessions as a pre-test/post-test measure for each client to measure their overall mood. This scale also included images of faces to provide a visual example of how the participants were feeling before and after the sessions. A post-session interview including about six questions (See appendix E) was conducted with each participant after the last telehealth music therapy session related to their experience with telehealth music therapy sessions. Each session was recorded through the Zoom app on the student music therapist's computer and was saved to a password-locked flash drive at the end of each session.

### **Procedure**

Research was conducted over a 3-week period. During the first week, information forms (see appendix A) were emailed to the assisted living facility that included information about what was being researched, the criteria requirements for each client, that their participation would be completely voluntary, and that they would be made aware of the fact that if at any time they felt the need to remove themselves from the study, they could do so with no penalty involved. This sheet also included information about the recording process and that during the music therapy sessions, the participant would be recorded through the Zoom application being used to facilitate the music therapy telehealth sessions and that the recordings would be erased once all the data had been collected and the student researcher's paper was complete. These forms were emailed out to the facility to be printed out and given to participants during the pre-

research Zoom meetings with the student researcher. The purpose of this information sheet was so that each participant had this form in front of them while the student researcher met with them, individually, to explain the research that would be conducted and if that was something that they would be interested in participating in. During the first week, the student researcher also consulted with the site supervisor at the assisted living facility to set up a 3-hour time slot to meet with residents at the assisted living facility to talk with them about participating in this research. The pre-research meetings were done through Zoom and the student researcher met with each resident individually. During the pre-research meetings, the student researcher used a script (see appendix F) to introduce themselves and explain the research, as well as informed the resident to reference the information sheet that was provided to them by the site supervisor that was previously emailed to them. The student researcher obtained verbal consent from each participant to not only participate in the study, but also that the research be recorded. The student researcher met with a total of 4 residents and obtained verbal consent from 3 residents and was told by the fourth that they were not interested in participating in the study. Once the participant consented to take part in the research, the student researcher spent 10 minutes interviewing them using a client information sheet (see appendix B). This client information sheet was used to get to know the client, get basic demographic information (i.e., age and gender), learn about their previous experiences using electronic devices (i.e., computers, laptops, iPads, Kindles, etc.), their previous experience with music therapy (i.e., in-person sessions or telehealth sessions), pre-existing health conditions or other health related information that would be beneficial to know about while conducting music therapy sessions (i.e., physical pain or assisted devices), and music preferences of the client. This information was then put into a spreadsheet that was saved on a password-locked flash drive.



Once the student researcher met with each participant, received verbal consent, and collected information about the participants musical preferences, the second week of research was used to take the information collected and create sessions plans for the clients (see appendix d). Due to the limited amount of information provided by each participant, regarding their music preferences, the student researcher chose to use music from a list of popular music preferred by this general age group that was compiled by VanWeelden and Cevasco (2007). Songs were performed on guitar or were pre-recorded by the student music therapist on guitar due to past research that suggested guitar be primarily used with older populations as it was the preferred instrument of choice by this population (Clair & Memmott, 2008). The session plans for each session followed an overall similar structure. Each session started with a hello song that involved the clients playing an instrument (i.e., rhythm sticks), a reminiscing-based application that covered topics such as their family, their significant others, loved ones, or what it was like growing up, an instrument playing application that gave them the choice of playing one of two instruments (i.e., rhythm sticks or shakers), a music and movement application that involved stretching to music or dancing to music, and then a closing application that involved singing and playing an instrument (i.e., shakers). All music therapy session plans were the same for each client since the student researcher was researching what music therapy techniques and applications worked well via telehealth for this specific population. The second week was also used to coordinate music therapy session times with the assisted living facility. The student researcher set up these session times with the site supervisor at the assisted living facility.

Three telehealth music therapy sessions were scheduled during the final week of the 3-week long research schedule with one day in between each session (i.e., session 1 occurring on a Monday, session 2 occurring on a Wednesday, and session 3 occurring on a Friday). The student

researcher met with each client, individually, for 20-minute sessions 3 times in one week over Zoom. The student researcher met with Client A. for their 20-minute session in the late afternoon, immediately after that Client B. had their 20-minute session, and then Client C. had their 20-minute session immediately after Client B. Each client met with the student researcher at the same time and in the same order for all 3 music therapy sessions during that week. Before each session, the student researcher sent an email, 24-hours in advance, to the site supervisor with the link to the Zoom meeting and informed them of the instruments that would be needed (i.e., rhythm sticks and egg shakers). During the music therapy sessions, the student researcher logged onto Zoom on their computer and the clients were logged into Zoom on the assisted living facility's iPad. The student researcher conducted each music therapy session in a private, sound-proof room. Headphones were used during each session to provide clear audio for the sessions, as well as to protect each client's personal information. For each individual session, the student researcher welcomed the client and introduced themselves to the client. The student researcher began with the opening song. During this time, the student researcher began sharing their screen using the screen share application on Zoom (Yuan, 2012). Through screen sharing, the student researcher projected the mood rating scale (see appendix c) and prompted the client to identify on a scale of 1-10 (1 being sad, depressed, or down; 5 happy nor sad; 10 being happy, great, or excited) how they were feeling that day at the beginning of the session. The student researcher repeated this again at the end of the session to see how the client was feeling once the session was over. These scales were used as a pre-test/post-test measure for each client to measure their overall mood at the beginning and end of each music therapy session. These scales also included images of faces to provide a visual example of how the participants were feeling as well. After the opening application was finished, the student researcher continued with the

remainder of the session that included a reminiscing-based application, an instrument playing application, some form of music and movement application, and the final closing application. On the day of the final telehealth music therapy sessions, the student music therapy met with each client for 10 more minutes following their last music therapy session after the music therapy session through Zoom and conducted a six-question interview (see appendix e). This interview consisted of questions related to the clients experience with the telehealth music therapy sessions, what parts of the session they enjoyed or didn't enjoy, and if telehealth music therapy sessions were something they would want to continue doing in the future or if they would prefer in person sessions instead. Once the post-session interview was complete, the student researcher thanked each participant for taking part in the research and the music therapy sessions and stated if they had any further questions, they could contact the student researcher through the help of the site supervisor at the assisted living facility.

### **Data Analysis**

The purpose of this research was to explore if music therapy through telehealth was an effective tool in providing sessions to those diagnosed with Alzheimer's disease in nursing homes and assisted living facilities in order to address goals related to increasing quality of life and increasing overall mood. From this research, we hoped to answer the questions of a) could music therapy be effectively facilitated via telehealth with those diagnosed with Alzheimer's disease, b) through telehealth music therapy, could outcomes related to increasing quality of life and overall mood be achieved, c) what music therapy techniques could be adapted and used through telehealth, and d) for those who may have had the opportunity to participate in in-person music therapy sessions in the past, would there be a preference of in-person or telehealth music therapy sessions? Data related to the research questions were collected through observation,

questionnaires, and interviews. Analysis of pre-test and post-test data looked at changes in the participants' mood from the beginning to the end of each music therapy sessions.

## CHAPTER IV: RESULTS

### **Pre-Session Information and Data**

Three individuals residing in the assisted living facility used for this study took part in this research. All participants had a diagnosis of early to middle stage Alzheimer's disease and were between the ages of 90 years old and 96 years old (M= 92.6 years old). Each participant took part in a pre-session interview, via Zoom, that gave the student researcher the opportunity to collect information such as musical preferences, activities they took part in at the assisted living facility, previous experiences with music therapy, either in-person or via telehealth, or a general history with music, and their experience using electronics. When asked about musical preferences, all 3 participants stated that they did not have any specific preferences in music, but all 3 participants stated they enjoyed relaxing music (100%), 1 of the 3 participants stated they enjoyed upbeat music that they could dance to (33.3%), and 2 of the 3 participants stated that they enjoyed anything that they could sing along to (66.7%). The student researcher also inquired about activities that the participants were involved in while living at the assisted living facilities. Those activities included exercise activities (n=3; 42.86%), brain game activities (n=2; 28.57%), and bingo (n=2; 28.57%). While experience with music therapy or with music, in general, was not a requirement only one out of the three participants (33.3%) had taken part in music therapy, once in-person and once via telehealth, and 2 out of the 3 participants (66.7%) had previous experience with music (e.g., singing or playing an instrument). Lastly, participants were asked about their experience with using electronics. All 3 participants indicated they had experience using either an iPad (n=3; 100%) or laptop computer (n=1; 33.3%) while residing at the assisted living facility. The primary use of these electronics was either to talk to family members (n=3; 75%) or to take part in telehealth music therapy sessions (n=1; 25%).

### **Client Likert Mood Rating Results**

Client A was the first resident that the student researcher met with during the 3 days of 20-minute music therapy sessions at the assisted living facility. Client A was a 92-year-old female with a diagnosis of middle stage Alzheimer's disease. Client A was the only participant of this study who had previously taken part in a music therapy session, both in-person and through telehealth, prior to this research occurring. At the beginning of each session and at the end of each session, the student researcher shared a screen on the device that was being used through the screen share feature on Zoom (Yuan, 2012). This screen included a Likert scale with ratings from 0-10 (1 being sad, depressed, or down; 5 happy nor sad; 10 being happy, great, or excited), as well as including faces that portrayed those emotions to provide a visual aspect to the scale. During the first session, Client A had a pre-session mood rating of 3 and a post-session mood rating of 5 (RNG=2; M=4). During the second session, Client A had a pre-session mood rating of 5 and a post-session mood rating of 7 (RNG=2; M=6). During the third and final session, Client A had a pre-session mood rating of 5 and a post-session rating of 7 (RNG=2; M=6). Overall, Client A had a mean mood rating of 5.33 over the 3 total music therapy sessions (see Figure 1). Across all three music therapy sessions, Client A had an average increase in mood by 2 points.

