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Perceived effectiveness of active music therapy for Alzheimer's language deficits

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University of Northern Colorado
Greeley, Colorado

Perceived effectiveness of active music therapy for Alzheimer's language deficits

A Thesis Proposal
Submitted in Partial
Fulfillment for Graduation with Honors Distinction and
The Degree of Bachelor of Arts

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Advisors: Rosann Ross and James Kole

College of Education and Behavioral Sciences

May 2019

PERCEIVED EFFECTIVENESS OF ACTIVE MUSIC THERAPY
FOR ALZHEIMER'S LANGUAGE DEFICITS

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Abstract

Alzheimer's disease (AD) is the most common form of dementia and can cause mood changes, memory loss, and loss of cognitive function. Musical interventions (known as music therapy) have been shown to effect the behavioral and memory loss aspects of AD. There have been few studies, however, completed to see what effects music therapy has on language deficits associated with AD. This study will look at the perceived effectiveness of active music therapy (MT) on the language deficits associated with AD. Active MT requires the participant to interact with the music either by playing an instrument, clapping, or singing, whereas passive MT requires the client to just listen to music. This study will administer a survey to people with AD as well as their guardians/family members, and will look at how active MT is perceived, and will assess if there is any correlation between past music experience and perceived effectiveness. Demographics as well as history of the participant's musical background will be gathered on the survey. It is hypothesized that active music therapy will be perceived as effective to help improve the language deficits in people who suffer from AD. It is also hypothesized that people with more experience with music will perceive active MT as more effective. The results from this study can be used to determine if there is a willingness to participate in active MT, and if a certain population would be more likely to participate in MT based on past experience with music.

Perceived effectiveness of active music therapy for Alzheimer's language deficits

Alzheimer's disease (AD) is a devastating form of dementia. The National Institute on Aging (2017) says this form of dementia affects about 5 million Americans. This disease is characterized by memory loss and specific language deficits, as well as changes in mood—these mood changes generally include increased depression (Jefferson et al., 2007; Sakamoto, Ando, & Tsutou, 2013), and increased anxiety and aggression (Svansdottir, & Snaedal, 2006).

Currently, the most popular form of treatment for patients who suffer from AD include antidepressants, sedatives, or neuroleptic medications (Svansdottir & Snaedal, 2006). Other drug treatments include medications that help to maintain current cognitive abilities, but are unable to reverse or stop the progression of AD (Alzheimer's, 2018). In addition to the limited benefits, many of those medications come with adverse side effects that can include vomiting, confusion, and “increased frequency of bowel movements,” (Alzheimer's, 2018). Though these medications can help with the moods of people with AD and try to maintain current cognitive function, the literature shows that they do nothing to help improve cognitive abilities or language deficits. Music therapy—a therapy involving either the listening to (passive) or the producing of (active) music for therapeutic gains—has been looked to as an alternative method of treatment for AD patients. Music therapy (MT) has been shown to improve mood in people who suffer from AD (Aldridge, 1994; Sakamoto et al., 2013; Svansdottir & Snaedal, 2006) without the side effects that the pharmaceutical drugs have. Music therapy can also improve memory in some cases (Aldridge, 1994; Baird, Samson, Miller, & Chalmers, 2017; Carruth, 1997). It is still unknown, however how music therapy can affect the language

deficits that are a presenting symptom of AD. It is also still unclear as to how the musical history of the individual can determine the effectiveness of music therapy (Baird et al., 2017).

The language deficits caused by AD leave the patient unable to comprehend and communicate with their families and caregivers. This can put stress on the caregivers themselves (Svansdottir & Snaedal, 2006) and cause emotional pain for family members (Aldridge, 1994). Because the medications given to people who suffer from AD do not improve the language and cognitive deficits, the patient is left unable to communicate what they are thinking, or how they are feeling. Finding treatments that not only improve the mood of AD patients, but also the cognitive and language dysfunctions as well, could help the patient and his/her family members/caregivers.

This study will examine the perceived effectiveness of active music therapy on the language deficits associated with AD, and determine if there is any correlation between musical background and perceived effectiveness. A survey will be used and will focus on active MT instead of passive, because it has been shown by Sakamoto et al. (2013) that active MT can have greater and longer lasting effects than passive MT. The following study will use participants from a nursing home in Loveland, Colorado, and will include residents with AD as well as their guardians/family members. The survey will include demographic information and a history of musical background. The results from this study will be able to provide further insight as to the feasibility of further research based on potential participant availability and a measurement of willingness to participate. The results from this study will also be able to determine if a certain population (those with more music experience) would be more willing to participate.

