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The Effect of Music Therapy Interventions on Mood Elevation and Reality Orientation of Patients with Memory Deficits

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THE EFFECT OF MUSIC THERAPY INTERVENTIONS ON MOOD ELEVATION AND REALITY ORIENTATION OF PATIENTS WITH MEMORY DEFICITS

By

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ABSTRACT

The purpose of this study was to conduct a music therapy session to determine the effect of music therapy interventions on mood elevation and reality orientation of patients with memory deficits. The Null hypothesis (H_0) stated there would be no significant statistical difference between the conditions. All subjects (N = 30) consented to participate in a 30-minute individualized session to determine the effect of interventions on mood elevation and reality orientation. The subjects consisted of (n = 24) women and (n = 6) men. The study consisted of an experimental group (n = 15) and control group (n = 15). The experimental group participated in live music therapy interventions in an individualized session that included instrument-playing, lyric analysis and singing with age-appropriate, patient-preferred music. For the control group, the subjects were asked to listen to recordings of the same music in an individualized session. Both the experimental and control groups were asked to complete identical pre-tests and post-tests. For the pre-tests and post-tests, the subjects were asked to rate their mood level based on a 7-point Likert-Type scale and to answer a series of three questions based on an adapted Mini-Mental Examination to assess reality orientation (Folstein, Folstein, & McHugh, 1975). Mann-Whitney U statistical tests were used to analyze the data. The analysis of the pre-tests for reality orientation and mood elevation showed no significant statistical difference between groups. The analysis of the post-tests for reality orientation showed no significant statistical difference between groups and, therefore, the null hypothesis failed to be rejected. The analysis of the post-tests for mood elevation showed a significant statistical difference and therefore, the null hypothesis was rejected.

Keywords: music therapy intervention, dementia, reality orientation, mood elevation
INTRODUCTION

Music therapy is a relatively new field but has been used as medicine since the beginning of recorded history (Clair & Memmott, 2008). As stated by the American Music Therapy Association, “the idea of music as a healing influence […] is at least as old as the writings of Aristotle and Plato” (AMTA, 2008a). Music has the potential to reduce various disabilities incurred by dementia, or Alzheimer’s (Kneafsey, 1997). “Music therapists use music to enhance social or interpersonal, affective, cognitive, and behavioral functioning” (AMTA, 2008c).

Dementia is an illness defined as having a multitude of cognitive deficits (Davis, 1995). Dementia could be caused by one or more conditions, such as Alzheimer’s disease, Parkinson’s disease, or cardiovascular disease (Davis, Gfeller, & Thaut, 1995). “Symptoms include the loss of ability to learn new information, remember previously learned information, or both” (Davis, Gfeller, & Thaut, 1995). Additional symptoms may include, “impairment in areas such as speech, writing, gross and fine motor skills, recognition of familiar objects or people, personal hygiene, financial matters, and social skills are common” (Davis, Gfeller, & Thaut, 1995). “It was estimated that 35.6 million people lived with dementia worldwide in 2010, with numbers expected to almost double every 20 years, to 65.7 million in 2030 and 115.4 million in 2050” (Prince, Bryce, Albanese, Wimo, Ribeiro, Ferri, 2013).

In a recent 2013 study, it was stated an estimated 5.2 million Americans have been diagnosed with dementia of the Alzheimer’s type. The “baby boom generation is projected to add about 10 million to the total number of people in the United States with Alzheimer’s disease” (Thies & Bleiler, 2013). It is estimated that by the year 2050, the prevalence of Alzheimer’s disease will rise to 13.8 million in the United States. “Alzheimer’s disease is the
sixth leading cause of death in the United States and the fifth leading cause of death in Americans age 65 years or older” (Thies & Bleiler, 2013).

“Dementia of the Alzheimer’s type is considered one of the most devastating diseases of the middle and old age” (Davis, Gfeller, & Thaut, 1995). According to Davis, Dementia of the Alzheimer’s type is the most expected source of severe cognitive dysfunction in elderly adults over the age of 65 (Davis, Gfeller, & Thaut, 1995). “Prevalence estimates range from 2 percent to 10 percent of those over the age of 65 and from 13 percent up to 50 percent of those individuals 85 and older” (Papalia, Camp, & Feldman 1996).

Early symptoms of Alzheimer’s include “lapses in judgment, decline in personal hygiene, bizarre thought patterns, changes in personality disorientation to time and place, anxiety, depression, and general deterioration in overall functioning” (Davis, Gfeller, & Thaut, 1995). Death from Alzheimer’s disease occurs between 3 to 20 or more years after initial onset (McNeil, 1995). The most common average falls between 4 and 8 years (McNeil, 1995). The cause of Alzheimer’s remains unknown. The only known speculation is that it is caused by a genetic link, abnormal protein deposits in the brain, or environmental factors (Davis, Gfeller, & Thaut, 1995).