Client B was the second resident. Client B was a 90-year-old female with a diagnosis of early stage Alzheimer's disease. Client B had no previous experience with music therapy prior to the research study occurring. During the music therapy sessions, Client B used a headphone device to hear the student researcher more clearly due to mild hearing problems. Client B was the only participant in the research that used an assistive device during the music therapy sessions. Client B was also asked to use the same Likert scale used by Client A to identify how

they were feeling at the beginning and at the end of each session. This was projected on the client's screen through the screen share feature on Zoom (Yuan, 2012). During the first session, Client B had a pre-session mood rating of 4 and a post-session mood rating of 6 (RNG=2; M=5). During the second session, Client B had a pre-session mood rating of 5 and a post-session mood rating of 5 (RNG=0; M=5). During the third and final session, Client B had a pre-session mood rating of 6 and post-session mood rating of 7 (RNG=1; M= 6.5). Overall, Client B had a mean mood rating of 5.5 over the 3 total music therapy sessions, as well as had an average mood rating increase of at least 1 point across the 3 music therapy sessions (see Figure 1).

Client C was the third and final resident that the student researcher met with during the 3 days of 20-minute music therapy sessions at the assisted living facility. Client C was a 96-year-old male diagnosed with middle stage Alzheimer's disease. Client C had no previous experience with music therapy prior to the research study occurring but had previous experience with music through singing and participation in choirs. Client C was also asked to use the same Likert scale used by Client A and Client B to identify how they were feeling at the beginning and at the end of each session. This was projected on the client's screen through the screen share feature on Zoom. During the first session, Client C had a pre-session mood rating of 10 and a post-session mood rating of 10 (RNG=0; M=10). During the second session, Client C had a pre-session mood rating of 10 and a post-session mood rating of 10 (RNG=0; M=10). During the third and final session, Client C had a pre-session mood rating of 7 and post-session mood rating of 10 (RNG=3; M= 8.5). Overall, Client C had a mean mood rating of 9.5 over the 3 total music therapy sessions (see Figure 1). Client C remained constant in his mood score during the first two music therapy sessions and an increase in mood rating by three points during the third and final music therapy session.

An unpaired t-test was conducted by the student researcher to identify if there was statistical significance in the changes in the participants' mood taken at the beginning of the music therapy session and at the end of the music therapy session. The mean and range were also calculated for both the pre-test and post-test scores across the three participants. For the pre-test scores, the mean was 6.1 and the range was 7 across the three music therapy sessions. For the post-test scores, the mean was 7.4 and the range was 5 across the three music therapy sessions. After running the unpaired t-test, the p-value equaled 0.23 (SD=2.32). While there was an increase in pre-test and post-test scores with each participant across all three music therapy sessions, because the p-value (0.23) was greater than 0.05, this implies that there was no statistical significance.

### **Session Results and Observations**

During the pre-session interviews, clients were asked about musical preferences. Limited information was provided to the student researcher about specific artists, genres, and general music that each client enjoyed. Due to the limited information that was provided, the student researcher used a list of music that was compiled by VanWeelden and Cevasco (2007) that included popular music that was found to be preferred by this general age group of clients that was taking part in this research (see Figure 4). After each song was used during an application, the student researcher asked each client if they knew the song. The student researcher also determined if the client knew the song based on if the client participated in singing the correct lyrics during the application. During the first sessions, the songs *Let Me Call You Sweetheart* by Bing Crosby (1934) and *My Bonnie Lies Over the Ocean* by H. J. Fuller (n.d.) were used during two applications. All three participants identified that they knew both *Let Me Call You Sweetheart* (n=3; 100%) and *My Bonnie Lies Over the Ocean* (n=3; 100%), as well as they sang



along to the songs, using correct lyrics, during the specific applications the songs were used in. During the second session, the songs *Edelweiss* from the movie *The Sound of Music* (1964) and *This Little Light of Mine* by Harry Dixon Loes (1920) were used during two applications. Only 2 out of the 3 participants (66.7%) sang along with correct lyrics and identified that they knew the song *Edelweiss*. All three participants identified that they knew the song *This Little Light of Mine* (n=3; 100%), and they sang along to the songs, using correct lyrics. During the final session, the songs *Home on the Range* by Brewster M. Higley (1872) and *I Got Rhythm* by George and Ira Gershwin (1930) were used during two applications. All three participants identified that they knew the song *Home on the Range* (n=3; 100%), and they sang along to the songs using correct lyrics. Only 2 out of the 3 participants (66.7%) sang along with correct lyrics identified that they knew the song *I Got Rhythm*. The music not inquired about, with regard to if the clients knew the music or not, was the music used during the music and movement applications. This was pre-recorded by the student researcher and only included the use of guitar, meaning they did not include lyrics (see Figure 4).

During the session, clients were given choices to make during applications that included picking instruments to play and music and movement applications to participate in. Beginning with instrument choices, clients were given a choice between playing a set of rhythm sticks or shakers during instrument playing related applications that occurred in all 3 sessions. With each individual client, Client A chose to play rhythm sticks during all three sessions, Client B chose to play rhythm sticks during session 1 and 3 and chose to play shakers during session 2, and Client C chose to play rhythm sticks during session 1, shakers during session 2, and during session 3, Client C expressed that he wanted to play both the shaker and the rhythm stick together. Client C and the student researcher did this by holding a shaker in one hand and taping the shaker with the

rhythm stick in his other hand (see Figure 2). Overall, rhythm sticks were picked 7 times (70%) and shakers were picked 3 times (30%) across the 3 clients over 3 music therapy sessions. During the third and final session, clients were given a choice of picking their music and movement application. Their choices were to do music and relaxation, which included slow upper extremity stretching to pre-recorded instrumental music, or music and dancing, which included upper and lower extremity movements to pre-recorded upbeat instrumental music. When given the choice, two clients picked to do music and relaxation (n=2; 66.7%) and one client picked to do music and dancing (n=1; 33.3%).

As stated in the method section, the overall structure of each session remained the same for each client since one of the purposes of this research was to identify what music therapy techniques typically used with this population worked or did not work (see Figure 6). Data for this portion of the research was collected through observation of the clients during the music therapy sessions. The opening and closing applications used for this research were to primarily address self-expression, identification of emotions and feelings in oneself, and following directions. While all three participants identified their mood through the Likert rating scale that was shown to them after an average of 3 prompts were given by the student researcher, Client B did explain that she had difficulty seeing the mood rating scale during the first and second music therapy sessions. This was fixed with the help of glasses that she did not have during the first two sessions.

Following the opening application, a reminiscing-based application was facilitated that covered topics related to family, loved ones, significant others, or memories of where they grew up. All clients willingly sang along with the student researcher, as well as shared memories related to the topic that was being covered during the music therapy session. Client A and Client

B shared detailed information and answered open-ended questions throughout all three music therapy sessions. Client C shared limited information about memories, answered more close-ended questions, and needed multiple prompts or questions asked to talk more about the topics being covered during the reminiscing applications. These applications appeared to be the segments of the sessions that the participants stated they enjoyed the most. These applications primarily involved the clients singing as their form of participation and 3 of the clients (100%) identified that singing was their favorite part, and 1 client (33.3%) also enjoying instrument playing. The clients shared positive statements about the reminiscing applications that included, “That was fun getting to sing and talk about my family” and “This is just lovely. I love getting to sing with you and telling you about my life”.

After the reminiscing applications were complete, an instrument playing application was facilitated. This application included clients choosing the instrument (i.e., rhythm sticks or shakers) they wanted to play, following simple directions on how or when to play the instrument, and doing upper extremity movements. Instruments were placed in front of the clients on a table and when prompted, Client A picked rhythm sticks 3 out of 3 times (100%) within an average of 5 seconds after being prompted to do so, Client B picked rhythms sticks 2 out of 3 (66.7%) times and shakers 1 out of 3 (33.3%) times within an average of 10 seconds after being prompted by to do so, and Client C picked rhythm sticks once and shakers once within an average of 8.5 seconds after being prompted to do so. During the final music therapy session, when Client C was given the choice between the rhythm sticks and the shakers, Client C expressed interest in playing both together. When asked how Client C planned to do so, Client C said, “we could tap the shaker with one of our rhythm sticks that we have”. Client C came up with his own way of playing the instruments that he individually had played during the previous two sessions.

The last application that facilitated before the closing application was a music and movement related application. During the first session, a music and stretching/relaxation application was done where breathing and stretching of the upper extremities was done paired with music. During the second session, a music and dancing application was facilitated where upper and lower extremity movements were done to upbeat instrumental music while remaining seated in a chair. During the third and final session, clients were given the choice between the two music and movement applications they had done during the previous two music therapy sessions. Client A and Client B chose to do music and relaxation (n=2; 66.7%) and Client C chose to do music and dancing (n=1; 33.3%). All music and movement applications lasted an average of 2 minutes and 15 seconds and all three participants remained engaged with the student researcher throughout the entire length of the application. The only instance of uncertainty of identifying if the clients were modeling the student researcher's movements occurred during the music and dancing applications due to where the clients were sitting, the angle of their device screen, and the student researcher not being able to see the lower half of the clients' bodies. During the dancing applications, Client C came up with his own dance moves as well and the student researcher included those movements into the application which resulted in a brightening of Client C's smile.

During the entirety of the music therapy sessions with all three participants, there were a total of 26 positive self-statements made by the clients that were unprompted by the student researcher. These positive self-statements were transcribed, coded, and categorized into four categories (see Figure 5). These categories included happiness (n=5; 19%), enjoyment of the experience (n=12; 46%), feeling better (n=5; 19%), and feeling grateful (n=4; 16%). Of the three participants, Client C stated the most positive statements (n=12; 46%) and Client A and B both

had the same number of positive statements (n=7; 27%). Statements that fell under the happiness category included expressions of clients feeling happy about something or that they, themselves, felt happy. Statements that fell under the category of enjoyment of the experiences included expressions of the clients having fun, enjoying playing an instrument or singing, or liking something related to the music therapy session. Statements that fell under the feeling better category included expressions of feeling better emotional, physically, or mentally during the sessions. Finally, statements that fell under the grateful category included expressions related to feeling grateful or blessed about being a part of the music therapy sessions or participating with the student researcher.