Literature Review

Alzheimer's disease (AD) is a devastating form of dementia where the brain loses its ability to function properly. People who suffer from AD experience “memory loss, impaired decision making, and language problems,” (National Institute of Aging, 2017) as well as some ability to perform tasks of daily living (Birks & Harvey, 2018). Due to these symptoms, people who suffer from AD begin to develop behavioral and psychological upsets—these can include anxiety, depression, or agitation (Svansdottir & Snaedal, 2006). Currently, the popular method for treating the behavioral aspects of this disease are antidepressants, sedatives, neuroleptic medications (Svansdottir & Snaedal, 2006) or acetylcholinesterase inhibitors to combat the cognitive symptoms of AD (Birks & Harvey, 2018). The first mentioned set of medications are only helpful for behavioral problems and come with serious side effects such as vomiting, confusion or changes in bowel movement (Alzheimer's, 2018). These medications are also used very commonly in nursing homes and care facilities to relieve stress on the nurses and care givers (Svansdottir & Snaedal, 2006). The acetylcholinesterase inhibitors do mildly improve cognitive function, but also come with negative side effects much like the behavioral medications (Birks & Harvey, 2018). Along with the downside of negative side effects, it is still unknown how long the results of acetylcholinesterase inhibitors last, and if there is any long-term benefit to taking that type of medication.

These medications that are commonly prescribed may help the individual with AD seem less distressed, and even help them remember things for a few minutes more, but ultimately, their memories are still fading, and their language deficits are still present. The aspects of language that are the first to deteriorate in AD are letter and categorical

fluency, naming, and language comprehension (Martin & Fedio, 1983; Oriá, Costa, Lima, Patrick, & Guerrant, 2009; Taler & Phillips, 2008). Taler and Phillips (2008) describe letter fluency as the ability to name as many words as possible in a given time frame that all begin with the same letter (the most common letters used are F, A, and S). Categorical fluency measures how many words can be named that all fall into a certain category, such as animals (Taler & Phillips, 2008) or things found in a supermarket (Clark et al., 2009; Martin & Fedio, 1983). These fluency tasks help measure the ability of executive function and distinguish between language ability and memory. This is an important distinction to make when diagnosing neurodegenerative diseases and can give a more clear representation of what is being affected the most (Oriá et al., 2009). Naming language ability is not just naming people, but also “word finding,” as Taler and Phillips (2008) would describe it. This specific deficit is often measured using the Boston Naming Test (BNT) (Jefferson et al., 2007; Martin & Fedio, 1983; Taler & Phillips, 2008). The lack of language ability in people with AD creates a communication gap between the patient and anyone else. People with AD are not able to find the correct words they want to use, and have difficulty remembering what fits into what category—this can especially affect tasks of daily living, such as grocery shopping. This gap, as well as the confusion and loss of memory, can then cause the depression, anxiety, and agitation to set in (Aldridge, 1994; Jefferson et al., 2007.; Svansdottir & Snaedal, 2006).

Since medications have not been able to improve the cause of the patients’ depression, anxiety, or agitation, music therapy has been tested as a way to combat the behavioral and psychological symptoms of dementia, as well as the cognitive ones. Two different types of music therapy have been tested: active and passive. Active music

therapy requires the patient to actually participate in making the music by playing an instrument (usually a percussion instrument), singing, or dancing; passive music therapy only requires the patient to listen to and experience the music (audibly or visually), whether that is listened to from a recording, or the therapist playing a live instrument.

This literature review will discuss how music therapy can be beneficial to people suffering from AD. This discussion is important because it can show the benefits of this nonpharmacological therapy that has very few, and insignificant, side effects. The possible psychological side effects include embarrassment, frustration, or disappointment in effectiveness, and the physical side effects include sore muscles from playing instruments or a sore throat from singing.

Language Deficits

The earliest signs of AD can be noticed by the language deficits—memory is a major and defining characteristic of AD, but the specific language deficits are what sets AD apart from other dementias. The first aspects of language affected by AD are fluency and naming (Martin & Fedio, 1983; Oriá et al., 2009; Taler & Phillips, 2008). Oriá et al. (2009) explains that these deficits occur mainly because the frontal lobe and subcortical regions of the brain are affected by AD. The frontal lobe allows for committal executive functioning to work properly, so when that structure breaks down, so does the ability to follow a set of rules while naming things. Naming objects is simply the ability to identify an object. When this ability has been lost or impaired by AD, the person suffering from AD may begin to feel disconnected from the social world because communicating has become much more difficult (Aldridge, 1994).

Fluency. The fluency deficit can often be seen when a person can no longer provide words that start with the same letter (letter fluency), or cannot provide things that all fit into a given category (categorical fluency). In a longitudinal study, Clark et al. (2009) found that people who had been diagnosed with AD had a larger decline in both categorical and letter fluency than people with preclinical AD and normal control participants over the course of an average of 4.1 years. This study took measurements every year for at least two years. It was also found that the categorical fluency declined faster than the naming ability in every group of participants (Clark et al., 2009). Brotons and Kroger (2000) had people who resided in a care facility that specialized in caring for people with AD, participate in therapy (active music therapy or traditional conversational therapy). Their results showed that verbal fluency and speech content increased more after four sessions of the music therapy relative to the conversational therapy. Songs were sung for the active piece of the therapy. When Martin and Fedio (1983) examined how categorical fluency compared between people with AD and normal controls, they found that the participants with AD provided shorter lists of items that would be found in a supermarket and provided fewer categories than the healthy controls. Categories used could include fruits, vegetables, household items, etc.