In 2007, a study was done to assess the prevalence of Alzheimer’s disease and other dementia in the United States. The results indicated that in 2002, about 13.9% of individuals aged 71 and older had a form of dementia, an estimated 3.4 million individuals. It was reported that about 9.7% of Americans lived with Alzheimer’s disease, which was approximately 2.4 millions individuals. The prevalence of dementia was stated as 5.0% of individuals 71-79 years of age. As the age increased to 90 and older, the prevalence became 37.4%. (Plassman, Langa,
An additional study was done in 2002 to assess prevalence of cognitive impairment in individuals without dementia. This longitudinal study was completed from July 2001 to March 2005. One hundred eighty individuals completed a 16- to 18-month follow assessment. Out of these 180 individuals, approximately 11.7% with cognitive impairment without dementia, eventually progressed to dementia. (Plassman, Langa, Fisher, Heeringa, Weir, Ofstedal, Burke, Hurd, Potter, Rodgers, Steffens, McArdle, Willis, & Wallace, 2008).
Dementia is a degenerative disease that is progressive in older people. It is specifically progressive if it is the Alzheimer’s-type dementia. (Clair & Memmott, 2008). The stages of dementia have been defined by Reisberg, Ferris, and Franssen (Reisberg, Ferris, & Franssen, 1985). These are described as “mild forgetfulness to the inability to ambulate, eat, or speak” (Reisberg, et al., 1985). As people are diagnosed with dementia, “they find themselves in a situation far beyond their control” (Clair & Memmott, 2008). Many people have a high risk of developing depression due to feelings of hopelessness (Clair & Memmott, 2008). The potential health concerns presented by depression include a lack or complete loss of appetite, which may lead to poor nutrition as well as sleep deprivation and a consistent resistance to perform daily living activities (Clair & Memmott, 2008). It is vital for the health of the individual with dementia that these symptoms are properly managed. Interventions in music therapy may increase overall quality of life through feelings of accomplishment and success. Music therapy allows individuals with dementia to “function with purpose and meaning” (Clair & Memmott, 2008).

The effect of music therapy on patients with memory deficits has been studied for a number of years. It has been stated that music can possibly slow down the deterioration of Alzheimer’s disease. It is also possible that music can assist in living as high quality daily existence as possible (Whitcomb, 1989). “Research supports connections between speech and singing, rhythm and motor behavior, memory for song and memory for academic (functional support) material, and overall ability of preferred music to enhance mood, attention, and behavior to enable the client to maintain or optimize function” (AMTA, 2008d).

Alzheimer’s disease (AD) is the “most common neurogenerative disease” and presents a
number of cognitive deficits along with “emotional and behavioral difficulties” (Clément, Tonini, Khatir, Schiaratura, & Séverine, 2012). In a study researching the effect of music compared to cooking for interventions for patients with Alzheimer’s disease, it was found that music is more beneficial to the patients than cooking. The music has higher results in eliciting positive emotions (Clément et al., 2012). A research question for this study was to determine if music therapy could increase mood elevation in patients with Alzheimer’s disease.

Furthermore, in a study researching the effect of music to aid in memory, ten patients diagnosed with Alzheimer’s disease were assessed for the recollection of material, both sung and spoken (Prickett & Moore, 1991). The results of the analysis indicated that music has the potential to allow patients with AD to express themselves through singing (Prickett & Moore, 1991).

Over a 2-year period in 2006, a study was performed to assess the long-term effects of group music therapy on older adults with moderate or severe dementia. The researchers investigated changes in cortisol levels in saliva and in blood pressure and by an intelligence scale. The systolic blood pressure was significantly lower in participants who were in the music group, compared to the non-music group. Data analysis showed statistical differences in maintaining physical and mental states during the 2-year period between the groups. The music group was reported to perform better than the non-music group. The results suggest that singing and playing instruments have a positive effect in preventing cardiac and cerebral diseases (Takahashi & Matsushita, 2006).
Music Preference

“Music is an integral part of most people’s lives since it has many cultural and societal uses” (Gibbons, 1977). “Most adults prefer music of their young adult years to music of other life periods” (Gatson, 1966). In a research study by Alicia Clair Gibbons assessing older adults with memory deficits, significant differences were found between preferences for music of the young adult years than music of later life periods. (Gibbons, 1977).

According to Gerdner and Swanson, it is important to take into account ethnicity and religious backgrounds during initial assessment of each subject. The musical preference of the individual is an important consideration in music therapy (Gerdner & Swanson, 1993).

In 2005, a research review was done to assess the effects of preferred music on behaviors with older adults with dementia. Eight research articles were included in the review. The articles were written between 1993-2005. Preferred music interventions showed positive outcomes in the reduction of agitated behaviors in older adults with dementia (Sung & Chang, 2005).

