Teaching Health-Promotion Knowledge To Post-Stroke Patients

Jody Jackson

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EFFECTS OF MUSIC THERAPY ON THE 
BEHAVIORS OF ALZHEIMER’S 
DISEASE PATIENTS

by

JODY JACKSON

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The Effects of Music Therapy on the Behavior of Alzheimer's Disease Patients

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Abstract

Alzheimer’s disease, the most common form of dementia, has behavioral symptoms which are difficult to manage. Current methods of management have shown to be ineffective. New and nontraditional methods are needed to manage agitation in the Alzheimer’s disease patient. The purpose of this quasi-experimental study was to determine the effects of music therapy on the behavior of Alzheimer’s disease patients. The theoretical framework utilized was based on Rogers’ (1983) Science of Unitary Human Beings: A Paradigm for Nursing. The null hypothesis tested was as follows: There will be no difference in behavior of Alzheimer’s patients before and after music therapy. A convenience sample of 15 female Caucasian Alzheimer’s disease patients was obtained from an Alzheimer’s unit in a long-term care facility in Northeast Mississippi. The Jackson Mood and Behavior Tracking Instrument was used to record behaviors which occurred when no music was played for a 4-hour period for 2 weeks to determine baseline behavior. After the baseline behavior was recorded, music therapy was
administered for 30 minutes daily for a period of 2 weeks. Behaviors were recorded immediately following the music on the Jackson Mood and Behavior Tracking Instrument. Data were analyzed using a dependent t test. Data analysis revealed a significant reduction in six of the 13 observed behaviors, thus indicating there was a difference in behavior of Alzheimer’s disease patients after music therapy. Therefore, the null hypothesis was rejected. Recommendations for further research included replication of the study using a larger sample size and/or different genres of music.
Dedication

This thesis is dedicated to the memory of my daddy,

Dillard Lafayette Johnson

Without his love and encouragement, I would have never had the strength to attend graduate school. He will be forever missed and his memory forever cherished.
Acknowledgments

I would like to express my gratitude to Dr. Lynn Chilton, my advisor and committee chair, for her guidance, patience, and encouragement throughout this research endeavor.

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Chapter I
The Research Problem

Alzheimer’s disease is a progressive degenerative disease that attacks the brain and results in impaired memory, thinking, and behavior. Causes of Alzheimer’s disease are unknown, and there are no tests available to diagnose the disease. Diagnosis is established on the basis of symptoms and by eliminating other causes of mental decline. Alzheimer’s disease is characterized by an impairment of decision making that begins slowly and can progress for a long period of time (Pollaski & Tatro, 1996).

Alzheimer’s disease has other negative consequences beside cognitive decline. Psychiatric and behavioral disorders develop in a large proportion of patients and complicate management. Many caregivers report the noncognitive symptoms being as burdensome as the cognitive symptoms (Symposium Report, 1998).

Currently there is no cure for people diagnosed with Alzheimer’s disease. Managing the behavioral problems
associated with the disease may contribute to improving
the quality of life of the patient and relieve stress for
both the patient and caregiver (Brontons & Pickett-Cooper,
1996). Managing the behavioral problems of Alzheimer’s
disease patients has become the goal for therapy.
Therefore, exploration of interventions which may improve
behavioral problems in this population is appropriate for
research.

**Establishment of the Problem**

Recent studies have shown that the prevalence of
Alzheimer’s disease is higher than previously expected.
Alzheimer’s occurs in 10 to 15% of people older than 65,
19% older than age 75, and 47% of people older than 85
(Pollaski & Tatro, 1996). Four million Americans have been
diagnosed with this degenerative disease. Approximately
42,000 of those diagnosed with Alzheimer’s live in
Mississippi (Taylor, 1998).

An estimated 14 million Americans will have
Alzheimer’s by the middle of the next century unless a
cure or prevention is found. Alzheimer’s is the fourth
leading cause of death among adults as it claims the lives
of more than 100,000 each year. As the incidence of
Alzheimer’s increases so does the cost to society.
Alzheimer’s disease costs society approximately $100 billion a year. The type of care that most Alzheimer’s disease patients require is not covered under Medicare or private insurance, so that most of the cost is paid by the families of those suffering from Alzheimer’s disease (“Facts about Alzheimer’s,” 1998).