Naming. The inability to name items is present very early on in AD (Taler & Phillips, 2008). This naming deficit can be seen when an individual is trying to find the names of objects or people and either can't find the word, or calls the item something else (Carruth, 1997). Martin and Fedio (1983) found that, compared to normal controls, participants with AD averaged lower scores on the Boston Naming Test (BNT) by three standard deviations. The Boston Naming test is an 85-item test designed to assess naming

abilities. It presents line drawings and has the test taker name the line drawings. If the item is misperceived, a guiding cue is given, and then a phonemic cue is given if the taker cannot name the object in 20 seconds. Martin and Fedio (1983) also matched AD participants to normal controls of similar education and found that the participants with AD performed significantly worse on the BNT than the control group. The method Martin and Fedio (1983) used by matching education level could have been more significant than not, due to some findings of Jefferson et al. (2007). Jefferson and colleagues (2007) found that in normal control participants, different races and different sexes performed differently on the Boston Naming Test 30 (a shortened version of the original BNT). It was found that males outperformed females, and Whites outperformed African Americans (Jefferson et al., 2007). They concluded that when naming tests are administered and analyzed, sex, race, and education level should all be taken into consideration. To try and combat these frustrating symptoms, Carruth (1997) had female participants with varying diagnoses, go through active music therapy where they sang songs. Over half of the participants improved their naming abilities (and more specifically the recall of the names of nursing staff in the nursing home where the participants resided) after fourteen sessions of therapy over the course of four weeks.

Music Therapy

“If every hospital or asylum inducted in its medical staff a musical director, and if every physician and trained musician understood the nature and action of music, there is no telling the good that might be accomplished, the lives brightened and the tangled brains restored to harmony.” – Dr. Egbert Guernsey (Podolsky, 1954)

Music therapy is an emerging alternative therapy. It uses sounds, melodies, and movement to engage participants in therapy, instead of using traditional conversational therapy (Svansdottir & Snaedal, 2006). Music therapy allows the participants to produce, dance to, or simply listen to music while trying to reach a therapeutic goal. Some goals generally reached with people who suffer from dementia, and specifically AD, could be to improve mood (Sakamoto et al., 2013; Svansdottir & Snaedal, 2006), increase communication (Aldridge, 1994), or promote better cognitive function (Baird et al., 2017). Possible ways of achieving the above goals could be, respectively, to have participants listen to or produce music from a time period that they remember to be very joyous and peaceful, have participants improvise different rhythms or melodies in a conversation-like way with the therapist, or study topics using sung mnemonics or studying with music. The following sections will explain different types of music therapy (and the pros and cons associated with the varying methods), and the benefits of music therapy.

Active vs passive. There are two types of music therapy: active and passive. The active therapy requires the participant to help create the music in some way—whether that is by singing, playing an instrument, or clapping their hands in rhythm with the music around them, or even dancing. Passive therapy simply requires the patient to listen to music. This listening includes either having the therapist provide live music, or listening from a recording (Aldridge, 1994; Music Therapy Techniques, 2018). After the music has been listened to, feelings and impressions are discussed. Deciding what type of music therapy to be used depends heavily on what the client needs as well as what the

client is able to do. Thankfully, just about anyone can participate in passive music therapy; there are no physical requirements.

The downside to passive music therapy, however, is that it has been seen to be less effective than active: Sakamoto et al. (2013) tested the differences between active, passive, and non-music therapy groups on the behavioral and psychological symptoms of AD. The behavioral and psychological symptoms (also known as BPSD) were measured with the Behavioral Pathology in Alzheimer's Disease (BEHAVE-AD) that has the following seven categories: 1) paranoid and delusional ideation, (2) hallucinations, (3) activity disturbance, (4) aggressiveness, (5) diurnal rhythm disturbance, (6) affective disturbance, and (7) anxieties and phobias. It was found that the interactive music therapy group had the largest improvement of emotional state overall, and also had longer lasting positive effects on emotional state than the passive music therapy group and the non-music control. It was also shown by Sakamoto et al. (2013) that when songs from a positive time in the participant's life were listened to, the participants' mood improved.

Svansdottir and Snaedal (2006) found that anxiety decreased, as did activity disturbances and aggression in participants who sang familiar songs twice in each therapy session. These results from Sakamoto et al. (2013) and Svansdottir and Snaedal (2006) support the idea that familiar songs can produce greater results than unfamiliar songs. Aldridge (1994) also found that when a woman participant played the piano and xylophone with her therapist, her short-term memory, fine motor skill, and overall quality of life improved. Aldridge (1994) speculated that the conversations that the therapist and participant can have in repeating rhythms back and forth can re-enhance the structure of verbal conversation, making communication more familiar to the patient.