Live versus Recorded Music

Many people passively listen to music. Music listening demands little attention from the listener (Silber, 1999). It has been found that live music is significantly more effective in the use of music therapy. In a research study performed by Lucanne Bailey, the effects of live music singing and guitar playing were compared with tape-recorded presentations of the same songs. The subjects in this study were hospitalized cancer patients (aged 16-69 years). The results indicated that the subjects reported significantly less anxiety and tension with the live music than with the tape-recorded music (Bailey, 1983). This and subsequent research suggest that live music is preferred over recordings by most people.
In 2008, a research study was performed to assess the effects of live music therapy interventions on quality of life. The experimental group was compared with a control group that “received routine hospital care without any music therapy interventions”. Results indicated that 4 out of the 6 quality of life measures were shown to be statistically significant (Walworth, Rumana, Nguyen, & Jarred, 2008).

**Music Therapy Interventions**

Music therapy interventions have been shown to improve physical, emotional, cognitive, and social needs the clients (AMTA, 2008b). In 2005, a research study was performed to assess the effects of movement-to-music activities and rhythm activities on females in substance abuse rehabilitation. These activities were used to determine if music therapy could have a positive influence on depression, stress, anxiety, and anger of the participants. The participants of the study reported a decrease in each of the conditions following the music therapy interventions. The principle investigator chose to use movement and instrument-playing activities for two of the music therapy interventions used in this study due to previous research done in the subject area.

In a randomized controlled trial performed in Belgium, the effects of musical exercise on mood and cognitive function were assessed. The subjects included 25 female patients with dementia. The study had 2 groups that included a control group of 10 patients performing daily activities and an experimental group of 15 patients that attended exercise training supported by music. The sessions for both groups occurred for 30-minutes over a 3-month period. The dependent variables were measures on the Mini-Mental State Examination and the Amsterdam Dementia Screening Test 6. The results indicated the experimental group showed a significant improvement in cognitive functioning (Winckel, Feys, Weerdt, & Dom, 2004).
In 2003, Cevasco and Grant performed a research study with persons with Alzheimer’s disease. The purpose of the study was to assess the effect of different methods to elicit exercising to music for older adults with Alzheimer’s disease. The results indicated that the treatment condition with continuous verbal cueing showed a significantly greater participation than the one verbal cue treatment condition (Cevasco & Grant, 2003).

In 2005, a research study was done to assess the effects of three different music therapy interventions on levels of depression, stress, anxiety, and anger of female clients in substance abuse rehabilitation. The music therapy interventions included movement-to-music activities, rhythm activities, and competitive games. Although no significant differences were found among the music therapy interventions, the subjects reported a decrease in all levels tested, including depression, stress, anxiety, and anger immediately following the sessions (Cevasco, Kennedy, & Generally, 2005).

**Mood Elevation**

It is has been stated that music has the power to influence moods (Clair & Memmott, 2008). Music therapy can provide opportunities to positively change mood and emotional states in individuals with Alzheimer’s disease (AMTA, 2007). Research has shown that music therapy can positively effect mood elevation for individuals of any age. In the particular case of older adults with memory deficits, it is highly effective in reducing anxiety and stress for both the older adult and caregiver. Music therapy can provide opportunities to increase socialization between the older adult and their caregiver, subsequently offering for a more positive environment. (AMTA, 2007). “Music in synchrony with mood can act as a catalyst, releasing emotions and opening better channels of communication” (Kneafsey, 1997). “Music in its
multidimensional nature allows it to touch physical, psychological, spiritual and social levels of consciousness” (Kneafsey, 1997).

In 2001, a research study was performed to assess the effects of music therapy protocols with oncology patients. Eleven oncology patients were separated into two groups, involving two different music therapy interventions. One groups was considered the “music making” group while the other group was the “music responding” group. The Profile of Mood States-Short Form was used to assess mood changes with the subjects. The results found statistically significant improvement in mood states after all music therapy sessions (Waldon, 2001).

“Music brings energy and life to many people who approach late life with loss of cognitive or physical functioning” (Hanser, 1999). “Feelings of worthlessness and despair are transformed into pride when people are shown that they are still capable” (Hanser, 1999). Even the most withdrawn patients with dementia are able to actively participate in music therapy activities (Hanser, 1999). It has been stated that reminiscing a joyful time can be “extremely revitalizing” (Bright, 1981).

Sato Ashida studied the effectiveness of reminiscence focused music therapy treatment for depression on older adults with dementia (Ashida, 2000). The depressive symptoms of the subjects were measured by the Cornell Scale for Depression in Dementia. The results indicated that the small group reminiscence focused music therapy group reduced depressive symptoms in the older adults with dementia (Ashida, 2000).

In a research study in 1992, the relationship between music participation and social behavior was assessed for individuals with Alzheimer’s disease. It was found that music can encourage social interaction during and after music (Pollack & Namazi, 1992). In a literature review studying the effect of music therapy on older adults with dementia, thirteen studies were
reviewed demonstrating that music therapy positively influenced the subjects. The results of the literature review found that music therapy can reduce levels of agitation and increase the mood and socialization skills of older adults with dementia (Wall & Duffy, 2010).