Over 50% of all Alzheimer’s disease patients are eventually placed in a nursing home due to the cognitive and behavioral problems associated with the disease. The average cost for each patient’s care in a nursing home is $36,000 a year and can exceed $70,000 a year in some parts of the country. The cost for home care for Alzheimer’s disease patients is approximately half that of nursing home costs averaging $18,000 per year. (“Facts about Alzheimer’s,” 1998). Management of cognitive and behavioral symptoms could play a part in keeping Alzheimer’s disease patients at home longer and saving society a significant amount of money.

Recent studies have shown that 80% of Alzheimer’s disease patients have problems with agitation at some time in the course of their disease process (Grossberg, 1998). These behaviors can be difficult to manage by health care providers and family members. Agitation is a behavior that
often motivates family members to institutionalize their loved one (Brontons & Pickett-Cooper, 1996).

Traditionally, the behavioral problems in Alzheimer’s disease patients have been managed pharmacologically. Medications, such as neuroleptics, benzodiazepines, anticonvulsants, and beta blockers, are commonly used to control behavioral problems. Researchers, however, have found these drugs to have only moderate effectiveness and the side effects often make the patients worse (Brontons & Pickett-Cooper, 1996).

Physical restraints also have been used to manage behavioral problems exhibited by Alzheimer’s disease patients. Because of the restrictive nature of physical restraints, health care providers have become aware of the need to provide other means for the management of problem behaviors (Brontons & Pickett-Cooper, 1996). In fact, many nursing homes have adopted a restraint-free policy.

Since neither pharmacological interventions nor physical restraints have been successful in improving behavior in these patients, nonpharmacological approaches have become an attractive and appropriate way to treat the agitated behaviors. Nontraditional, nonpharmacological methods of treatment have provided a way to treat the
emotional symptoms and the physical symptoms (Brunk, 1996).

Music, pet, and art therapy are the most commonly studied forms of nonpharmacological approaches. Of these, music therapy seems to be the approach that is gaining the most interest; however, little has been written about the effectiveness of music therapy for the management of agitation in Alzheimer’s disease patients (Gerdner & Buckwalter, 1996).

Music has been used as a soothing therapy since the beginning of time. The idea to use music as an adjunct to medical treatment developed in the late 18th century. Documented uses of music as therapy can be found following World War I. Music therapy was noted to have physiological changes on mood, blood pressure, breathing, and pulse rate. As a means to communicate and express feelings, music therapy unites the fields of music and therapy and provides treatment using a prescribed auditory medium (Music Therapy, 1998).

In music therapy, the flow of imagery is spontaneous. Music acts as a catalyst and container of the altered state experience. Music evokes feelings, stimulates problem solving, and awakens the healing potential of
body, mind, and soul (Campbell, 1992). In 1972, Bonny and Panhkle (as cited in Campbell, 1992) found that music was a powerful catalyst in achieving what they reported as music’s effectiveness in the following ways: facilitating the release of intense emotion, directing and structuring the experience, providing a sense of continuity and a state of timelessness, and contributing toward the desired peak experience (Campbell, 1992).

Judicial use of music therapy can be a powerful tool for decreasing pain, loneliness, and depression, as well as increasing group cohesion, self-expression, and self-esteem. Music that is provided in a therapeutic milieu also can reduce the need for chemical and physical interventions that sometimes are used for behavioral purposes when no other forms of therapy are available (Ragneskog, 1996). Doctors and nurses have testified that, “music is better than medicine” (Campbell, 1992, p. 186).

Music’s ability to tap into memory is evident in residents with dementia. These residents may be completely disoriented as to time and place but can often remember every word of a song from the past. This memory may allow them to have a link to their past despite their cognitive impairment (Brunk, 1996).
If favorable outcomes arise with the use of music therapy versus the use of chemical or physical interventions for dealing with behavioral problems of the demented patient, the goal of the use of music therapy will be achieved. Many anecdotal references have been made regarding the use of music therapy as treatment for the problem behaviors of Alzheimer’s disease patients but few research studies have been conducted. The purpose of this study was to determine if there is a difference in the behaviors of Alzheimer’s disease patients before and after music therapy.