Benefits of music therapy. Both active and passive music therapy have been shown to have positive impacts on people who suffer from AD; decreased aggression, improved depression, and remembering names have all been discussed results of music therapy thus far. There have also been positive effects seen on caregivers and family members because of music therapy (Aldridge, 1994; Sakamoto et al, 2013). Another benefit to note is that music therapy can be encouraged and practice at the home with family members because singing, drumming, or clapping can be done anywhere (Rogers & Fleming, 1981). Music therapy has also been seen to have very limited negative side effects. Possible side effects to consider are discomfort (emotional and physical), and possible disappointment in a lack of results from therapy.

Quality of life. Quality of life (QOL) is explained as the means an individual goes about receiving satisfaction from life from things such as emotional and physical well-being, developing skills, and being able to make choices for one's lifestyle (VandenBos & APA, 2015). To measure someone's QOL, many things are taken into consideration and are generally self-reported using the BEHAVE-AD test. This test reveals information for seven different categories: 1) paranoid and delusional ideation, 2) hallucinations, 3) activity disturbance, 4) aggressiveness, 5) diurnal rhythm disturbance, 6) affective disturbance, and 7) anxieties and phobias. Sakamoto and colleagues (2013) found that both active and passive music therapy improved emotions and stress levels; passive music therapy improved the scores on two categories (6 and 7), while active music therapy improved the score on five categories (1, 3, 4, 6, and 7) of the BEHAVE-AD. This shows an overall improvement in QOL with the treatment of music therapy. After ten weekly sessions of active music therapy, a 55-year-old woman was able to cook for

herself and find appropriate clothing to wear without help (Aldridge, 1994). The items examined by the BHAVE-AD are the most commonly examined aspects of QOL, but the aspects that Aldridge (1994) looked at are also important to consider. If an individual cannot complete tasks of daily living, the individual's life can be severely impacted.

Cognition. Van de Winckel, Feys, De Weerd, and Dom (2004) wondered how using music during exercise would affect mood and cognition, compared to conversational therapy without exercising in people with dementia. They found that cognition improved for the group that used music with exercise (according to the MMSE), but found no statistical difference between mood in participants from either group. The Mini Mental State Examination (MMSE) is a cognitive test that can determine the severity of dementias. It was concluded, however, that the active part of the exercise therapy is most likely what increased the cognition in the participants more than the music. Martin and Fedio (1983) tested AD participants against normal controls to see what each participant referenced different symbols as. They had four different categories of symbols that were presented: objects, actions, modifiers, and emotions. The AD participants significantly underperformed in correctly referencing the symbols in the objects, actions, and modifiers categories (Martin & Fedio, 1983). Cohen and Masse (1993) had three groups of participants (without dementia, but had a neurological disease) that received instruction for speech therapy in three different ways: through singing, rhythmic instruction, and verbal. The group that received singing instruction improved on rate of speech, as well as verbal intelligibility more than the other two groups (Cohen & Masse, 1993). Verbal intelligibility was measured using the Computerized Assessment of Intelligibility of Dysarthric Speech which measures single

word intelligibility and sentence intelligibility. This study showed an overall improvement in language production, not just the fluency or naming ability of the participants, suggesting that the method in which instruction is given affects the comprehension of the instruction.

Language. Cohen and Masse (1993) did find that verbal intelligibility improved for a group that received singing instruction during speech therapy over groups that received rhythmic and spoken instruction; the instructions were given on speech material (vowels, words, and functional sentences). It was found that rate of speech improved with singing and rhythmic instruction more significantly than with spoken instruction. Cohen and Masse (1993) speculated that the breath support, expanded vocal range, and vocal projection all had an influence on speech intelligibility (Cohen & Masse, 1993). In 2000, Brotons and Kroger also found that spontaneous speech fluency improved more with music therapy than with traditional conversational therapy. Rogers and Fleming (1981) found that a man with severe oral apraxia (the inability to form and pronounce words correctly using mouth and throat musculature) improved much quicker in music therapy than in traditional speech therapy. When each mile marker was reached (i.e. pronouncing vowels, completing tongue exercises, etc.), it was done in the music therapy sessions first, and then later achieved in speech therapy (Rogers & Fleming, 1981).

Summary

Both passive and active music therapy improve many aspects of life for people suffering from AD. Music therapy can have significant impacts on emotion, quality of life, and communicative abilities, for the individual with AD, as well as their family and caregivers (Aldridge, 1994; Sakamoto et al., 2013). Music can connect with people on a

deeper level than words can. For example, a specific song can bring back memories from a joyful time (Svansdottir & Snaedal, 2006), elevate mood (Sakamoto et al., 2013.; Svansdottir & Snaedal, 2006), and mimic the response patterns in verbal speech with the back-and-forth, call-and-response structure that music therapy and conversations have (Aldridge, 1994). Another great advantage to music therapy over other treatments is that the side effects are practically nonexistent. The physical requirements for the participant are very simple, and are adjusted to the individual physical abilities of each participant. The therapy is also noninvasive, which sets music therapy apart from other treatments like pharmaceuticals.