In a research study by Suzuki, the effects of music therapy on mood changes and memory were assessed for older adults with depression. The subjects in this study lived in a residential care home and were reported to have depression. The Wilcoxon Matched-Pairs Signed-Ranks Tests were used for data analysis. The results found that a significant decrease in the subjects’ negative affect as well as a decrease in the percentages of unpleasant memories recalled following the music therapy sessions (Suzuki, 1998).

In a research study by Mathews, Clair, & Kosloski, the effects of music-based group exercise activities were assessed for older adults with dementia. The study took place over a 25-week period. The control group performed exercises without music while the experimental group performed exercises accompanied by recorded instrumental music. The results indicated an increase in participation level for the experimental group involving rhythmic music (Mathews, Clair, & Kosloski, 2001).

A controlled study was performed to assess the effects of weekly music therapy on disruptive and depressive behaviors in older adults with dementia. The subjects of the study lived in a nursing home. The music therapy protocols were found to facilitate active participation in adults in advanced dementia. The subjects showed an increase in alert responses and socialization (Han, Kwan, Chen, Yusoff, Chionh, Goh, & Yap, 2010).

In 1993, five confused and agitated patients with dementia of the Alzheimer’s type participated in a research study by Gerdner & Swanson. The subjects lived in a long-term care facility. The subjects “for whom music had played the most significant role had the most
significant reduction in agitated behavior” (Gerdner & Swanson, 1993). “Implementing music before peak levels of agitation was seen as preferable in an attempt to prevent an increase in agitated behaviors” (Gerdner & Swanson, 1993).

A total of 104 subjects were involved in an experimental study assessing the effects of music therapy interventions on older adults with dementia. The experimental group received twelve 30-minute group music therapy intervention sessions, conducted twice a week for six weeks. The control group participated in normal daily activities. After one month, the results indicated the experimental subjects showed a reduction in agitated behavior and physically aggressive behavior (Lin, Chu, Yang, Chen, Chen, Chang, Hsieh, & Chou, 2010).

A randomized controlled study was conducted to assess the effects of music on depression level in older adults. The study included 47 older adults in two groups that included an experimental group receiving music and a control group performing daily activities. Blood pressure, heart rate, respiratory rate and depression level variables were taken in the assessment. In the music group, there was a statistically significant difference in the depression scores and blood pressure (Chan, Chan, Mok, & Tse, 2009).

In a randomized controlled trial, the effect of live music on quality of life and depression on older adults with dementia was assessed. There were 47 older adults in the trial. The individuals were assessed using the Dementia Quality of Life and Geriatric Depression Scale. The study included two groups: a control group that participated in reading activities and an experimental group that participated in music activities. The results indicated that both music and reading activities can improve self-esteem, depression and a sense of belonging for older adults with dementia (Cooke, Moyle, Shum, Harrison, & Murfield, 2010).

The second research question is whether music therapy interventions such as instrument
playing, singing, discussion and movement activities can positively affect reality orientation for the participants.

**Reality Orientation**

Gfeller states that “one aspect that makes music unique is the associations each person makes with particular selections” (Gfeller, 2002). The American Music Therapy Association, music therapy can increase an “awareness of self and environment” for individuals with Alzheimer’s disease (AMTA, 2007). In 1989, Whitcomb wrote, “music gives meaning to the environment when so many other experiences are not understandable” (Whitcomb, 1989). As stated by Brotons, Koger, and Pickett-Cooper (1997) and Koger, Chapin and Brotons (1999), cognitively impaired older adults have enhanced self-respect when mastering musical tasks.

In a study by Jennifer Riegler, reality orientation was tested with two groups of geriatric patients. One group received a music-based intervention while the remaining group was the control group with no music. Each group received two 30-minute reality orientation sessions per week for 8 weeks. Results showed the non-music control group remained the same across each trial and the music-based group showed a significant interaction with reality orientation (Riegler, 1980).

In 2008, a research study was done to assess the effects of music on 59 individuals with dementia. The two groups included a control group that received educational support and entertainment activities and an experimental group that received music therapy. The subjects underwent an assessment that included a Mini Mental State Examination and Barthel Index and Neuropsychiatry Inventory. Both groups received 30 sessions over a 16-week period. Results indicated that delusions, agitation, anxiety, irritability, apathy, motor activity and night-time
disturbances significantly improved for the experimental group (Raglio, Belleli, Traficante, Gianotti, Ubezio, Villiani, & Tabucci, 2008).

In 1993, a research study was performed to assess the effects of music on patients with Alzheimer’s disease. The subjects of the study were separated into three different groups, including a music group, a recreational group that did activities such as drawing and painting and a third group that did activities such as puzzle exercises. For the music group, music classified as “Big Band” music was played during their daily recreational activities. An analysis of variance was used to assess the results of the experiment. The data analysis indicated that the music group were more alert, had a higher recollection of personal history and were overall happier than the other two groups (Lord & Garner, 1993).