Significance to Nursing

The use of music therapy for Alzheimer’s disease patients is significant to nursing in the areas of practice, theory, and research. The use of music therapy by nurse practitioners has an implication in the area of practice. Nurse practitioners function as primary health care providers and provide treatment for Alzheimer’s disease patients. If music therapy improves the quality of life of the Alzheimer’s disease patient by decreasing agitation, then it should be utilized by nurse practitioners when treating these patients.
Nurse practitioners could utilize music therapy as treatment for Alzheimer’s disease patients in the home setting or in long-term care facility settings. In the home setting, families could use the playing of music to calm their loved ones. This calming would make it easier for the family to care for them at home and would increase the quality of life for the Alzheimer’s disease patient.

Music therapy utilized by geriatric nurse practitioners can benefit Alzheimer’s disease patients residing in long-term care facilities. It could be possible for facilities to reduce the number of physical and chemical restraints used. The utilization of prescribed routine music therapy could calm and decrease negative behaviors in long-term care settings. If benefits were demonstrated over time, this information could validate insurance coverage of this modality in the future.

This study also has a contribution to nursing science in the areas of theory and research. This research adds to the existing body of knowledge concerning the use of music therapy with Alzheimer’s disease patients. It helps to support Martha Rogers’ theory that by modifying the environment of an individual, the nurse practitioner can
modify the energy field of the individual. The study will also help validate the need for insurance coverage for music therapy.

Theoretical Framework

The theoretical framework for this study was Martha Rogers’ Science of Unitary Human Beings: A Paradigm for Nursing (1983). Rogers based her conceptual model on a set of assumptions that described the life process in human beings. The theorist believed that life process was characterized by openness (Tomey & Alligood, 1998). Rogers theorized that human energy fields exist to infinity. They are continuously open and continually changing (Rogers, 1983).

Two types of energy fields exist in Rogers’ theory: human energy fields and environmental energy fields. Humans and their environment do not have energy fields, they are energy fields. The energy field is a fundamental unit of unitary man and of the environment (Rogers, 1983). Environmental and human fields have been identified by wave patterns and are in continuous change and mutual process (Tomey & Alligood, 1998).

In Rogers’ theory, a person is an open system that is in continuous process with the open system of the
environment. The purpose of nursing is to promote and facilitate health and well-being in the person. To fulfill this purpose, the nurse practitioner must promote harmony in the interaction between the human and environmental energy fields (Tomey & Alligood, 1998).

Rogers says that in changing a patient’s environment, the practitioner can help facilitate and promote the process of healing within the patient. An assessment of the immediate surroundings should be done when caring for a patient. Since the patient and the nurse practitioner are open systems, exchanging energy between themselves and their environment, the nurse practitioner and the patient can mutually plan an environment to facilitate health (Copp, 1998).

The concepts of Rogers’ theory may be applied by correlating the energy fields both living and nonliving to the Alzheimer’s disease patients and their environment. The concept of open systems correlates to the interaction between Alzheimer’s disease patients and their environment, and pattern refers to the behaviors of the Alzheimer’s disease patients.

In this research study, music therapy correlates to the environmental energy field. Alzheimer’s disease
patients are open systems consisting of open energy fields. They interact with their environment and its energy field on a continual basis. Changing the environment with music therapy promotes and facilitates health by promoting harmony between the energy fields.

Assumptions

The assumptions surrounding this study were as follows:

1. Alzheimer’s disease patients can exhibit various behaviors.

2. Music impacts the environment.

3. Individuals continually interact with their environment.

Purpose of the Study

The purpose of this study was to determine if there is a difference in the behavior of Alzheimer’s disease patients before and after music therapy. This study also sought to add to the body of knowledge about alternative interventions for the management of problem behavior in patients with Alzheimer’s disease.
Statement of the Problem

Alzheimer’s disease patients suffer from behavioral problems every day. Current interventions do not effectively manage the behaviors. The researcher sought to implement an intervention which would improve the behavior of Alzheimer’s disease patients by decreasing agitation. This study examined the problem: Does music therapy impact the behaviors of Alzheimer’s disease patients?

Research Hypothesis

One research hypothesis was generated for this study. The null hypothesis tested was as follows: There will be no difference in the behaviors of Alzheimer’s disease patients before and after music therapy.

