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# The Effects of Music Therapy on Alzheimer's Disease

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It is projected that about 70% of the elderly with dementia are diagnosed with Alzheimer's disease (Hendrie, 1998). This statistic is apparent in nursing homes and elderly housing facilities. Other than drug therapies, non-pharmacologic interventions seem to have a greater impact on stimulating cognitive functioning and increasing positive behaviors. Researchers found that among all non-pharmacologic interventions, music therapy seems to be the most effective and the least harmful one (Zare, Ebrahimi, & Birashk, 2010). This proposed experimental study predicts that music therapy increases cognitive functioning in Alzheimer's and dementia patients.

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Dementia has become a major public health challenge for our aging society (Yang, Z., Zhang, K., Lin, P., Clevenger, C., & Atherly, A., 2010). More and more elderly patients have been diagnosed with dementia as the age of life expectancy increases. The average age of onset is approximately 80 years old and the typical patient will live approximately five years with dementia (Yang et al., 2010). Health Services Research (HSR) predicts that roughly one in seven of today's elderly individuals will develop dementia before death (Yang et al., 2010). Dementia manifests itself as an ongoing decrease of overall cognitive functioning and activities of daily living (Fischer-Terworth & Probst, 2011). Some behaviors that are common in dementia patients include: agitation, aggression, shouting, and the loss of short-term memory. Dementia is common in elderly patients; the incidence of dementia is rising steadily. (Khachaturian & Radebaugh, 1996).

Alzheimer's disease is the most common form of dementia among the elderly (Monczor, 2005). About 10% of people 65 years or older and 33% of people 85 years or older have dementia, of which about 70% of those with dementia have Alzheimer's disease (Hendrie, 1998). By

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extended pre-clinical period during which the underlying disease damages specific parts of the brain (Lyketsos, Szekely, Mielke, Rosenberg, & Zandi, 2008). Alzheimer's disease is characterized by an accumulation of amyloid plaques and neurofibrillary tangles and by neural destruction (Chan, Jansen, Watt, Jenkins, Frost, Rossor, & Fox, 2003). The study of early-onset Alzheimer's disease shows acceleration of brain atrophy during progression of disease (Chan et al., 2003). Atrophy in the brain and neural destruction causes a decline in memory and cognitive and behavioral functioning.

Behavioral symptoms are very important when assessing a patient with Alzheimer's disease. Behavioral functioning is observed through positive behaviors, negative behaviors, and neutral behaviors. Positive behaviors include: attempts at talking, laughing, smiling, humming, making contact, shaking head, and dancing. Negative behaviors include behaviors attesting to agitation and aggression. Neutral behaviors are defined as any behavior which does not clearly enter into the positive or negative category, such as, dozing, sleeping, or staring into space (Ziv, Granot, Hai, Dassa, & Haimov, 2007).

Many treatments, medical and non-medical, are suggested for coping with Alzheimer's disease (Zare, Ebrahimi, & Birashk, 2010). Dementia Care is an established approach that combines pharmacologic and

non-pharmacologic interventions to target dementia symptoms in an effort to delay progression and improve the lives of the patients and caregivers (Lyketsos et al., 2008). Some drug therapies, such as antipsychotic drugs and anti-depressant drugs, have been commonly used to decrease negative behaviors in Alzheimer's patients.

Although drug-therapies can be productive, studies suggest that non-pharmacological interventions have been successful (Cohen-Mansfield, 2005). Non-pharmacological interventions have been suggested to enhance cognitive affect and performance in activities of daily living, as well as reduce agitation and behavior problems (Cohen-Mansfield, 2005). Psychological interventions for dementia should not aim to reconstitute lost neuropsychological functions; rather, they should enable the patient to maintain an acceptable quality of life despite all restrictions (Fischer-Terworth & Probst, 2011). These interventions may include psychological therapy, electromagnetic therapy, or music therapy. Zare, Ebrahimi, and Birashk (2010), concluded that music therapy was more effective and less harmful than most drug-therapies.