### **Post-Session Information and Data**

A 10-minute post-session interview was conducted with each participant immediately following the third and final music therapy session with the student researcher through Zoom. The topics covered during the interview consisted of topics related to the clients experience with the telehealth music therapy sessions, what parts of the session they enjoyed or didn't enjoy, and if telehealth music therapy sessions were something they would want to continue doing in the future. When asked if they enjoyed the music therapy sessions, all three clients (n=3; 100%) answered yes. More specifically, the clients identified that their favorite parts of the music therapy sessions included either singing along with the student music therapist (n=3; 100%) or getting to play the different instruments (n=1; 33.3%). When asked if the clients had a preference between the two instruments (i.e., the rhythm sticks and the shaker) they played during the music therapy sessions, all three clients identified that they enjoyed playing both instruments equally and did not have a favorite. The student researcher inquired about questions related to the audio and visual aspect of the sessions. When asked about how easy or hard it was to hear the student

researcher during the music therapy sessions, all three participants said that they did not have problems hearing the student researcher during the sessions and that the audio was very clear and easy to listen to. With regard to the visual aspect, two of the participants stated that they did not have any problems seeing the student researcher on the screen during the session or seeing the mood Likert rating scale that was projected on the screen (n=2; 66.7%) and one participant said that they only time she had difficulty seeing the screen was when the Likert mood rating scale was projected on the screen (n=1; 33.3%), but that was fixed with putting on glasses. Client A was the only participant in the researcher that had previous experience taking part in a music therapy session prior to this study occurring. When asked if she preferred the in-person sessions or the telehealth sessions, Client A stated that she preferred the in-person sessions since she is “able to be with people more when the sessions happen face-to-face.” All three participants were asked if they would participate in telehealth music therapy sessions again if they had the opportunity to do so and two clients stated that they would do telehealth sessions again (n=2; 66.7%) and one client said that she would maybe do telehealth sessions again (n=1; 33.3%). The last question that was covered during the post-session interview was asking the clients how the music therapy sessions made them feel (see Figure 3). The student researcher coded the clients’ responses and found the common themes of enjoyment (n=2; 28.57%), happiness (n=3; 42.86%), and giving them something to do (n=2; 28.57%).

## CHAPTER V: DISCUSSION

The purpose of this research was to explore if music therapy through telehealth could be an effective tool in providing sessions to those diagnosed with Alzheimer's disease in nursing homes and/or assisted living facilities to address goals related to increasing quality of life and increasing overall mood. Because most outside sources and programs that were usually being provided to those in these assisted living facilities were discontinued due to the pandemic, we wanted to see if we could still find ways to provide music therapy to these clients. This research will provide information related to if music therapy can be provided effectively through telehealth with this older population, as well as what goals, objectives, and musical techniques can be addressed over telehealth. From this research, we wanted to answer the questions of a) can music therapy be effectively facilitated via telehealth with those diagnosed with Alzheimer's disease, b) through telehealth music therapy, can outcomes related to increasing quality of life and overall mood be achieved, c) what music therapy techniques can be adapted and used through telehealth, and d) for those who may have had the opportunity to participate during in-person music therapy sessions in the past, will there be a preference of in-person or telehealth music therapy sessions?

Overall, the main purpose of this research was to explore what parts of music therapy could still be facilitated effectively through telehealth for those who were diagnosed with early to middle stage Alzheimer's disease. Through the observations made by the student researcher based on the participation and positive statements shared by the three participants during the music therapy sessions, the researcher believes that, while more research is still needed to provide significant conclusions, music therapy was demonstrated as effective through telehealth with this population. Beginning with the basics of session plans and music therapy techniques

commonly used with this population, the results from this research lined up with a research that looked at similarities and differences of in-person and telehealth music therapy, as well as the most effective techniques used with telehealth (Knott & Block, 2020; Bailey, 2020a; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). Vaudreuil et al. (2020) found that when using techniques such as singing and dancing, drumming, lyrics adaption/songwriting, and music-based relaxation, those were the most effective and easiest to facilitate through telehealth. They also stated that these were the preferred applications by those that participated in the study as well (Knott & Block, 2020; Bailey, 2020a; Vaudreuil, Langston, Magee, Betts, Kass, & Levy, 2020). The student researcher observed similarities when comparing this research to the results found in previous research. All clients actively participated throughout all three sessions by singing, dancing, following directions, playing instruments, sharing memories, and creating new ways of dancing or playing instruments. All of this was done through music therapy techniques that were stated as the most effectively facilitated through telehealth from research that was previously completed (Knott & Block, 2020; Bailey, 2020a).

Through the positive statement made by clients related to how they enjoyed the sessions and the way the sessions made them feel, it could also be a factor as to why these telehealth sessions could be considered as effective. This research found that Client A stated at the end of music therapy session one, "I'm feeling good. I'm actually feeling better", Client B stated at the end of music therapy session two, "I have a wonderful life and I am very grateful I get to do these things where I am right now", as well as "I'm just feeling blessed for the time that I have had and am having and I'm glad you [the student researcher] have been a part of it", and Client C stated "Thank you for doing this all for me. I have been enjoying getting to sing with you." Not only through these positive statements, but through the participation that each client put towards



each session, whether that be singing along, playing instruments, coming up with new ideas, share memories from their past, or sharing how they felt, each client followed along with the student researcher over telehealth just as if it was a normal session (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019).

Another observation that was made that the researcher found interesting, was related to the factor of rapport. With any therapist, rapport is a main factor that helps when making connections and forming strong between the client and their therapists. From this study that was conducted, the student researcher anecdotally observed strong rapport beginning to be built after the second music therapy session with Client C. This was something that researcher found in other studies that found that even over telehealth, rapport was still able to be built between therapist and client (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Glover, 2020). At the beginning of session 3 with Client C, as soon as the student researcher turned on her camera to begin the session, Client C stated, “Look! She’s back for more music!” and said this with a smile on his face. This was just one of the many positive statements that were shared during the music therapy sessions. While the other clients made positive statements similar to those, rapport was not built as quickly as it was with Client C and the student researcher. That could possibly be due to the short amount of time spent doing music therapy sessions and only having three total sessions with each client. The factor of rapport can only be assumed based on the reactions and statements made specifically by Client C. it could be assumed that even through telehealth sessions, rapport can be built between the client and the therapist (Glover, 2020).

When it comes to adaptations needed for telehealth music therapy with elderly clients diagnosed with Alzheimer's disease, not many adaptations were needed. Normally, when facilitating in-person sessions, musical techniques that are commonly used to address goals and objectives related to quality of life, decreasing depressive related symptoms, and increasing socialization can include group and individual singing, reminiscence-based application, music and relaxation applications, and instrument playing (Clair & Memmott, 2008). With the research that was conducted and research that was previously done by others, these same techniques typically done during in-person could be assumed to be just as effective as those facilitated over telehealth (Pollack & Namazi, 1992; Dassa & Amir, 2014; Bailey, 2020a). During sessions over telehealth, the structure of the sessions remained the same as they would during in person sessions with regard to beginning and ending with an opening and closing application, as well as incorporating applications that used techniques such as therapeutic singing, reminiscing-based applications, music and movement applications, music and relaxation applications, and instrument playing applications. Because these specific music therapy techniques require little to no hand-over-hand assistance or detailed explanations, this could have been why clients were able to catch on and join in just as fast as they would if the research was conducting these sessions in-person. Based on this information and the research conducted, very limited adaptations were needed to be made when facilitating music therapy sessions with this specific population.

Of the adaptations that needed to be made, those primarily included anything to do with technology or the specific electronics that were being used. During the second music therapy session, the student researcher included a music and movement application that involved both upper and lower extremity movements. When facilitating music and movement applications in-

person, one of the factors you don't have to worry about is the client being able to see their entire body. While facilitating over telehealth, the music therapist must be more aware of what the client is seeing in the small video box. There is a limited amount of room on the screen, so because of this, during music therapy sessions, the student researcher had to move her screen back and adjust for the client to see not only the top half of the student researcher but all the bottom half. Another adaptation, as well as a limitation to telehealth music therapy sessions, was the lack of onsite instruments for clients to use. When beginning contact with the facility that was used for the research, the student researcher was informed of a limited assortment of instruments the facility had onsite. While this is something that was not mentioned in previous telehealth research related to music therapy, this is something that could be assumed is common amongst other nursing homes or assisted living facilities. Due to most music therapists bringing in instruments of their own to use during in-person sessions, music therapists must become flexible and creative when it comes to creating or finding ways to use resources around them for clients to still be able to actively participate during sessions (Knott & Block, 2020).