A randomized controlled study was performed to assess cognitive, emotional, and social benefits of musical activities on older adults with early dementia. The study included three groups that included a control group that received usual care, a group that involved singing coaching activities, and music listening group. A total of 89 subjects were in the research study. The experiment was performed over a 10-week period. The coaching session included singing/listening to familiar songs and performing rhythmic movements. The music listening group involved reminiscence and discussions. Data analysis included extensive neuropsychological assessments, cognitive tests, and mood and quality of life scales. The results indicated the singing and music listening groups improved mood, orientation, attention, general cognition, and episodic memory (Sarkamo, Tervaniemi, Laitinen, Numminen, Kurki, Johnson, & Rantanen, 2013).

In 2007, a research study was performed to assess cognitive change during group music therapy for older adults with cognitive impairments. Once a week, the subjects were assigned to
a music therapy or control group. The Mini-Mental State Examination was given to the subjects to assess cognitive functioning 3 times per week. Results indicated significant improvement in the cognitive functioning during the following morning (Bruer, Spitznagel, & Cloninger, 2007).

**Purpose**

A variety of music therapy methods have proven effective with those with memory deficits. The purpose of this study was to compare pre-session and post-session self-reports between different single-session treatment techniques. This research study assessed the effects of live music therapy interventions compared with music listening. The live music therapy interventions included instrument-playing, lyric analysis, discussion and singing. The experimental group \((n = 15)\) received music therapy interventions for 30-minutes. The control group \((n = 15)\) listened to recordings of the same material as the experimental group for 30-minutes.
METHOD

Setting

Research was completed in a common area of an assisted living facility in Tallahassee, Florida. Subjects were treated individually in sessions. Data collection was completed on Monday, Tuesday, and Wednesday afternoons between April and May. There were no audio or video recordings made of any kind during the sessions.

Design

This study utilized a pre-test, post-test design and random assignment. The pre-tests and post-tests consisted of mood elevation self-reports based on a 7-point Likert-Type Scale and an adapted Mini-Mental Examination based on three questions (see Appendix C & D). The three questions of the Mini-Mental Examination included: What year is it? What month is it? What state are we in? (see Appendix C & D). Correct responses for the adapted Mini-Mental Examination were totaled for an overall score of reality orientation.

Participants

All male \( n = 6 \) and female \( n = 24 \) subjects were reported by the director to have mild through profound memory deficits in an assisted living facility (See Table 1). The list of subjects provided by the director of the facility were in random order and assigned alternatively to condition. The subjects were asked to participate by the principal researcher. The subjects had the opportunity to accept or decline the offer to participate. No incentives to attend the session were given. The guardians of the subjects were presented consent forms that provided a detailed description of the research study. After consent was given for each subject, the principal researcher used an approved script to present the research study to the participant (see Appendix
The subjects’ names were saved on one hard-copy master list. These documents were secured in locked cabinet in a locked office.

Table 1

*Gender Classifications*

<table>
<thead>
<tr>
<th></th>
<th>Live Music</th>
<th>Control</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>12</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
</tbody>
</table>

**Procedure**

Each individualized music therapy session occurred for 30 minutes. Prior to the music therapy intervention, the subjects were asked to complete the pre-test. The pre-test asked the participants to rate their mood based on a 7-point Likert-type scale (0=Poor, 6=Excellent). In addition to the mood assessment, the subjects were asked a series of three questions related to reality orientation based on an adapted Mini-Mental Examination (Folstein, Folstein, & McHugh, 1975). Upon completion of the session, the researcher asked the subjects to complete a posttest. The posttest consisted of identical questions related to the pretest, rating their mood based on a 7-point Likert-type scale and testing their reality orientation.
During the session, the researcher implemented songs to elicit movement activities, instrument playing, group cohesion and discussion (see Appendix B). For *When the Saints Go Marching In*, *My Bonnie Lies Over the Ocean* and *Let Me Call You Sweetheart*, some slight movements were asked of the subjects. The subjects remained in their chairs and simply moved arms and legs to a very small degree. For *I Got Rhythm*, and *Don’t Sit Under the Apple Tree*, the subjects were asked to play a simple percussive instrument, such as a shaker or tambourine. For *Oh What a Beautiful Morning*, *This Little Light of Mine*, *I Can’t Help Falling in Love*, and *You Are My Sunshine*, the subjects were asked to participate in some song lyric analysis. The PI encouraged subjects to make transfers related to reality orientation questions during song lyric analysis (see Appendix B).