Definition of the Terms

For purposes of this research, the following definitions were provided:

Difference in behavior: Theoretical: Difference is defined as “the magnitude or degree by which one quality or quantity differs from another of the same kind” (Stedman, 1990, p. 434). Behavior is defined as “any response emitted by or elicited from an organism; any mental or motor act or activity; and more specifically
parts of a total response pattern” (Stedman, 1990, p. 179). Operational: For the purpose of this study, behavior was conduct or actions of persons with Alzheimer’s disease as identified by the Jackson Mood and Behavior Tracking Instrument. Behavior was observed and recorded between the hours of 2:00 p.m. and 6:00 p.m. In order for there to be a difference in behavior with the participants of the study, more than one third of the behaviors listed on the Jackson Mood and Behavior Tracking Instrument would have to be significantly decreased.

Alzheimer’s disease patient: Theoretical: a person who exhibits symptoms in which there is a general progressive deterioration of the mental status characterized by disorientation, impaired memory, judgement, and intellect (Stedman, 1990). Operational: female patients diagnosed with a progressive dementia, characterized by disorientation, impaired memory, judgment, and intellect, residing in an Alzheimer’s unit in a long-term care facility in Northeast Mississippi. Ages of participants ranged from 65 to 90 years.

Music therapy: Theoretical: Music therapy is defined as

... the use of music (the assembling intelligible combinations of tones in an
organized, structured form) to provide a variety of listening and participatory experiences adapted to the needs of the individual clients, such as an opportunity for nonverbal communication, shared experiences, emotional expression, relaxation, and nonthreatening enjoyment. (Fortinash & Holoday-Worret, 1996, p. 566)

Operational: The intervention for this study utilized daily playing of a 30-minute gospel cassette tape to Alzheimer’s disease patients during the time period from 1:30 p.m. to 2:00 p.m. for 2 weeks.

Summary

There is no cure for Alzheimer’s disease. Managing the behavioral problems of these patients contributes to the quality of life for the patient and relieves stress for the caregiver (Brontons & Pickett-Cooper, 1996). The purpose of this study was to determine if there was a difference in behaviors before and after music therapy. Rogers’ Science of Unitary Human Beings Theory was utilized to guide the study. Rogers believed that people continuously interact with their environment and that modifying one’s environment will in turn have an impact on the person. The null hypothesis that was tested was as follows: There will be no difference in the behaviors of
Alzheimer's disease patients before and after music therapy.
Chapter II
Review of Literature

Review of the literature indicated that while there were numerous anecdotal references concerning music therapy as a treatment for Alzheimer’s disease patients, only a small number of studies were published. Few research studies involving music therapy and Alzheimer’s disease patients were found. Other research reviewed included music therapy as treatment for groups of subjects similar to Alzheimer’s disease patients and other forms of alternative interventions with dementia patients.

Ragneskog (1996) investigated if and how different dinner music affected demented patients residing in a nursing home ward. The researcher hypothesized that music could produce a relaxing atmosphere for demented patients which would lead to a reduction in symptoms. The independent variable was the music that was played at select times, and the dependent variables were the effect of the music and symptoms exhibited by the demented patients (Ragneskog, 1996).
A quasi-experimental pre-post design was employed. A long-term care facility near Gothenbourg, Sweden, was the setting. This facility was chosen because it has a special care unit for demented patients (Ragneskog, 1996).

A non-probability sampling design was used, and 10 patients who had the highest scores of the Multi-Dimensional Dementia Assessment Scale were considered eligible for the sample. Five of those who qualified to participate actually participated in the study (Ragneskog, 1996).

Five subjects were subjected to three different types of music at random and observed for an effect on the behavior during dinner. The subjects were video-recorded during five different periods. The first period was deemed a breaking-in period and was for one week. This period was used to obtain baseline data and allow the subjects and staff to acquaint themselves with the equipment. The remaining four periods lasted for 2 weeks each. During the second, third, and fourth periods one of three types of music was played. Types of music utilized in the study were soothing, pop, and 1920s/1930s music. No music was played during the fifth period and was considered a control period. Between the three musical periods, there
was a one-week interval with no music. The total study period was 11 weeks. Only workdays were used for the intervention. A total of 40 dinners were observed in the study (Ragneskog, 1996).