One of the other main points that was researched with this study was identifying if a change in mood would occur while providing music therapy sessions to clients through telehealth. When the COVID-19 pandemic began and nursing homes and assisted living facilities began to lock down, research found that three main commonalities were showing up with these residents living in nursing homes and assisted living facilities related to feelings of depression, anxiety, and loneliness (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020; University of Michigan, 2020; Lowe, 2020; Alzheimer's Association, n.d.b). In this current study, while the increases in mood ratings were not statistically significant, the researcher did see that clients did increase their moods or remained at

their moods at the end of each music therapy session compared to the mood that they started at during the beginning of the session. While there is not current research that looks at these mood changes through telehealth music therapy sessions, research related to this topic using the same music therapy techniques in-person, found increases in clients' moods and their overall quality of life (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Glover, 2020; Ashida, 2000; Olderog-Millard & Smith, 1989; Guétin, Portet, Pommié, Messaoudi, Djabelkir, Olsen, Cano, Lecourt, & Touchon, 2009). As stated previously, while the mood rating scales were not statistically significant, the researcher did see an increase in each mood rating when comparing the pre-session score to the post-session score. Statistical significance may not have been found due to the limited number of participants, or possibly due to the research occurring post-COVID vaccine. Research and surveys that was conducted that found higher levels in depressive related symptoms were primarily taken during the pandemic before vaccines were available, and this research was conducted a few months after COVID vaccines were being offered to elderly populations (Mok et al., 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020; University of Michigan, 2020; Lowe, 2020; Gold, Rosowsky, Piryatinsky, & Sinclair, 2020). Because of this, nursing homes and assisted living facilities may have started to provide more opportunities for socialization and face-to-face interaction with clients which was originally limited when COVID-19 first began to take over. If this research was conducted early during the COVID-19 pandemic, it could be assumed that results may have been different due to residents still being on lockdown and having less outside communication which could have possibly resulted in more significant mood rating results.

The final topic that was looked at during this study was not only how the clients fared with the having music therapy over telehealth, but if this was an experience they enjoyed and would possibly want to do in the future. Going into this study, the researcher wondered if a lack of knowledge related to technology or the lack of interest in the use of technology might interfere with the results of the study. Surprisingly, the researcher found that the clients actively participated throughout the entirety of the music therapy sessions by singing along with the student researcher, playing instruments in the specific ways they were prompted to do so, as well as stretching and dancing to movements that were being modeled on the screen in front of them. When asked at the end of the final sessions if they would participate in telehealth music therapy sessions again if they were given the option to do so, two of the clients said they would, and one client said that they maybe would do it again. These findings support previous research done by Vaportzis, Clausen, & Gow (2018). Participants in their study expressed that they felt challenged at times, but that positive responses outweighed the negative, as well as many of the participants expressed that they would like to continue using the tablets and felt the advantages of using these tablets more would help to keep in touch with family and friends (Vaportzis, Clausen, & Gow, 2018). Both Client A and C appeared to manage the devices well and followed the student researcher well. Client B did so as well, but there were times where the facial expression she would make or a statement she would make (“I’m not sure how good I will be [at participating in the music therapy session], but I will give it my best.”) made it seem as if she was unsure of what she was doing. She did express that she enjoyed getting to do music therapy with the student researcher at least 2 times during each session. Based on the feedback about by the clients’ possible future with telehealth music therapy and their overall participation during the music therapy sessions, continuing to give clients the opportunity to take part in telehealth music

therapy or other forms of telehealth related therapies could possibly be beneficial to the physical, mental, social, and emotional health. By incorporating these new therapy and healthcare formats into this population's life, it may keep their brains and minds stimulated by having them learn how to navigate this new healthcare platform and technology, as a whole (Glover, 2020).

With the research that was conducted in this study, some limitations occurred, and some improvements that could have been made. One limitation that occurred was related to minor visual problems. Two visual problems included one client having difficulty being able to see the Likert mood rating scale that was being projected on her screen, as well as during the music and movement applications that included any lower body movements. While the first visual issue was fixed with the client putting on her glasses, this could be resolved with bigger fonts and/or increase the size of the numbers on the rating scale. With the second visual issue, the student researcher was only able to see the client on the screen from the waist up. Because of this, the student researcher was not able to see what lower body movements the client was doing or not doing. This could possibly be resolved by having the device being used for the telehealth sessions on a rolling table so that when telehealth sessions are occurring, the table that the device is on can be easily moved and then the music therapist can see the client's entire body.

Another limitation of the research was the lack of clients who participated. With only three participants taking part in this research, this could be the reasoning as to why there was no statistical significance in mood rating scores. Hopefully more research can occur looking at music therapy telehealth sessions with larger sample sizes, as well as covering more populations or more facilities other than the one assisted living facility that was used during this study.

The last limitation of this research revolves around the factors of limited music therapy sessions, as well as when the research took place. While it may be viewed as a limitation that the

student researcher only met with all three clients three times, one of the main purposes of this research was to explore if music therapy through telehealth was effective and what did and did not work, or possibly needed to be adapted, with regard to music therapy techniques typically used while facilitating in-person sessions. The student researcher kept all sessions the same across all clients to maintain consistency. Where this short amount of time may be seen as a limitation is with the mood rating scale. Because there were only three total ratings for each client (i.e., 9 total ratings combined) this may have led to no statistical significance in those mood rating scores. If there were more participants or more music therapy sessions facilitated, this could have possibly resulted in a more statistically significant result. The final limitation could have been when the music therapy sessions took place. The sessions occurred at the beginning of April 2021. At this point in time, the assisted living facility that was being used for the research had started to allow more social interactions between residents due to vaccines starting to be administered. This could have played a role in some of the mood ratings due to residents starting to have more socialization and activities to take part in with others, rather than being isolated which is what was being seen in many assisted living facilities and nursing homes in research that was being done at the beginning of the COVID-19 pandemic (Mok et al., 2020; Rochester Regional Health, 2020; El Haj, Altintas, Chapelet, Kapogiannis, & Gallouj, 2020; Simard & Volicer, 2020). While this may have played a role in the mood ratings that were received from the participants in this study, the research still shows that elderly populations diagnosed with Alzheimer's can receive music therapy through telehealth and that they enjoy it.

With regard to future research, because the structure of this research was to identify what music therapy techniques worked well or needed adaptations while being facilitated through telehealth, as well as looking to see if an increase in mood occurred during sessions, it would be

intriguing to see how this research could be used as a steppingstone for more in-depth and individualized sessions for elderly clients with Alzheimer's disease through telehealth. Because there is such a lack of research not only looking at telehealth music therapy sessions, but also looking at telehealth sessions with this specific population, this information can be used not only for general use by board-certified music therapists, but also to form new research topics related to telehealth music therapy. This also opens up new ways of conducting research, as well as reaching participants that researchers may not have had the opportunity to work with previously. Another path this research could be taken in, is looking at telehealth sessions with this population in a group setting. How would telehealth music therapy sessions work if each client was on their own device participating in a telehealth music therapy session? Especially with the limitation of feedback and delayed audio that is seen in much telehealth related research (Baker & Krout, 2009; Hahna, Hadley, Miller, & Bonaventura, 2012; Lightstone, Bailey, & Voros, 2015; Spooner, Lee, Langston, Sonke, Myers, & Levy, 2019; Glover, 2020), is this something that would decrease the effectiveness of the music therapy sessions, and would elderly clients be able to stay engaged?

Overall, the purpose of this research was to explore if music therapy through telehealth could be an effective tool in providing sessions to those diagnosed with Alzheimer's disease in nursing homes and/or assisted living facilities to address goals related to increasing quality of life and increasing overall mood. Even when the world goes back to "normal" after the pandemic, having research that shows that music therapy can still be facilitated through telehealth provides options to board-certified music therapists, nursing homes, assisted living facilities, and elderly populations. Clients may still have health conditions that require them to stay in their rooms at assisted living facilities or nursing homes. This may require another way of receiving therapy in



order to keep them safe and telehealth is an option to continue to provide that therapy. This research shows that, with this elderly population, this is something that can be done with small adaptations of typical music therapy techniques that we use every day and in-person with clients. While there is much more research to be done to provide the most effective music therapy sessions via telehealth, this research that has been conducted creates the starting points that are needed to take those next steps.

## REFERENCES

- Ali, A. A., Khalil, M. G., Elariny, H. A., & Abu-Elfotuh, K. (2017). Study on social isolation as a risk factor in development of Alzheimer's disease in rats. *Brain Disorders & Therapy*, 6(2), 1-10.
- Alzheimer's Association. (n.d.)a. *Depression*. Retrieved from <https://www.alz.org/help-support/caregiving/stages-behaviors/depression#:~:text=Experts%20estimate%20that%20up%20to,Apathy>
- Alzheimer's Association. (n.d.)b. *Stay mentally and socially active*. Retrieved from [https://www.alz.org/help-support/brain\\_health/stay\\_mentally\\_and\\_socially\\_active](https://www.alz.org/help-support/brain_health/stay_mentally_and_socially_active)
- Alzheimer's Association. (n.d.)c. *What is Alzheimer's disease?* Retrieved from <https://www.alz.org/alzheimers-dementia/what-is-alzheimers>
- Alzheimer's Disease Education and Referral Center. (2008). *Alzheimer's disease* [FACT SHEET]. Retrieved from <https://www.nia.nih.gov/health/alzheimers-disease-fact-sheet>
- American Music Therapy Association. (n.d.) Music therapy and Alzheimer's disease [PDF]. Retrieved from [https://www.musictherapy.org/assets/1/7/MT\\_Alzheimers\\_2006.pdf](https://www.musictherapy.org/assets/1/7/MT_Alzheimers_2006.pdf)
- American Telemedicine Association. (2019). Telehealth basics. <https://www.americantelemed.org/resource/why-telemedicine/>
- Anthem Memory Care. (2016). *Socialization for dementia care: 5 reasons why it's so important*. Retrieved from <https://www.anthemmemorycare.com/blog/socialization-for-dementia-care-5-reasons-why-it-s-so-important#:~:text=As%20the%20Alzheimer's%20Association%20on,with%20healthy%20diet%20and%20exercise.%E2%80%9D>
- Ashida, S. (2000). The effect of reminiscence music therapy sessions on changes in depressive symptoms in elderly persons with dementia. *Journal of Music Therapy*, 37(3), 170–182.