Something to consider, however, when suggesting this type of therapy is how past exposure and understanding can alter the effects of music therapy. In 2017, Baird et al. looked at how musicians and nonmusicians with and without AD performed on memory tasks. Results showed that the sung mnemonic device used for the completion of a memory task was only significantly more effective than spoken mnemonics for musicians. When including those participants who had AD, only those who had a history of musical knowledge performed the memory task better with the sung mnemonic. Participants with AD who did not have prior music experience actually performed worse with the sung mnemonic than nonmusician AD participants who used the spoken mnemonic (Baird et al., 2017). If the participant is unfamiliar with music, would music therapy be helpful, or just more confusing?

With all of the evidence supporting music therapy, there is still little known of the effects that music therapy has on the language deficits of people who suffer from AD. The following project design will outline a proposal for a study looking at how music

therapy is perceived as a means to improve language ability in people with AD, as well as if the perception of effectiveness is correlated with past music experience.

Project Design

Purpose

This study will examine the perceived effectiveness of active music therapy on the language deficits of people who suffer from AD. One of the many symptoms of AD is the language deficits that appear early on in the progression of the disease. These deficits are often seen in the form of naming (Martin & Fedio, 1983) and fluency (Clark et al., 2009; Martin & Fedio, 1983). In a review done by Geretsegger, Elefant, Mossler, and Gold (2014), and Lim (2010), there was evidence supporting music therapy as being able to improve the communication abilities and speech production in children with an autism spectrum disorder. There is also information found in the literature that active music therapy can help decrease depression and anxiety in people with AD (Aldridge, 1994; Sakamoto et al., 2013; Svansdottir & Snaedal, 2006), and there is some evidence supporting music therapy as a means to facilitate memory in AD sufferers (Baird et al., 2017; Svansdottir & Snaedal, 2006).

There has been no information found, however, on how active music therapy can affect the language deficits in people who suffer from AD. The information found in this study could be beneficial for music therapists and health professionals trying to treat AD; if potential clients and their caregivers think that active music therapy would be worth time, money, and other resources, then health professionals may feel more comfortable in suggesting music therapy as a treatment. The research questions this study looked at are:

- 1) How is the effectiveness of active music therapy perceived for improving the language

deficits associated with Alzheimer's disease? 2) If active music therapy is or is not perceived to improve the language deficits of the participant, does a history of music exposure correlate?

Methodology

This study will take a postpositivist viewpoint and will have a correlational design—a survey will be used (see Appendix A) to fulfill a correlational analysis. The postpositivist viewpoint believes in obtaining informed consent, and maintains objectivity throughout the study. The survey used will be quantitative, following the postpositivist nature of obtaining knowledge, but will allow the participant to explain things qualitatively if he/she wishes to, and the attitudes assessed will also be quantified. For analysis, the quantified data will be put into SPSS and a chi-squared test will be used to determine if there is any correlation between past music experience and perceived effectiveness of music therapy.

Methods

Participants. The participants will be recruited from a nursing home in Loveland, Colorado. The Director of the nursing home will be asked to identify any resident who has been diagnosed with AD or probable AD, and if they feel any of those identified would be interested in participating in the survey. All of the residents who are recommended by the nursing home director will be contacted in person, along with their guardians—guardians will be reached initially by email or telephone (see Appendix B), then in person to receive written consent (Appendix C). Each guardian and potential participant will be told, in depth, what this survey will entail and the possible risks. Once consent has been given by the guardian on behalf of the participant with AD, each

participant with AD will be asked if he/she would like to complete the survey. If the participant with AD agrees, then the participant will be given a written consent form to sign. The guardian will also sign a consent form on behalf of themselves to complete the survey as well. All demographic information will be gathered on the survey, including past musical experience. All guardians will be given the option, and encouraged, to help their loved one with AD complete the survey. If they decline, the researcher will be available to all participants to help clarify or explain questions on the survey.

Data collection. The measurement used in this study will be a survey asking for basic demographic information, questions about musical background (exposure, use, etc.), and a question asking if music therapy has already been experienced among others.

The survey will be administered after written consent has been given by each participant, and in some cases, by the participant's guardian. The survey will then be handed to each participant along with a pen/pencil. When participants finish the survey, the lead researcher will collect the surveys. When all surveys have been collected they will be transported by the lead researcher to the University of Northern Colorado campus. All data will be collected in paper form and will be kept in a locked office on the University of Northern Colorado campus that only the primary researcher and the advisors will have access to.