A tape recorder with prerecorded cassettes was used during the study. The music lasted from 30 to 45 minutes and was played simultaneously for all patients during dinner. The sequence of the three types of music chosen was decided randomly. The staff cooperated in finding the most suitable sound level for the music. The music was turned on 5 minutes before dinner and was played until the last patient had finished his or her meal. The time spent with dinner was measured by stopwatch from the time the main course was served to when the subject had finished it or it had been taken away. Dessert was the second course. The time between courses was excluded from the data collection (Ragneskog, 1996).

The subjects were video-recorded throughout their dinner. Four of the subjects sat together with three other patients around a large dining table, while the fifth subject sat in a chair with a fixed table by himself in another dining room. To avoid distractions, two cameras (one in each room) were fixed to the corners of the
The video recordings were performed without sound registration and lasted from 30 to 45 minutes (Ragneskog, 1996).

The video cassettes were coded to ensure that the researchers were unaware of which type of music was being played. The video recordings were divided into 2-minute observation segments and were analyzed after one another. For each segment, certain behaviors were noted as being present. Data from the recordings were reported as mean frequencies of the observed 2-minute segments for each subject during the period. All observations were compared to the control period. The intention was to analyze a total of 200 meal situations. Due to several factors 14 meal situations were missing. Changes in behavior during mealtime and time spent with dinner were statistically analyzed by multivariate analysis of repeated measurements followed by multiple comparisons with the control period (Ragneskog, 1996).

Four of the five subjects spent more time with dinner during the three musical periods in comparison with the control period. Overall, subjects spent the longest time at dinner when exposed to the playing of the soothing music; secondly, when music from the 1920s and 1930s was
played; and, lastly, when the pop music was played. The fifth subject spent more time with dinner during the 1920s/1930s music and the pop music. The total mean time spent with a meal was increased by 22% when music was played, compared to the control time (Ragneskog, 1996).

With the video observation, differences were seen during the musical sessions compared to the control period. The subjects were noted to eat by themselves more often, but when the soothing music was played they were fed more often as they sat without touching their food or pushed their plates away more (Ragneskog, 1996).

Ragneskog concluded that music does beneficially affect restlessness and agitated demented patients. Music, especially soothing music, was a means to increase the time spent eating at dinner. Also music allowed the patients to eat their dinner more calmly (Ragneskog, 1996).

The researcher recommended further study to investigate how individually adapted music might affect people suffering from dementia. Also, the author suggested replication of the study using a different sequence of music (Ragneskog, 1996).
The relevance of Ragneskog’s (1996) research to the proposed research was in the similar use of music therapy to control restlessness in the demented patient. The current study sought to explore the effects of music therapy on behavior of Alzheimer’s disease patients throughout a 4-hour period, while the Ragneskog (1996) study explored restlessness during mealtime.

In another study by Brotons and Pickett-Cooper (1996), the effects of live music on agitated behavior of Alzheimer’s disease patients during and after music therapy intervention were examined. The researchers hypothesized that there would be no significant difference in agitated behavior of Alzheimer’s disease patients before, during, and after music therapy. They also hypothesized that there would be no significant difference in the scores of agitated behavior between music therapist and caregivers/facility staff. A third hypothesis was that there would be no significant difference in the effects of music therapy on agitated behavior between those subjects who had a musical background and those who did not have a musical background (Brotons & Pickett-Cooper, 1996).

The independent variable was the musical therapy. The dependent variables measured were the amount of agitation
exhibited by the Alzheimer’s disease patient and the number of dosages of PRN (as needed) medication administered 2 days before, 2 days during, and 2 days after the music therapy (Brotons & Pickett-Cooper, 1996).

The researchers defined agitation behavior as “overt behavior that indicates restlessness, hyperactivity or subjective distress” (p. 7). Musical background was defined as somebody who enjoyed music and had been involved in an ensemble for more than 3 years, or somebody who enjoyed music and had 3 or more years of music/instrument instruction (Brotons & Pickett-Cooper, 1996).

A quasi-experimental pre-post design was employed. The researchers utilized a non-probability sampling design. Criteria for selection were as follows: (a) diagnosis of probable Alzheimer’s disease given by a neurologist, (b) presence of agitation as defined by the researcher’s tool, (c) the verbal ability sufficient to answer simple social and activity questions and to comply with request to speak, participate, or sit down, and (d) the written consent of the patient’s guardian or representative. In order to be included in data analysis, the subjects also had to attend at least half of the five
music therapy sessions. Forty-seven subjects from four nursing homes participated; only 20 were included in data analysis (Brontons & Pickett-Cooper, 1996).