**Materials**

Appropriate materials were brought to each treatment condition. For the music-based group, the principal investigator brought a guitar in soft shell case to accompany songs played in the session. Each subject in the group was offered a choice to play a small blue shaker (percussive instrument) or a tambourine to play during the songs specified earlier. For the control group, the principal investigator brought a computer with appropriate speakers to amplify recorded songs played in the session.
RESULTS

Raw data consisted of mood elevation self-reports based on a 7-point Likert-type scale and reality orientation scores based on an adapted Mini-Mental Examination for (N=30) patients (Folstein, 1975). An alpha level of .05 was used for all statistical comparisons. Mann-Whitney U Tests were used to calculate the data.

Data Analysis of Pre-Tests

Pre-tests for Reality Orientation and Mood Elevation

A comparison of the pre-tests regarding reality orientation did not show a significant difference, \( z = 1.22, p < 0.11 \) (See table 2). A comparison of the pre-tests regarding mood elevation did not show a significant difference, \( z = -0.06, p < 0.27 \) (See table 2). Therefore, there were no differences between the live music and control groups prior to the sessions.

Table 2

*Pre-Test Self-Report Response Means and Mann-Whitney Test Results*

<table>
<thead>
<tr>
<th></th>
<th>Reality Orientation</th>
<th>Mood Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordings</td>
<td>.87</td>
<td>2.67</td>
</tr>
<tr>
<td>Live Music</td>
<td>.33</td>
<td>3.0</td>
</tr>
<tr>
<td>( z )</td>
<td>1.22</td>
<td>-0.06</td>
</tr>
<tr>
<td>( p )</td>
<td>0.11</td>
<td>0.27</td>
</tr>
</tbody>
</table>
Data Analysis of Post-Tests

Post-Tests for Reality Orientation and Mood Elevation

A comparison of the post-tests regarding reality orientation did not show a significant difference, \( z = 0.6, p < 0.27 \) (See table 3). Therefore, the Null hypothesis was not rejected. A comparison of the post-tests regarding mood elevation showed a statistically significant difference, \( z = -2.07, p < 0.04 \) (See table 3). The Null hypothesis was rejected. The mood elevation mean for the live music group (4.40) was higher than the control group (2.9).

Table 3

*Post-Test Self-Report Response Means and Mann-Whitney Test Results*

<table>
<thead>
<tr>
<th></th>
<th>Reality Orientation</th>
<th>Mood Elevation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recordings</td>
<td>1.0</td>
<td>2.86</td>
</tr>
<tr>
<td>Live Music</td>
<td>.73</td>
<td>4.40</td>
</tr>
<tr>
<td>( z )</td>
<td>0.6</td>
<td>-2.07</td>
</tr>
<tr>
<td>( p )</td>
<td>0.55</td>
<td>*0.04</td>
</tr>
</tbody>
</table>

*Indicates statistical significance, \( p < .05 \).*
DISCUSSION

The Null hypothesis was rejected for the effect of live, music therapy interventions on mood elevation for older adults with memory deficits. However, the results indicated there were no significant differences in the effect of music therapy on reality orientation. Lyric analysis discussion may have placed less concentration on the question related to the current year than other reality orientation issues. This factor may have affected the results of the data.

Limitations

This study was limited to a relatively small sample size. There was a noticeable difference in gender sample size, which may have affected the results of the study. The principle investigator did not screen and control for demographics. The data may have been affected by the lack of screening. There were a number of participants that began the study confused and unaware of surroundings. Throughout the sessions for both the experimental and control groups, the participants asked for clarification of the study. This factor may have affected the results of the reality orientation data. For reality orientation questions based on the adapted Mini-Mental Examination, the principle investigator may have placed more concentration on certain questions than others. The data may have been affected by an unequal emphasis on questions with reality orientation. It is possible that the subjects may have had a greater benefit, had the sessions taken place in the mornings.

Suggestions for Further Research

Future research should include a larger sample size collected over a longer period of time. The same size should include an equal distribution of male and female participants. For further research with reality orientation, there should be an equal emphasis on each question
based on the adapted Mini-Mental Examination. Three questions may not have been enough to adequately measure mental state.

**Implications for Clinical Use**

The results of the study indicated that older adults with memory deficits may benefit from live, music therapy interventions for mood elevation. In the study, the data analysis of the post-tests concluded that there was a statistical significance comparing the live, music therapy interventions with the control group for mood elevation. The interventions included instrument-playing, movement activities and lyric analysis and singing, which have shown multiple benefits in prior research.