Data analysis. The demographics for all participants will be analyzed and summed up by stating how many of each sex were among the participants, what the distribution of race of participants was, the average education level, as well as the range of education between participants. The music experience history will be averaged by years playing an instrument/singing/dancing, and how prevalent music was throughout

the participant's life. Demographics will also be separated into two groups, based on if the participant was a resident in the nursing home (had at least probable AD), or if the participant was a guardian.

The data pages will be kept in a filing cabinet in a locked office on the campus of the University of Northern Colorado. The only persons with access to this office and filing cabinet will be the primary researcher and her two advisors. Data will be kept for a minimum of three years starting in May of 2019, in the locked filing cabinet. To maximize confidentiality, names will not be used in publication, and no identifying demographic information will be associated with specific participants.

Discussion

There is very little physical strain on the participant, as only a survey will be completed and there are minimal foreseeable psychological risks associated with this study. There may be some frustration while participants complete the survey, but the lead researcher will be in the room with every participant to clarify if questions arise from the questionnaire. The results of this study could influence health professionals who are treating AD, as well as nursing home directors, to encourage the use of music therapy if it is perceived as an effective treatment. Finding any correlation between past music experience and perceived effectiveness could also provide a target population for music therapy (one that would be more willing to participate).

Costs that will be encountered in this study are printing data collection sheets and transportation of student researcher. There will be no compensation given to the participant, as there is no funding for this project and participation is completely voluntary.

References

- Aldridge, D. (1994). Alzheimer's disease: Rhythm, timing and music as therapy. *Biomedicine & Pharmacotherapy*, 48(7), 275-281. doi:10.1016/0753-3322(94)90172-4
- Alzheimer's Association (2018). Alzheimer's and Dementia. Retrieved from https://www.alz.org/alzheimer_s_dementia
- Baird, A., Samson, S., Miller, L., & Chalmers, K. (2017). Does music training facilitate the mnemonic effect of song? An exploration of musicians and nonmusicians with and without Alzheimer's dementia. *Journal of Clinical and Experimental Neuropsychology*, 39(1), 9-21. doi:10.1080/13803395.2016.1185093
- Birks, J. S., & Harvey, R. J. (2018). Donepezil for dementia due to Alzheimer's disease. *Cochrane Database of Systematic Reviews*, 6. doi:10.1002/14651858.CD001190.pub3.
- Brotons, M. & Kroger, S. M. (2000). The impact of music therapy on language functioning in dementia. *Journal of Music Therapy*, 38(3), 183-195.
- Carruth, E. K. (1997). The effects of singing and the spaced retrieval technique on improving face-name recognition in nursing home residents with memory loss. *Journal of Music Therapy*, 34(3), 165-186. doi:10.1093/jmt/34.3.165
- Clark, L. J., Gatz, M., Zheng, L., Chen, Y., McCleary, C., & Mack, W. J. (2009). Longitudinal verbal fluency in normal aging, preclinical, and prevalent Alzheimer's disease. *American Journal of Alzheimer's Disease and Other Dementias*, 24(6), 461-468. doi:10.1177/1533317509345154

- Cohen, N. S., & Masse, R. (1993). The application of singing and rhythmic instruction as a therapeutic intervention for persons with neurogenic communication disorders. *Journal of Music Therapy*, 30(2), 81-99. doi:10.1093/jmt/30.2.81
- Geretsegger, M., Elefant C., Mossler, K. A., & Gold, C. (2014). Music therapy for people with autism spectrum disorder. *Cochrane Database of Systematic Reviews* 6. doi:10.1002/14651858.CD004381
- Jefferson, A. L., Wong, S., Gracer, T. S., Ozonoff, A., Green, R. C., & Stern, R. A. (2007). Geriatric performance on an abbreviated version of the Boston Naming Test. *Applied Neuropsychology*, 14(3), 215-223. doi:10.1080/09084280701509166
- Lim, H. A. (2010). Effect of “developmental speech and language training through music” on speech production in children with autism spectrum disorders. *Journal of Music Therapy* 47(1), 2-26
- Martin, A. & Fedio, P. (1983). Word production and comprehension in Alzheimer's disease: The breakdown of semantic knowledge. *Brain and Language*, 19(1), 124-141. doi://doi.org/10.1016/0093-934X(83)90059-7
- Music Therapy Techniques (2018). Retrieved from <https://www.allpsychologycareers.com>
- National Institute on Aging (Producer). (2017, Aug 23,). *How Alzheimer's changes the brain*. [Video/DVD] Pixeldust Studios. Retrieved from <https://www.nia.nih.gov/health>