One week before the first session, researchers met with staff members to answer questions and to discuss the specific guidelines to rate agitation on the Agitation Behavior Scale. Subjects then were grouped by three or four and participated twice a week for 30 minutes for a total of five music therapy sessions (Brontons & Pickett-Cooper, 1996).

The music sessions were led by a board certified music therapist and included a variety of music activities. The sessions always took place in the afternoon. Caregivers rated the subjects' agitation behavior just prior to the music therapy. Then, music therapy sessions were videotaped for behavior analysis during music therapy. Once the sessions were completed, subjects were brought to another room where their behavior was observed for 20 minutes. In addition to the direct observation, the subjects' charts were reviewed to tabulate the number of dosages of PRN medication administered each day of the week (Brontons & Pickett-Cooper, 1996).
Data were analyzed using the computer program SYSTAT statistical package. Baseline and post-music therapy agitation scores were calculated for each individual. Each session’s videotape was viewed by the researchers using a continuous observation procedure to determine the level of the subject’s agitation during the first 10 minutes of music therapy and the rest of the session (Brontons & Pickett-Cooper, 1996).

Two independent observers analyzed 40% of all sessions. Means of agitation scores for the five baseline periods, each of the two during music therapy observations, and the five post-music therapy observations for each group for each individual were calculated. Music background constituted the between-group variable, a two-factor analysis of variance with repeated measures was calculated. Brontons and Pickett-Cooper found no effects with respect to music background, but they did identify significant main effects of agitation behavior (p = .20). Fisher PLSD tests were run and the authors determined significantly more agitation in the subjects before music therapy than during either of the two music therapy observations and after music therapy sessions. There was
no two-way interaction between music background and agitation behavior (Brontons & Pickett-Cooper, 1996).

In order to determine if the post-music therapy agitation scores differed between music therapist and facility caregivers, independent observations from the music therapist and caregivers were obtained for 40% of the total after music therapy observations. A t test for independent samples was calculated, and the researchers found no significant differences in the agitation scores between music therapist and caregivers (p = .28) (Brontons & Pickett-Cooper, 1996).

Only one facility reported using psychotropic drugs to control agitation on a PRN basis. Five patients were included in the data analysis from this facility. Two subjects used PRN medication during the period of the project. Two days before the music therapy these two subjects had a combined total of seven doses of PRN medication, one day before music therapy they had a combined total of five doses, during the 2 days of music therapy four and one doses, respectively, and 2 days after the music therapy a total of seven doses was received each day (Brontons & Pickett-Cooper, 1996).
Brontons and Pickett-Cooper (1996) suggested that music therapy was not only an appropriate, but an effective behavioral intervention to decrease agitated behaviors exhibited by patients with Alzheimer’s disease as evidenced by decreased use of PRN medication. The results demonstrated less agitation and requirement of PRN medication after music therapy (Brontons & Pickett-Cooper, 1996).

The relevance of Brontons and Pickett-Cooper’s (1996) study to the proposed research was the use of music therapy as an intervention to control behaviors in Alzheimer’s disease patients. The current research sought to compare behaviors before and after music therapy, while the Brontons and Pickett-Cooper research compared agitated behaviors before, during, and after music therapy. The Brontons and Pickett-Cooper study also examined PRN medication use as an indication of the effectiveness of music therapy.

Groene (1993) examined the effect of music therapy activity on the wandering behavior of clients tentatively diagnosed with Alzheimer’s disease. The purpose of the study was to gain empirical documentation of music
therapy’s effectiveness on patients with Alzheimer’s in the early stages of the disease (Groene, 1993).

The independent variable studied was the music therapy. The dependent variable was the amount of wandering exhibited by Alzheimer’s disease patients. The researcher operationally defined a wanderer as a cognitively impaired individual with the ability to ambulate on foot or by wheelchair without assistance. Seating/proximity behavior was viewed as a measure of the lack of wandering at a certain time and place during session conditions (Groene, 1993).

A two-group, two-treatment repeated measures experimental design was employed in the study. No control group was used. All subjects received contact with the music therapist (Groene, 1993).