**Conclusion**

The implications of this study show that older adults can benefit from individualized music therapy with regard to mood, which is a serious problem for this population. Additional research is needed to further assess the effect of music therapy interventions on reality orientation.
## APPENDIX A

### REPERTOIRE LIST

<table>
<thead>
<tr>
<th>Song Title</th>
<th>Composer/Songwriters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hail, Hail, The Gang’s All Here</td>
<td>Arthur Sullivan</td>
</tr>
<tr>
<td>Oh What A Beautiful Morning!</td>
<td>From the musical, Oklahoma! Richard Rodgers/Oscar Hammerstein II</td>
</tr>
<tr>
<td>When the Saints Go Marching In</td>
<td>Louis Armstrong</td>
</tr>
<tr>
<td>I Got Rhythm</td>
<td>George Gershwin</td>
</tr>
<tr>
<td>Don’t Sit Under the Apple Tree</td>
<td>The Andrews Sisters</td>
</tr>
<tr>
<td>My Bonnie Lies Over the Ocean</td>
<td>Traditional</td>
</tr>
<tr>
<td>This Little Light of Mine</td>
<td>Harry Dixon Loes</td>
</tr>
<tr>
<td>Let Me Call You Sweetheart</td>
<td>Leo Friedman/Beth Slater Whitson</td>
</tr>
<tr>
<td>I Can’t Help Falling in Love</td>
<td>Elvis Presley</td>
</tr>
<tr>
<td>You Are My Sunshine</td>
<td>Oliver Hood</td>
</tr>
<tr>
<td>Happy Trails</td>
<td>Dale Evan Rogers</td>
</tr>
</tbody>
</table>
APPENDIX B

TREATMENT CONDITION PROTOCOL

Music Therapy Techniques Used During Experimental Group

**Hello song:** The principle investigator began with singing *Hail, Hail The Gang’s all Here*. PI encouraged subject to sing along.

*Principle investigator encouraged subjects to sing lyrics of each song listed below.*

**Songs used for movement activities:**

A. *When the Saints Go Marching In*
   Subjects were asked to march feet to the beat of the music while singing and playing a small shaker.

B. *My Bonnie Lies Over the Ocean*
   Subjects were asked to imitate arm movements modeled by the principle investigator.

C. *Let Me Call You Sweetheart*
   Subjects were asked to sway side to side while singing lyrics to song.

**Songs used for instrument-playing:**

A. *I Got Rhythm*
   Subjects were given a choice to play either a small shaker or tambourine as a percussion instrument. Principle investigator first modeled how to play the shaker. Subjects were asked to play the shaker for the duration of the song.

B. *Don’t Sit Under the Apple Tree*
   Subjects were given a choice to play either a small shaker or tambourine as a percussion instrument. Principle investigator first modeled how to play the shaker. Subjects were asked to play the shaker for the duration of the song.

**Songs used for song-lyric analysis/discussion:**

A. *Oh What a Beautiful Morning*
   Principle investigator prompted the subject to discuss the weather outside and relate it to the song. Principle investigator encouraged the subject to compare the weather to the current season. Principle investigator encouraged the subject to compare the weather during the current year to previous years.

B. *The Little Light of Mine*
   After the subject and principle investigator sang original song lyrics together, principle investigator adapted the song lyrics. Subjects were asked to fill in blanks for
the lyrics of the song. For example, subjects were asked to choose a word to fill in the following blank: “This ______ of mine”.

C. **I Can’t Help Falling in Love**
   Prior to singing the song, the principle investigator prompted the subject to think of someone they loved in their life. Following the song, the principle investigator prompted the subject to discuss someone they loved in their life.

D. **You Are My Sunshine**
   Principle investigator encouraged the subject to relate the current to the lyrics of the song. Principle investigator encouraged the subject to discuss memories related to the song.

**Good-bye Song:** The session concluded with *Happy Trails*. The PI encouraged subject to sing along.

**Music Therapy Techniques Used During Control Group**

Principle Investigator played recordings of the songs listed below.

*Hail, Hail, The Gang’s All Here*
*When the Saints Go Marching In*
*My Bonnie Lies Over the Ocean*
*Let Me Call You Sweetheart*
*I Got Rhythm*
*Don’t Sit Under the Apple Tree*
*Oh What a Beautiful Morning*
*The Little Light of Mine*
*I Can’t Help Falling in Love*
*You Are My Sunshine*
*Happy Trails*
APPENDIX C

PRE-TEST SELF-REPORT SURVEY

In relation to your mood, how are you feeling right now?

0    1    2    3    4    5    6
Poor                  Excellent

What is the year? ____________________________________________

What is the month? ___________________________________________

What state are we in? _________________________________________
APPENDIX D

POST-TEST SELF-REPORT SURVEY

In relation to your mood, how are you feeling right now?

<table>
<thead>
<tr>
<th>Poor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>Excellent</th>
</tr>
</thead>
</table>

What is the year? ____________________________________________

What is the month? ____________________________________________

What state are we in? _________________________________________
APPENDIX E

APPROVED CONSENT FORM

Principle Researcher: Kayla Breland, MT-BC

Affiliated University: Florida State University
College of Music

Participant Name: ________________________________

FSU Behavioral Consent Form
The Effect of Music Therapy Intervention on Mood Elevation and Reality Orientation on Patients with Memory Deficits

The person for whom you serve as guardian is invited to be in a research study of the effect of music therapy on mood elevation and reality orientation on patients with memory deficits. The participant was selected as a possible participant because they meet the criteria for this study. We ask that you read this form and ask any questions you may have before giving consent.