- Oriá, R. B., Costa, C. M., Lima, A. A., Patrick, P. D., & Guerrant, R. L. (2009). Semantic fluency: A sensitive marker for cognitive impairment in children with heavy diarrhea burdens?. *Med Hypotheses*, 73(5), 682-686. doi:10.1016/j.mehy.2009.05.013
- Podolsky, E. (1954). Music and mental health. *Mental Health*, 13(3), 99-109
- Rogers, A., & Fleming, P. L. (1981). Rhythm and melody in speech therapy for the neurologically impaired. *Music Therapy*, 1(1), 33-38.
- Sakamoto, M., Ando, H., & Tsutou, A. (2013). Comparing the effects of different individualized music interventions for elderly individuals with severe dementia. *International Psychogeriatrics*, 25(5), 775-784. doi:10.1017/S1041610212002256
- Svansdottir, H. B., & Snaedal, J. (2006). Music therapy in moderate and severe dementia of Alzheimer's type: A case-control study. *International Psychogeriatrics*, 18(4), 613-621. doi:10.1017/S1041610206003206
- Taler, V., & Phillips, N. A. (2008). Language performance in Alzheimer's disease and mild cognitive impairment: A comparative review. *Journal of Clinical and Experimental Neuropsychology*, 30(5), 501-556. doi:10.1080/13803390701550128
- Van de Winckel, A., Feys, H., De Weerd, W., & Dom, R. (2004). Cognitive and behavioural effects of music-based exercises in patients with dementia. *Clinical Rehabilitation*, 18(3), 253-260. doi:10.1191/0269215504cr750oa

VandenBos, G. R., & American Psychological Association. (2015). APA Dictionary of Psychology (Vol. Second Edition). Washington, DC: American Psychological Association.

Appendix A: Survey

1. I am the (please circle all that apply):

Participant Guardian/Family member of resident Other: _____
2. What is your age? _____
3. What is your gender? _____
4. What is your race? (Please circle all that apply)
 - a. Caucasian
 - b. African American
 - c. Latino(a)
 - d. Asian
 - e. Other (Please specify) _____
5. What is the highest level of education completed?
 - a. some high school
 - b. high school degree
 - c. some college
 - d. Associates (2 year) degree
 - e. Bachelor's degree
 - f. Graduate/Professional Degree
6. How often did you listen to music in your childhood (0-12 years)? This includes in the car, in the home, going to performances, having lessons, etc (please circle one).

0- never 1- rarely 2- a few times per year 3- once per month 4- weekly

5- a few times per week 6- daily (Please explain): _____

6.a. How often did you listen to music in your adolescence (13-18 years)? Please circle one:

0- never 1- rarely 2- a few times per year 3- once per month 4- weekly

5- a few times per week 6- daily (Please explain): _____

6.b. How often did you listen to music in your adulthood (19-40 years)? Please circle one:

0- never 1- rarely 2- a few times per year 3- once per month 4- weekly

5- a few times per week 6- daily (Please explain): _____

6.c. How often did you listen to music in your mid-adulthood (41-65 years)?

Please circle one:

0- never 1- rarely 2- a few times per year 3- once per month 4- weekly

5- a few times per week 6- daily (Please explain): _____

6.d. How often did you listen to music in your late adulthood (66-present years)?

Please circle one:

0- never 1- rarely 2- a few times per year 3- once per month 4- weekly

5- a few times per week 6- daily (Please explain): _____

7. Have you had any past experiences with music? Please circle all that apply:

Music lessons

Music classes in/outside of school

Singing regularly

Dance experience

Singing in/outside of church

Other: _____

Please explain how long each activity lasted (years if applicable): _____

8. Have you been involved in any sort of music therapy in the past? Circle one:

Yes No

If yes, please explain: how long ago, for how long were you involved, what type of music therapy (active or passive), and if it was pre or post diagnosis of Alzheimer's disease.

9. Music therapy can be effective for improving mood (circle one).

Strongly disagree Disagree Neutral Agree Strongly agree

10. Creating music is better than listening to music (circle one).

Strongly disagree Disagree Neutral Agree Strongly agree

11. Creating music to learn something new would be better than listening to music while learning something new (circle one).

Strongly disagree Disagree Neutral Agree

Strongly agree

12. Music therapy can help people with Alzheimer's disease name objects (circle one).

Strong disagree Disagree Neutral Agree Strongly agree

13. Music therapy can help people with Alzheimer's disease list objects in categories (circle one).

Strong disagree Disagree Neutral Agree Strongly agree

14. Music therapy can help improve communication in Alzheimer's disease (circle one).

Strong disagree Disagree Neutral Agree Strongly agree

15. Music therapy could help people with Alzheimer's disease (circle one).

Strongly disagree Disagree Neutral Agree Strongly agree

Why did you answer the way you did to question 15? _____

16. I would be willing to participate in music therapy

Yes Maybe No

Please explain why you chose Yes, Maybe, or No: _____

17. I would like my loved one with Alzheimer's disease to participate in music therapy.

Yes Maybe No

Please explain why you chose Yes, Maybe, or No: _____

Any further comments: _____

Appendix B: Letter of intent to families

My name is Alana Reed and I am a senior at the University of Northern Colorado. In May I plan to graduate with Honor's with a Bachelor's in Psychology and a minor in Chemistry. I am currently conducting my own research for an Honor's Thesis that examines the perceived effectiveness of active music therapy on Alzheimer's language deficits. My study will also try to determine if there is any correlation between past experiences with music and perceived effectiveness of music as a form of therapy.