- ATA. (n.d.). *Telehealth: Designing the 21st century care*. Retrieved from <https://www.americantelemed.org/resource/why-telemedicine/>
- Baker, F., & Krout, R. (2009). Songwriting via Skype: An online music therapy intervention to enhance social skills in an adolescent diagnosed with Asperger's Syndrome. *British Journal of Music Therapy*, 23(2), 3-14.
- Bailey, J. (2020)a. *Telehealth and music therapy* [Blog]. Therabeat Inc. Retrieved from <https://www.therabeat.com/news-and-events/2020/3/23/telehealth-and-music-therapy>
- Bailey, J. (2020)b. *Telehealth struggles and solutions* [Blog]. Heart & Harmony Music Therapy. Retrieved from <https://www.heartandharmony.com/teletherapy-solutions-music-therapy/>
- Bondi, M., Edmonds, E., & Salmon, D. (2017). Alzheimer's disease: Past, present, and future. *Journal of the International Neuropsychological Society*, 23(9-10), 818-831.
- Brotons, M., & Marti, P. (2003). Music therapy with Alzheimer's patients and their family caregivers: A pilot project. *Journal of Music Therapy*, 40(2), 138–150.
- BrightFocus Foundation. (2019). Alzheimer's disease: Facts & figures. Retrieved from <https://www.brightfocus.org/alzheimers/article/alzheimers-disease-facts-figures>
- Burton, R. L., & O'Connell, M. E. (2018). Telehealth rehabilitation for cognitive impairment: Randomized controlled feasibility trial. *JMIR Res Protoc*, 7(2), e34.
- Center for Disease Control and Prevention. (2019). *Alzheimer's disease*. Retrieved from <https://www.cdc.gov/aging/aginginfo/alzheimers.htm>
- Center for Disease Control and Prevention. (2020)a. *Daily updates of totals by week and state*. Retrieved from <https://www.cdc.gov/nchs/nvss/vsrr/covid19/index.htm>
- Center for Disease Control and Prevention. (2020)b. *Symptoms of coronavirus*. Retrieved from <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

- Cevasco, A. M., & Grant, R. E. (2006). Value of musical instruments used by the therapist to elicit responses from individuals in various stages of Alzheimer's disease. *Journal of Music Therapy*, 43(3), 226-246.
- Clair, A. & Memmott, J. (2008). *Therapeutic uses of music with older adults* (2<sup>nd</sup> ed.). Silver Springs, MD: American Music Therapy Association, Inc.
- Clément, S., Tonini, A., Khatir, F., Schiaratura, L., & Samson, S. (2012). Short and longer term effects of musical intervention in severe Alzheimer's disease. *Music Perception*, 29(5), 533-541.
- Dassa, A., & Amir, D. (2014). The role of singing familiar songs in encouraging conversation among people with middle to late stage Alzheimer's disease. *Journal of Music Therapy*, 51(2), 131–153.
- Data.CMS.gov. (2020). *COVID-19 nursing home data*. Retrieved from <https://data.cms.gov/stories/s/COVID-19-Nursing-Home-Data/bkwz-xpvg/>
- El Haj, M., Altintas, E., Chapelet, G., Kapogiannis, D., & Gallouj, K. (2020). High depression and anxiety in people with Alzheimer's disease living in retirement homes during the covid-19 crisis. *Psychiatry research*, 291, 113294.
- Glover, K. K., (2020). *A phenomenological study of the therapeutic relationship of tele-music therapy in the US* [Unpublished graduate thesis]. Molloy College.
- Godwin, K. M., Mills, W.L., Anderson, J.A., & Kunik, M.E. (2013). Technology-driven interventions for caregivers of persons with dementia. *Am J Alzheimer's Dis Other Dementias*, 28(3), 216-222.
- Gold, D., Rosowsky, E., Piryatinsky, I., & Sinclair, S. J. (2020). Comparing patient and informant ratings of depressive symptoms in various stages of Alzheimer's disease. *Neuropsychology*.

- Gómez-Gallego, M., & Gómez-García, J. (2017). Music therapy and Alzheimer's disease: Cognitive, psychological, and behavioral effects. *Neurology (English Edition)*, 32(5), 300-308.
- Guétin, S., Portet, F., Picot, M. C., Pommié, C., Messaoudi, M., Djabelkir, L., Olsen, A. L., Cano, M. M., Lecourt, E., & Touchon, J. (2009). Effect of music therapy on anxiety and depression in patients with Alzheimer's type dementia: randomized, controlled study. *Dementia and geriatric cognitive disorders*, 28(1), 36–46.
- Hildebrandt, M. E. (2019). *The effect of iPad instrumentation versus traditional music instruments on sustained attention with older adults* (Order No. 22621133). Available from Dissertations & Theses @ Illinois State University; ProQuest Dissertations & Theses Global.
- Howley, E. K. (2019). Nursing home facts and statistics. U.S. news and world report. <https://health.usnews.com/health-news/best-nursing-homes/articles/nursing-home-facts-and-statistics>
- Illinois Department of Public Health. (n.d.). *Long-term care facility outbreaks COVID-19*. Retrieved from <https://www.dph.illinois.gov/covid19/long-term-care-facility-outbreaks-covid-19>
- Knott, D., & Block, S. (2020). Virtual music therapy: Developing new approaches to service delivery. *Music Therapy Perspectives*, miaa017.
- Kydd, P. (2001). Using music therapy to help a client with Alzheimer's disease adapt to long-term care. *American Journal of Alzheimer's Disease & Other Dementias*, 103–108.
- Lightstone, A. J., Bailey, S. K., & Voros, P. (2015). Collaborative music therapy via remote video technology to reduce a veteran's symptoms of severe, chronic PTSD. *Arts & Health*, 7(2), 123-136.

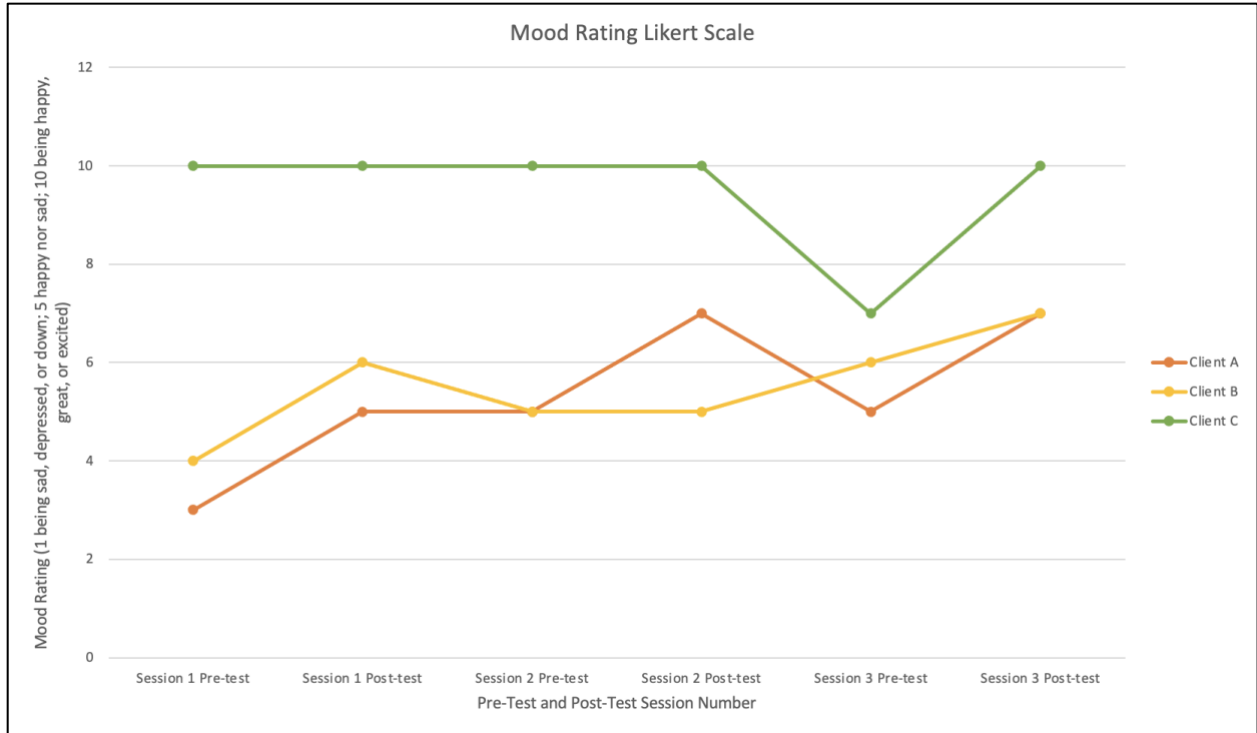
- Lowe, R. (2020). *COVID-19 pandemic's disproportionate and dangerous effects on the Alzheimer's community*. US Against Alzheimer's. Retrieved from <https://www.usagainstalzheimer.org/blog/covid-19-pandemics-disproportionate-and-dangerous-effects>
- Martínez-Alcalá, C.I., Pliego-Pastrana, P., Rosales-Lagarde, A., Lopez-Noguerola, J., & Molina-Trinidad, E.M. (2016). Information and communication technologies in the care of the elderly: systematic review of applications aimed at patients with dementia and caregivers. *JMIR Rehabilitation: Assistive Technology*, 3(1), e6.
- Mayo Clinic Staff. (2020). *Telehealth: Technology meets health care*. Mayo Clinic. Retrieved from <https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/telehealth/art-20044878>
- McCann, J. J., Gilley, D. W., Bienias, J. L., Beckett, L. A., & Evans, D. A. (2004). Temporal patterns of negative and positive behavior among nursing home residents with alzheimer's disease. *Psychology and Aging*, 19(2), 336–345.
- Mohammadi, A. Z., Shahabi, T., & Panah, F. M. (2011). An evaluation of the effect of group music therapy on stress, anxiety, and depression levels in nursing home residents. *Canadian Journal of Music Therapy*, 17(1), 55–68.