This study is being conducted by Kayla Breland. Kayla Breland is a graduate music therapy student at The Florida State University.

Background Information:
The purpose of this study is to study the effects of music on mood elevation and reality orientation.

Procedures:
If you allow consent for this study, we would ask the participant to do the following things. Each individual will be asked to participate in one session for 30 minutes. This study will not be video taped or recorded. Each participant will be asked to complete a pre-test questionnaire and post-test questionnaire of one question regarding their mood and three questions regarding the month, date and state currently residing in. During the session, the participant will be asked to participate in music activities such as instrument playing and singing. The participant may choose to leave the study at any time.

Risks and benefits of being in the Study:
There are no risks involved in this study.

The benefits to participation include possible increase in mood elevation and reality orientation.

Compensation:
There will be no compensation given to the participants of this study.

FSU Human Subjects Committee Approved on 03/12/2014 Void After 3/11/2015
HSC #2013.11922
Assent Form - Script

Principle Researcher: Kayla Breland, MT-BC

Participant Name: ______________________________

Hello, my name is Kayla Breland. I am a music therapy student at FSU. I am doing a research study that you are invited to participate in. In the research study, you will be asked to answer a few questions and participate in music activities such as instrument-playing and singing. You are free to leave the study at any time. The information gathered from this study will be kept confidential and used only for research. If you would like to participate, please sign the form below.

_________________________________________  _________________________
Signature of participant                      Date

FSU Human Subjects Committee Approved on 03/12/2014 Void After 3/11/2015
HSC #2013.11922
APPENDIX F

FLORIDA STATE UNIVERSITY APPROVAL MEMORANDUM

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8673 FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 04/16/2014
To: Kayla Boshand

Address:
Dept.: MUSIC SCHOOL

From: Thomas L. Jacobson, Chair

Re: Use of Human Subjects in Research
The Effect of Music Therapy Interventions on Mood Elevation and Cognitive Functioning for Patients with Memory Deficits

The application that you submitted to this office in regard to the use of human subjects in the research proposal referenced above has been reviewed by the Human Subjects Committee at its meeting on 03/12/2014. Your project was approved by the Committee.

The Human Subjects Committee has not evaluated your proposal for scientific merit, except to weigh the risk to the human participants and the aspects of the proposal related to potential risk and benefit. This approval does not replace any departmental or other approvals which may be required.

If you submitted a proposed consent form with your application, the approved stamped consent form is attached to this approval notice. Only the stamped version of the consent form may be used in recruiting research subjects.

If the project has not been completed by 03/11/2015 you must request a renewal of approval for continuation of the project. As a courtesy, a renewal notice will be sent to you prior to your expiration date; however, it is your responsibility as the Principal Investigator to timely request renewal of your approval from the Committee.

You are advised that any change in protocol for this project must be reviewed and approved by the Committee prior to implementation of the proposed change in the protocol. A protocol change/amendment form is required to be submitted for approval by the Committee. In addition, federal regulations require that the Principal Investigator promptly report, in writing, any unanticipated problems or adverse events involving risks to research subjects or others.

By copy of this memorandum, the chairman of your department and/or your major professor is reminded that he/she is responsible for being informed concerning research projects involving human subjects in the department, and should review protocols as often as needed to insure that the project is being conducted in compliance with our institution and with DHHS regulations.

This institution has an Assurance on file with the Office for Human Research Protection. The Assurance Number is IRB00000446.

Cc: Jayne Stanfield, Advisor
HSC No. 2013.11922
APPENDIX G

HARBOR CHASE ASSISTED LIVING FACILITY APPROVAL

Attn: Human Subjects Committee

Kayla Breland, is currently a Music Therapy graduate student from Florida State University.

Angel Hardee, Director of Memory Care at HarborChase Assisted Living and Memory Care of Tallahassee, is giving Ms. Breland permission to conduct a research study. It is entitled, “The effect of music therapy intervention on mood elevation and reality orientation on people with memory deficiencies.”

If you have any questions, please contact

Thank you.

Director of Memory Care
REFERENCES


BIOGRAPHICAL SKETCH

Name: Kayla Rose Breland

Birthplace: Boca Raton, FL

Higher Education:
The Florida State University, FL
Major: Music Therapy
Degree: B. M. (2013)

The Florida State University Tallahassee, FL
Major: Music Therapy
Degree: M.M. (2014)

Experience:
Healing Hearts Music Therapy
Tallahassee, FL (2013 - 2014)
Music Therapy Private Practice (Children and Adults with Developmental, Physical and Mental Disabilities)

Music Therapy Practicum Supervisor
Healing Hearts Music Therapy
Tallahassee, FL (2013 - 2014)

Music Therapy Intern, Southwestern State Hospital
Tallahassee, FL (2012 - 2013)

Honors:
Florida State University Dean’s List
Florida State University Marching Chiefs Medal of Honor Recipient