Music therapy has been seen to be effective in improving mood and lowering aggression in people with Alzheimer's disease, as well as improve memory for musicians with Alzheimer's disease. Memory and mood are only some of the symptoms of Alzheimer's, however, so I would like to explore how music therapy affects the language deficits associated with this disease. Before having participants go through actual music therapy and assessing language abilities, I would first like to assess the perceptions of music therapy. I would also like to determine if people with more music experience think music therapy is more effective than people with less past music experience—in the future this could help me find a targeted population for further research.

You are being contacted by Nicole (the director at Aspen House Assisted Living) because you are the family member/guardian of a resident that has been diagnosed with Alzheimer's disease. Because of this diagnosis, I would like to ask you, and your family member with Alzheimer's, to participate in my study.

What this study will entail is a survey that will take about 15 minutes to complete. This survey will be administered in person, one time and there will not be any follow up participation needed. I would like to have both the resident with Alzheimer's disease, as well you (their guardian) take this survey to better understand the perceived effectiveness of music therapy. A consent form will be presented to each participant as well as their guardians before the survey is handed out and participation is completely voluntary. Any participant may choose to stop participating at any time, is free to leave any questions blank they do not wish to answer, and there will be no penalty.

I understand the nature of this disease so, if possible, I would encourage you (their guardian) to be in the room while the resident is completing the survey so he/she can be more comfortable. I will also be present the whole time to answer any questions anyone may have about the survey.

All surveys will be collected by me (the primary researcher) and will then be stored in a locked filing cabinet on the University of Northern Colorado campus. The only people with access to this filing cabinet will be myself and my two advisors (Rosann Ross M.A., LPC, NCC, and James Kole Ph.D.).

If participating in this study is something you think you would be interested in, please contact me (reed6182@bears.unco.edu) or Nicole (nicole@aspenhouseassistedliving.com). Please, also feel free to contact me with any questions or concerns you may have.

Thank you for your consideration!

Appendix C: Consent form



UNIVERSITY OF
NORTHERN COLORADO

CONSENT FOR HUMAN PARTICIPANTS IN RESEARCH UNIVERSITY OF NORTHERN COLORADO

Project Title: PERCEIVED EFFECTIVENESS OF ACTIVE MUSIC
THERAPY FOR ALZHEIMER'S LANGUAGE DEFICITS

Researcher: Alana Reed, Undergraduate Student

Phone: 970-817-0317

E-mail: reed6182@bears.unco.edu

Research Advisor: Rosann Ross, M.A., L.P.C., N.C.C., School of Psychological Sciences

Phone: 970-351-2485

E-mail: rosann.ross@unco.edu

James Kole, Ph.D., School of Psychological Sciences

Phone: 970-351-2422

E-mail: james.kole@unco.edu

The purpose of this study is to determine the perceived effectiveness of active music therapy on the language deficits associated with Alzheimer's disease (AD). Each participant will completed a survey on behalf of themselves.

Before surveys are handed out, a family member/guardian of the nursing home resident will sign a consent form and then the residents will sign the consent form. The family member/guardian will also be asked to complete the survey (whether or not their loved one completes a survey) and will give written consent for themselves on a separate consent form.

Some questions on the survey will address musical background:

“What is your past experience with music, i.e. music lessons, singing regularly, dance experience, always listens to music, etc?” – “Please explain.”

This information will help determine, at the end of the study, if there is any correlation between past music experience and perceived effectiveness of music therapy. The survey will take about 15 minutes to complete. While each participant is filling out the survey, the lead researcher will be present to answer any questions, and the family

members/guardians of the participants with AD will be encouraged to stay in the room as well.

All data will be collected by the primary researcher (Alana Reed) in paper form one time. All forms will be kept in a cabinet in a locked office on the University of Northern Colorado campus. The only people with access to this cabinet will be the primary researcher, as well as the two research advisors.

Participation is voluntary. You may decide not to allow your family member or yourself to participate in this study, and if he/she/you begins participation, he/she/yourself, may still decide to stop and withdraw at any time. Your decision will be respected and will not result in loss of benefits to which you/your family member are otherwise entitled. Having read the above and having had an opportunity to ask any questions, please sign below if you would like to participate in this research. A copy of this form will be given to you to retain for future reference. If you have any concerns about your selection or treatment as a research participant, please contact Nicole Morse, IRB Administrator, Office of Sponsored Programs, 25 Kepner Hall, University of Northern Colorado Greeley, CO 80639; 970-351-1910.

Date: _____

Printed name of Participant _____

Signature of Participant _____

Printed name of Guardian _____

Signature of Guardian _____

Primary Researcher signature

Date

Thank you very much!