Music therapy has been found to improve memory and reminiscence (Foster & Valentine, 2001; Sambandham & Schirm, 1995). The mere presence of music strengthens social interaction (Ziv et al., 2007). The objective of music therapy is based on reflection of emotions, memories and images that evoke experiences associated with the musical stimuli (Suzuki et al., 2004). A specific tune or song lyric may trigger childhood memories and stimulate the brain. Tappen (1994) investigated the effects of music on brain stimulation and found that music has the power to provide the Alzheimer's patient with a sense of accomplishment, to energize and stimulate, to trigger words, and to soothe and comfort both the patient and caregiver.

Increased behavioral functioning is also seen in music therapy. Music can soothe and calm Alzheimer's disease patients. Elderly housing facilities and nursing home care are encouraged to incorporate music therapy into their daily groups by staff members. Researchers suggest that if nursing homes or other caring centers use music therapy as a daily program for people with Alzheimer's disease, it may reduce intrusive behaviors in patients and decrease the levels of stress and burnout in caregivers (Zare, Ebrahimi, & Birashk, 2010).

While many therapies are successful in decreasing negative symptoms in Alzheimer's patients, music therapy is significantly effective in decreasing negative behaviors, and stimulating cognitive functioning. Through further research, music therapy has the ability to effectively help patients suffering from Alzheimer's disease. Unlike others, this study will focus mainly on increasing cognitive skills and will include a larger sample size.

## PROPOSED METHODS

### *Design Study*

An experimental study will be conducted to evaluate the effects of music therapy on cognitive functioning and behavior in patients with Alzheimer's disease. Using a within subjects design, observations before and after music therapy will be compared in order to best determine the effectiveness of music therapy.

### *Participants*

I plan to study 100 elderly Alzheimer's disease patients between ages 70 and 90 years old. Participants will be recruited from nursing homes, where they are supervised; permission will be asked of staff. Participants should be high functioning, have some motor functioning, and awareness. The staff will help to distinguish which patients best fit this criteria. We will aim to recruit an equal number of males and females in order to be able to use results for generalization purposes.

### *Measures*

An (ADCQ) Alzheimer's disease Caregivers Questionnaire (Solomon, 2002) will be completed by staff and researchers before and after evaluation, which will allow for an accurate and consistent assessment. This assessment will evaluate the behaviors and cognitive functioning of a patient with Alzheimer's disease in order to determine the level of severity in each patient.

### *Procedure*

An experimental group will receive music therapy and a control group that will not experience music therapy. After completion of the ADCQ as a pre-test, a score of cognitive ability and behavior will be determined. Participants will be asked basic questions to test memory based on childhood and present experiences.

Participants will be placed in the same room that they are usually in for group activities and therapies. Background music of their generation will be played as they complete activities such as BINGO, puzzles, cards, or just resting and relaxing. Behaviors will be observed by staff and researchers. Certain behaviors that will be looked for are: agitation, aggression, talking, smiling, dancing, humming, singing, movement, etc.

After one hour of activity, staff and researchers will sit down with participants, complete the ADCQ as well as ask the same cognitive memory questions that were asked before the therapy session. Results of pre and post tests will be compared determining if behavioral and cognitive functioning increased.

## CONCLUDING REMARKS

### Limitations

There are some limitations that can be found in this design. A longitudinal design and a larger sample size may be more successful for generalization purposes. One concern is that dementia patients are not truly diagnosed with Alzheimer's disease until after death, when an autopsy has been completed. Diagnosing Alzheimer's requires careful medical evaluation, including: A thorough medical history, mental status testing, a physical and neurological exam, and tests (such as blood tests and brain imaging) to rule out other causes of dementia-like symptoms (Alzheimer's Association, 2013).

### Significance

This design will allow me to experimentally test the benefits of music therapy on Alzheimer's disease patients. I will compare traditional group therapy to music therapy and test cognitive functioning before and after. I believe that the participants in the music therapy group will have an increase in cognitive functioning than those with traditional therapy. I also predict that participants will show less agitation and aggression after music therapy. Observing both cognitive functioning and behavioral factors may, in turn, lead to the development of music therapy programs in elderly housing facilities.

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