- Mok, V. C. T., Pendlebury, S., Wong, A., Alladi, S., Au, L., Bath, P. M., Jan Biessels, G., Cordonnier, C., Dichgan, M., Dominguez, J., Gorelick, P. B., Kim, S., Kwok, T., Greenberg, S. M., Jia, J., Kalaria, R., Kivipelto, M., Naegandran, K., Lam, L. C. W., Yin Ka Lam, B., Lee, A. T. C., Markus, H. S., O'Brien, J., Pai, M., Pantoni, L., Sachdev, P., Skoog, I., Smith, E. E., Srikanth, V., Suh, G., Wardlaw, J., Ko, H., Black, S. E., & Scheltens, P. (2020). Tackling challenges in care of Alzheimer's disease and other dementias amid the COVID-19 pandemic, now and in the future. *The Journal of the Alzheimer's Association*, 1-11.
- National Institute of Aging. (2019). Alzheimer's disease fact sheet. Retrieved from <https://www.nia.nih.gov/health/alzheimers-disease-fact-sheet>
- Olderog-Millard, K. A., & Smith, J. M. (1989). The influence of group singing therapy on the behavior of Alzheimer's disease patients. *Journal of Music Therapy*, Volume 26(2), 58–70.
- Orgeta, V., Tabet, N., Nilforooshan, R., & Howard, R. (2017). Efficacy of antidepressants for depression in Alzheimer's disease: Systematic review and meta-analysis. *Journal of Alzheimer's Disease*, 58(3), 725-733.
- Pollack, N. J., & Namazi, K. H. (1992). The effect of music participation on the social behavior of Alzheimer's disease patients. *Journal of Music Therapy*, 29(1), 54-67.
- Preidt, R. (2020). *Alzheimer's gene linked to severe COVID-19 risk*. WebMD. Retrieved from <https://www.webmd.com/lung/news/20200527/alzheimers-gene-linked-to-severe-covid-19-risk>
- Ridder, H. M. O., Stige, B., Qvale, L. G., & Gold, C. (2013). Individual music therapy for agitation in dementia: An exploratory randomized controlled trial. *Aging & Mental Health*, 17(6), 667–678.

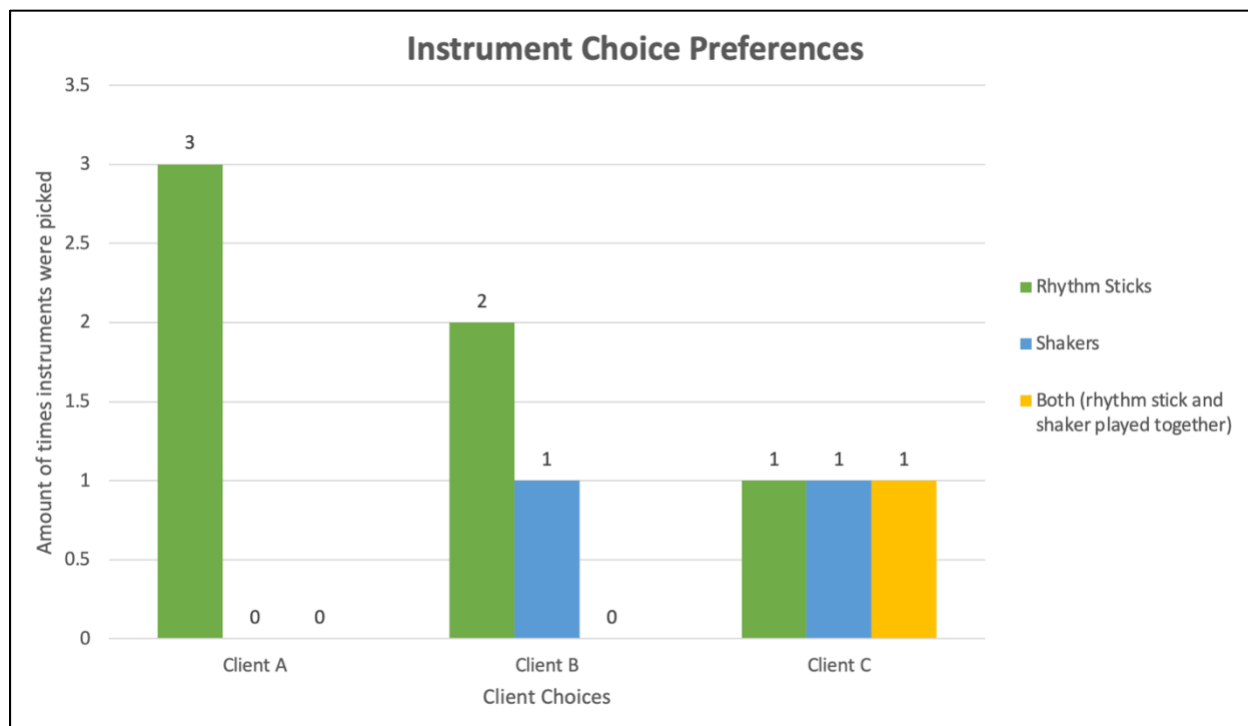
- Rochester Regional Health. (2020). *Effects of coronavirus on Alzheimer's patients & caregivers*. Retrieved from <https://www.rochesterregional.org/news/2020/06/alzheimers-covid19>
- Simard, J., & Volicer, L. (2020). Loneliness and isolation in long-term care and the COVID-19 pandemic. *JAMADA* 21, 966-967.
- Spooner, H., Lee, J. B., Langston, D. G., Sonke, J., Myers, K. J., & Levy, C. E. (2019). Using distance technology to deliver the creative arts therapies to veterans: Case studies in art, dance/movement and music therapy. *The Arts in Psychotherapy*, 62, 12-18.
- University of Michigan. (2020). *Depression worsens over time for older caregivers of newly diagnosed dementia patients*. News Wise. Retrieved from [https://www.newswise.com/coronavirus/depression-worsens-over-time-for-older-caregivers-of-newly-diagnosed-dementia-patients/?article\\_id=737388](https://www.newswise.com/coronavirus/depression-worsens-over-time-for-older-caregivers-of-newly-diagnosed-dementia-patients/?article_id=737388)
- VanWeelden, K., & Cevasco, A. M. (2007). Repertoire recommendations by music therapists for geriatric clients during singing activities. *Music Therapy Perspectives*, 25(1), 2007, 4–12.
- Vaportzis, E., Clausen, M. G., & Gow, A. J. (2018). Older adults experiences of learning to use tablet computers: A mixed methods study. *Frontiers in psychology*, 9, 1631.
- Vaudreuil, R., Langston, D. G., Magee, W. L., Betts, D., Kass, S., & Levy, C. (2020). Implementing music therapy through telehealth: Considerations for military population. *Disability and Rehabilitation: Assistive Technology*, 1-10.
- Weaver, D. (2020). *Depression and dementia in the age of COVID-19*. Medical Press. Retrieved from <https://medicalxpress.com/news/2020-09-depression-dementia-age-covid-.html>
- Yuan, E. (2012). Zoom video communications (Version 5.4.7) [Computer software]. Freemium.



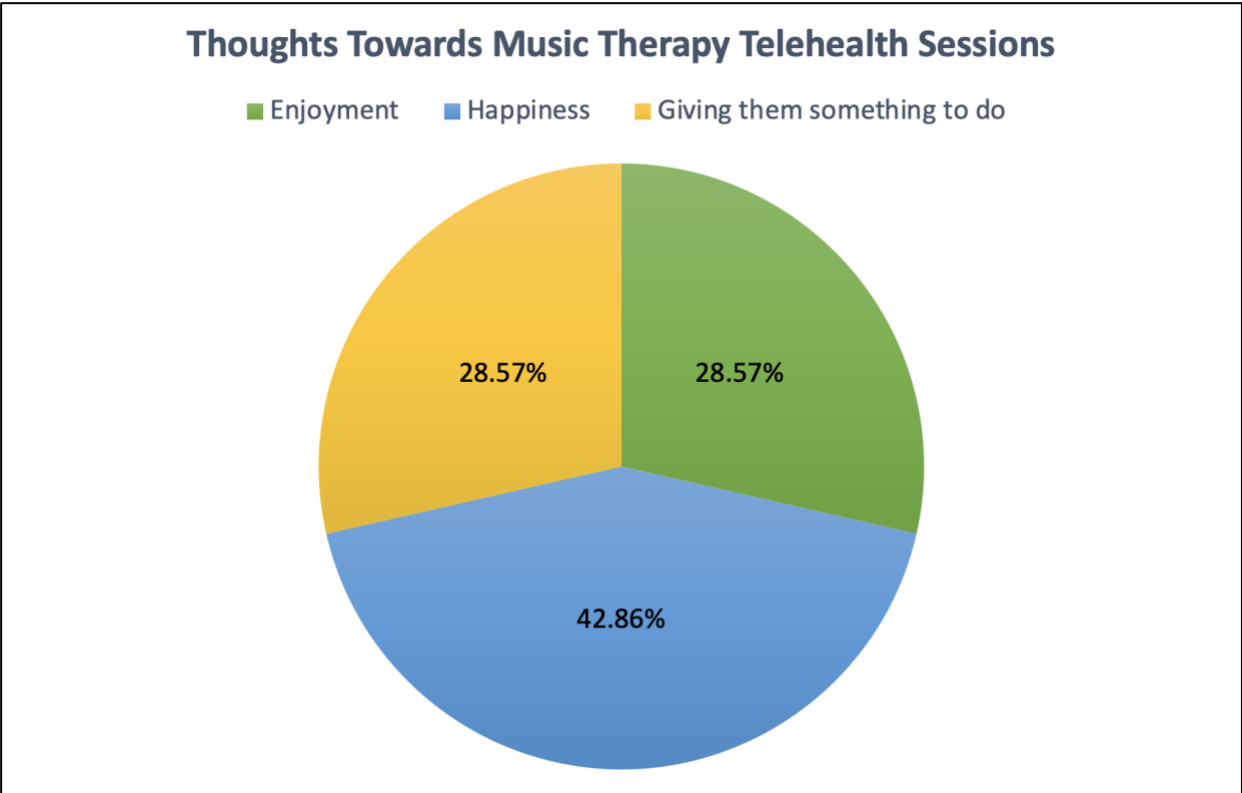
## APPENDIX A: FIGURES



*Figure 1.* This line graph depicts the mood rating pre- and post-test scores of Client A, B, and C during each music therapy session. The Likert mood rating scale was on a scale of 0-10 (1 being sad, depressed, or down; 5 happy nor sad; 10 being happy, great, or excited).



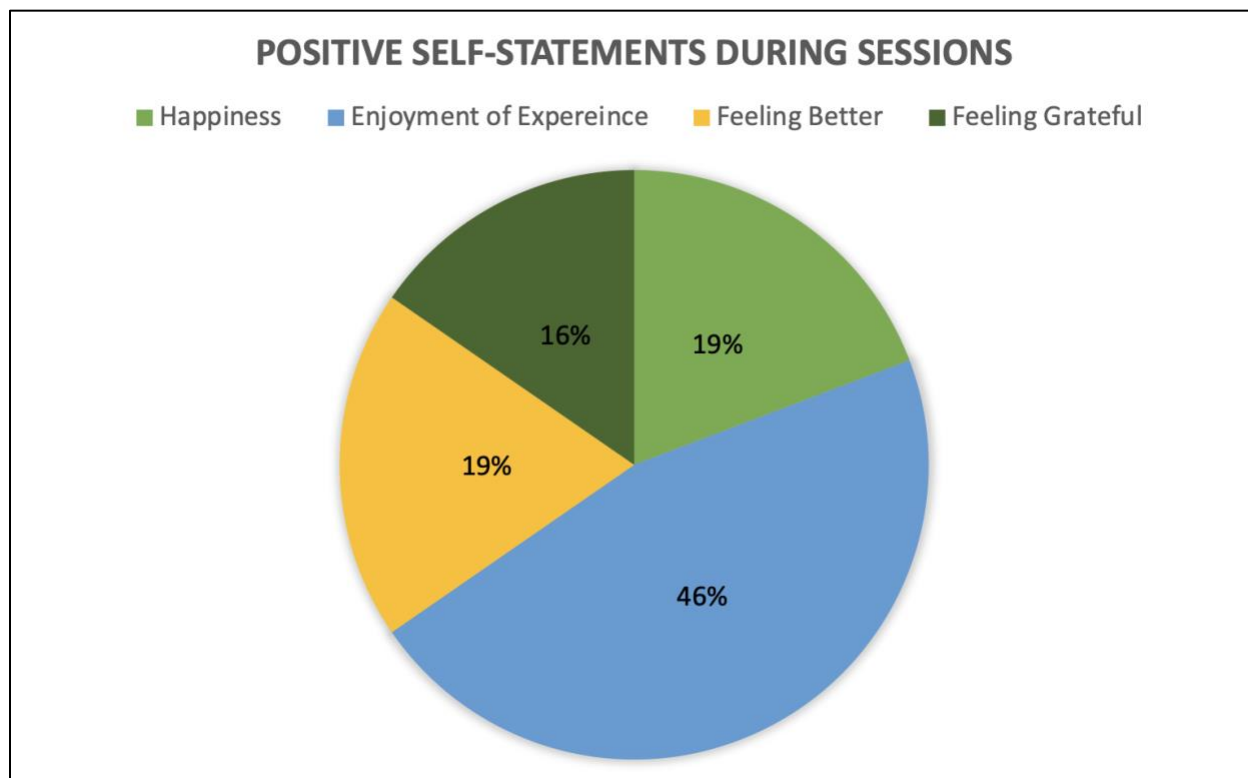
*Figure 2.* This bar graph depicts the instrument preferences that each client (i.e., Client A, Client B, and Client C) made throughout the entire week of music therapy sessions. A “both” option was included for Client C due to his choice during session 3 where he wanted to play both of the instruments together and did so by tapping one rhythm stick with one shaker.



*Figure 3.* This pie chart depicts the thoughts and responses of the clients when asked about their experiences partaking in the music therapy telehealth sessions during the post-session interview at the end of the third and final session. The verbal responses were categorized into 3 categories that included enjoyment (n=2), happiness (n=3), and giving them something to do (n=2).

<b>Application Songs</b>	<b>Application Type</b>	<b>Client A</b>	<b>Client B</b>	<b>Client C</b>
<b>Session #1</b>				
Let Me Call You Sweetheart	Reminiscing	Yes	Yes	Yes
My Bonnie Lies Over the Ocean	Instrument Playing	Yes	Yes	Yes
<b>Session #2</b>				
Edelwiess	Reminiscing	Yes	No	Yes
This Little Light of Mine	Instrument Playing	Yes	Yes	Yes
<b>Session #3</b>				
Home on the Range	Reminiscing	Yes	Yes	Yes
I Got Rhythm	Instrument Playing	Yes	No	Yes

*Figure 4.* This table includes the songs used for the reminiscing and instrument playing applications during the 3 music therapy sessions. The table shows what songs the clients verbally identified that they knew (“YES”) or what songs they verbally identified that they did not know (“NO”). Due to limited information provided by the participants, the student research used songs from a compiled list created by VanWeelden and Cevasco (2007) that included popular music that was found to be preferred by this general age group of clients that were taking part in this research.



*Figure 5.* This pie chart depicts the positive self-statements that were made by the clients throughout the entirety of the music therapy sessions. These statements were unprompted, meaning that the clients made these comments on their own without being prompted with a question by the student researcher. The positive self-statements were categorized into four categories that included happiness (n=5), enjoyment of the experience (n=12), feeling better (n=5), and feeling grateful (n=4).

Application Type	Application Description	Songs Used	Possible Goals
Opening Application	<ul style="list-style-type: none"> <li>• Clients were given rhythm sticks to play</li> <li>• The researcher played the tapping pattern on guitar</li> <li>• Clients rated how they were feeling at that current moment with the mood rating scale</li> </ul>	<ul style="list-style-type: none"> <li>• Adapted version of <i>Tonight You Belong to Me</i> by David and Rose (1956)</li> <li>• Adaptations made by Taylor Stengren (2021)</li> </ul>	<ul style="list-style-type: none"> <li>• Following simple directions</li> <li>• Communicating/expressing emotions</li> <li>• Fine motor skills</li> <li>• Remaining on task</li> <li>• Upper extremity range of motion</li> </ul>
Reminiscing Application	<ul style="list-style-type: none"> <li>• Topics covered related to loved ones, children, and where they grew up</li> <li>• The researcher would play and sing the song on guitar and then prompt questions related to the topic</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Let Me Call You Sweetheart</i> by Crosby (1934)</li> <li>• <i>Edelweiss</i> from “The Sound of Music” (1964)</li> <li>• <i>Home on the Range</i> by Higley (1872)</li> </ul>	<ul style="list-style-type: none"> <li>• Episodic memory</li> <li>• Long term memory</li> <li>• Reminiscing</li> <li>• Remaining on task</li> <li>• Answering open-ended and close-ended questions</li> </ul>
Instrumental Playing Application	<ul style="list-style-type: none"> <li>• Clients were given the choice between playing rhythm sticks or shakers</li> <li>• Clients either played up and down in front of their body or up, over, and around their head</li> <li>• The researcher modeled the movements and sang the song</li> </ul>	<ul style="list-style-type: none"> <li>• <i>My Bonnie Lies Over the Ocean</i> by Fuller (n.d.)</li> <li>• <i>This Little Light of Mine</i> by Loes (1920)</li> <li>• <i>I Got Rhythm</i> by Gershwin &amp; Gershwin (1930)</li> </ul>	<ul style="list-style-type: none"> <li>• Expressing wants and needs</li> <li>• Upper extremity range of motion</li> <li>• Following simple directions</li> <li>• Remaining on task</li> <li>• Fine motor skills</li> <li>• Making decisions</li> </ul>
Music and Movement Application	<ul style="list-style-type: none"> <li>• Clients either danced (upper and lower extremities) while seated or stretched (upper extremities) while seated</li> <li>• All music was pre-recorded by the researcher with just guitar</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Love Me Tender</i> by Presley (1956)</li> <li>• <i>Don't Sit Under the Apple Tree</i> by Miller (1939)</li> <li>• <i>Blue Suede Shoes</i> by Presley (1956)</li> <li>• <i>What a Wonderful World</i> by Armstrong (1967)</li> </ul> <p>(All songs were pre-recorded by the researcher)</p>	<ul style="list-style-type: none"> <li>• Upper extremity range of motion</li> <li>• Lower extremity range of motion</li> <li>• Following simple and complex directions</li> <li>• Remaining on task</li> <li>• Relaxation</li> <li>• Stamina</li> </ul>
Closing Application	<ul style="list-style-type: none"> <li>• Clients were given shakers and prompted to shake on the word goodbye</li> <li>• The researcher sang and played guitar during the application</li> <li>• Clients rated how they were feeling at that current moment with the mood rating scale</li> </ul>	<ul style="list-style-type: none"> <li>• Adapted version of the song <i>Goodnight, Irene</i> by Seeger (1950)</li> <li>• Adaptations made by Taylor Stengren (2020)</li> </ul>	<ul style="list-style-type: none"> <li>• Sustained attention</li> <li>• Following simple directions</li> <li>• Upper extremity range of motion</li> <li>• Fine motor skills</li> <li>• Remaining on task</li> <li>• Expression of emotions</li> </ul>

Figure 6. This table includes the session plan outline that was used during every music therapy session with each client that participated in the research. This table also includes the basic description of what was done during each application, as well as the songs that were used for the applications. The last section includes possible goals that could be used for future music therapy sessions based on what was done during the music therapy session facilitated during this research study.

## APPENDIX B: PARTICIPANT CONSENT FORM

You are being asked to participate in a research study conducted by Taylor M. Stengren [Wonsook Kim College of Fine Arts, Illinois State University] under the supervision of Dr. Andrea Crimmins and Dr. Christopher Wellin. The purpose of this study is to examine the effectiveness of telehealth music therapy sessions with individuals diagnosed with early to middle stage Alzheimer's disease.

### **Why are you being asked?**

You have been asked to participate in this study because you may meet the participant criteria for this research. Participants must meet the requirements of having a diagnosis of early to middle stage Alzheimer's disease and can express themselves verbally. Whether you have participated in either telehealth music therapy or in-person music therapy sessions is not required. Your participation in this study is completely voluntary. You will not be penalized if you choose to skip parts of the study, not participate, or withdraw from the study at any time. Whether you chose to participate or not, this will not affect your current care/services at the facility you are residing at.

### **What would you do?**

If you choose to participate in this study, you will be asked to complete an information form about yourself with questions related to general demographic questions, past treatment, previous music therapy treatment, and musical preferences. Once this form is complete, you will take part in at least 3, 20-minute music therapy sessions that will last about a week. After the last music therapy session, you will be asked to answer about six questions about your experience with the telehealth music therapy sessions. These sessions will be recorded through the Zoom during the music therapy sessions in order to analyze data after the sessions. Once the data has been collected and research is complete, the recordings, that will be stored on a flash drive, will be deleted.

### **Are any risks expected?**

We do not anticipate any risks beyond those that would occur in everyday life. Researchers will be informed of any physical limitations that the participant may have prior to music therapy sessions beginning in order to eliminate the chance of any physical risks to the participant. Any specific information or direct quotes given to the researcher by the participant during music therapy sessions that might breach confidentiality, will not be included in the research.

### **Will your information be protected?**

Your responses in the information forms, recorded sessions, and questionnaires will be confidential; nothing that will identify you will be linked to your responses. The findings from this study may be presented in a final master's thesis defense or publications. When these findings are presented, your responses will be combined with the responses of other participants. Once the research has been presented, the information will be deleted from the flash drive that it will be stored on. After your data has been deidentified, your data may be used in other research projects.

### **Who will benefit from this study?**

While you may not directly benefit from this study, your responses will help inform future music therapists on effective applications and treatment strategies used to effectively facilitate music therapy sessions through a telehealth platform with those diagnosed with Alzheimer's disease. Some benefits that the participant may get, themselves, from participating in this research is that they may find that music therapy is a suitable form of therapy and it may help them physically, emotionally, or mentally with the current status of their diagnosis.

**Whom do you contact if you have any questions?**

If you have any questions about the research, please contact the student researcher, Taylor Stengren, at [tmsteng@ilstu.edu](mailto:tmsteng@ilstu.edu).

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If you have any questions about your rights as a participant, or if you feel you have been placed at risk, contact the Illinois State University Research Ethics & Compliance Office at (309) 438-5527 or [IRB@ilstu.edu](mailto:IRB@ilstu.edu).

**Documentation of Consent**

You are verbally consenting to participate in this research study. Below includes the verbal prompt that the researcher will ask you to read if you decide to participate in this research. By verbally consenting to participate in this research, this will take the place of a physical, written consent form.

Verbal Consent Statement: "I, (insert participants name), consent to participate in this research study."

**Documentation of Video Recording Consent**

You are verbally consenting to giving permission to the student researcher to record telehealth music therapy sessions. Recorded sessions will be kept on a flash drive and used to analyze data after sessions. Once all data is collected and research is complete, all recordings and any other paperwork will be deleted and destroyed.

Verbal Consent Statement: "I, (insert participants name), consent to this research being recorded."



APPENDIX C: CLIENT INFORMATION FORM

**Client Information Form**

*This information should be filled out by the client or filled out by the client with assistance from a staff member from the nursing home/assisted living facility. These forms will be destroyed once all research has been collected and analyzed.*

**Client First Name:** \_\_\_\_\_

*(Full names will not be included in research. The researcher will use the initials of the client.)*

**Client Age:** \_\_\_\_\_

**Diagnosis:** \_\_\_\_\_

**How long has the client been residing in the nursing home/assisted living facility?**

\_\_\_\_\_

**Client's music preference (specific artists/bands, genres, or songs):**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Has this individual received any treatment or therapy prior to the COVID-19 shutdown?**

\_\_\_\_\_  
\_\_\_\_\_

**Is this individual receiving any treatment or therapy currently?**

\_\_\_\_\_  
\_\_\_\_\_

**Has the client participated in in-person music therapy sessions?** \_\_\_\_\_

**Has the client participated in telehealth music therapy sessions?** \_\_\_\_\_

**Has the client had previous experience using an electronic device (e.g. computer, laptop, iPad, kindle, etc.)?**

\_\_\_\_\_ YES

\_\_\_\_\_ NO

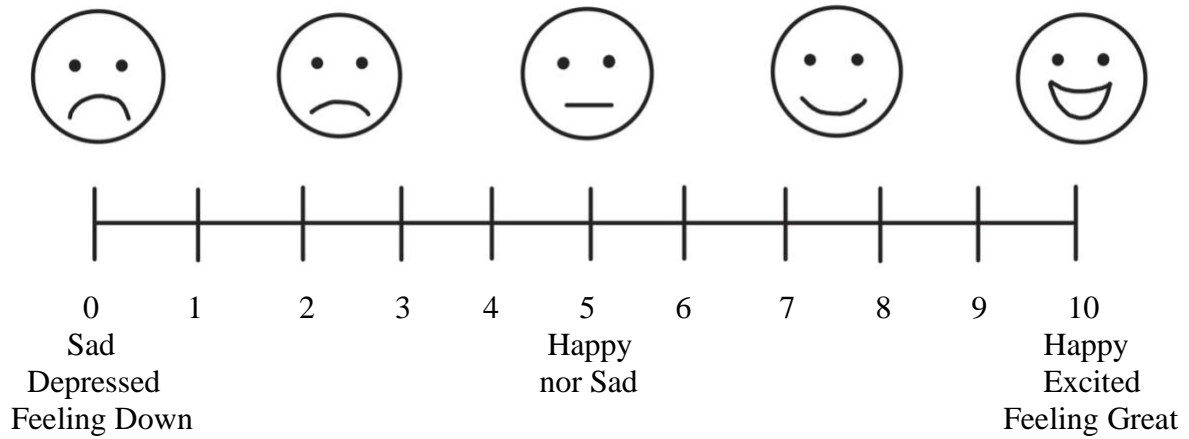
**Other comments/important information to know about this client (possibly physical, emotional, cognitive limitations) :**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## APPENDIX D: LIKERT MOOD RATING SCALE

### Likert Mood Rating Scale

*This scale will be used at the beginning and at the end of each music therapy session to identify the client's mood before music therapy sessions and after the music therapy sessions. This rating scale will be shared through the screen share option on Zoom for clients to verbally identify how they are feeling that day.*



## APPENDIX E: RESEARCH SESSION PLAN

### Research Session Plan

*General outline used during all three sessions with three clients. This format was used to incorporate music therapy techniques commonly used with this population while facilitating music therapy sessions in-person to identify if they work via telehealth, as well as to identify what adaptations may need to be made.*

1. **Opening Application**

Title: How are we feeling today?

*This application will be used as the baseline rating to see how the client is feeling that day. The rating scale will be incorporated into the procedure.*

2. **Application #2**

Title: Reminiscing application

*This application will be used for the clients to talk about past memories about family, friends, or happy events.*

3. **Application #3**

Title: Instrument/Singing application

*This application will use a variety of instruments during each session (e.g., egg shakers or rhythm sticks). The application will use preferred music to prompt instrument playing.*

4. **Application #4**

Title: Music and Dancing/Stretching application

*This application will use instrumental music to work on stretching upper and lower extremities for the clients. The music will be slower and include no vocals in order for them to begin to relax, cool down, and prepare themselves for the closing application.*

5. **Closing Application**

Title: Now it's time to say goodbye

*This application will end with the same rating scale that was used during the first application to identify how the client is feeling at the end of the music therapy session and to identify if their mood has changed after participating in the session.*

APPENDIX F: FINAL POST-SESSION DISCUSSION QUESTIONS

**Final Post-Session Discussion Questions**

*After the final music therapy session has been completed, the student music therapist will meet with the client immediately following the final session and discuss the questions listed below with each client.*

1. Did you like participating in music therapy sessions online?
2. If you had music therapy in the past, did you prefer having in-person sessions or telehealth sessions?
3. What were your favorite parts of the music therapy sessions that you enjoyed?
4. Was there anything that was difficult or that you did not like about the telehealth music therapy sessions, and if so what were they?
  1. Was it hard to hear me at times?
  2. Was it hard to see me at times?
5. What were some of the instruments that we used during the music therapy sessions that you enjoyed playing?
6. How did music therapy sessions make you feel?
7. Other comments: \_\_\_\_\_

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## APPENDIX G: COGNITIVE IMPAIRMENT SCRIPT

### *Consent Form Participation in the Study:*

(Insert participant's name), I am a student at Illinois State University that is doing a project for one of my classes. We will be doing music therapy sessions with you if you decide to do so. We will get to sing music together, play some musical instruments, dance to music, and relax to music that I will be playing for you. You will get to stay in your room during these sessions and I will meet with you over a computer. If you would like to be a part of these music therapy sessions you can sign the form that the staff member has given you.

### *Pre-Session Statement:*

Hello (insert participant's name), today we are going to spend some time doing a music therapy session. What we are going to do during these sessions is sing some songs together, play some instruments, and do some dancing to music that you may enjoy.

### *Post-Session Interview:*

(Insert participant's name), now that we have finished doing our music therapy sessions, I want to ask you a few questions about what you liked or did not like about making music with me. Is this something that you would be interested in doing?