A non-probability sampling design was utilized. The actual sample included 30 persons (16 females and 14 males) who resided in a major metropolitan health care facility on a special Alzheimer’s unit and exhibited wandering behavior. The average age for the subjects was 77.5 years with a range from 60 to 91 years. The length of stay in the facility averaged 35 months with a range of 1 to 150 months (Groene, 1993).
After permission was obtained from appropriate parties, wandering behavior was determined by on-site health care staff. Music and reading preferences of each subject were compiled from a variety of sources (Groene, 1993).

To obtain baseline data, the researcher and nursing staff recorded the wandering behavior of each participant in the study for a minimum of 3 days between the hours of 2:00 p.m. and 5:30 p.m. This period was chosen because it is the time of day referred to as the “sundowning period.” Wandering behaviors were measured individually using pedometers, mercury counters, and cyclometers (Groene, 1993).

After baseline data were gathered, subjects were randomly divided into two groups: mostly music or mostly reading. Each participant then received one alternative therapy session per day for 7 days. The sessions were arranged to be either five sessions of reading followed by two sessions of music or five sessions of music followed by two sessions of reading. Each session was scheduled to last a maximum of 15 minutes. The sessions were delivered over the course of 15 weeks (Groene, 1993).
The music sessions consisted of music therapy activities, such as listening, playing percussion instruments, singing, and movement or dance. Live music was incorporated into each session. All activities were conducted by a certified music therapist (Groene, 1993). The reading sessions consisted of reading aloud to a client by the therapist or occasionally reading aloud by the client of material suggested in the background assessment (Groene, 1993).

Participants were free to leave and return to the session during the 15-minute allotted time. The behavior was recorded by the researcher by videotaping and counting the amount of time the participant remained in the session area (Groene, 1993).

If a participant left the session area, the researcher continued the music or reading until it was ascertained that the subject was not returning or until he or she was so far away that they could not hear the stimulus any longer. The stimulus resumed when the subject reentered the room or returned into hearing range. During the time the subject was "wandering" the researcher would signal to the video camera to allow for determining the
amount of time the subject was in proximity of the session (Groene, 1993).

Data were analyzed using the Statistical Package for the Social Sciences 4.0 (SPSS) and the SAS Software Release 6.06.01 for the VAX/VMS computer system (Groene, 1993). Seating/proximity behavior was measured using a maximum value of 900 seconds per session. The individual scores ranged from 5 to 900 seconds. Groene determined from the data that subjects in the mostly music group had higher seating/proximity ratings during music sessions 1 to 5 than subjects in the mostly reading group during reading sessions 1 to 5. Also, the subjects in the mostly reading group had higher seating/proximity ratings during the music sessions 6 to 7 than subjects of the mostly music sessions during reading sessions 6 to 7 (Groene, 1993).

To test for the effects of music treatment compared to a reading treatment, the researcher found that significance was approached in mean seating/proximity time in favor of the music over the reading treatment, $t(24) = 1.83$, $p = .01$. To test for overall music effects compared to reading effects in mean seating/proximity time, music intervention was significantly more favorable, $t(29) =$
3.79, p = < .001. There were no significant effects or interactions in seating/proximity behaviors for factors of sex, age, or months on site at the facility. For sessions 1 to 5, repeated measures ANOVA test for seating/proximity behavior were significant for both groups’ score increases, $F(4, 112) = 3.20, p = .016$ (Groene, 1993).

Wandering was measured differently for those who were ambulatory versus those who were wheelchair bound. The wheelchair measuring device recorded distance in miles and tenths of a mile. Thus, the measurement of miles/hour was used as a standard comparison for all participants’ wandering behavior. Different instruments were utilized to account for the individuals whose pace or stride was irregular or too soft to register on the standard pedometer. No significant differences in wandering behavior were revealed. There was a significant difference between the mean wandering scores during the five music sessions versus the two reading sessions of the mostly music group in favor of the music sessions, $t(14) = 2.25, p = .041$. There were no significant effects of interactions in wandering behavior for the factors of age, sex, or months on site at the facility (Groene, 1993).
The Mini-Mental State Examination was given to each participant before and after each session. There were no significant differences in cognitive pre-post test scores for the group regardless of treatment type. Although not significant, there was a slight cognitive posttest gain for the mostly music group during the music sessions as compared to reading sessions. There were no significant effects of interactions in pretest-posttest cognitive test scores for the factors of sex, age, or months on site at the facility (Groene, 1993).

Groene concluded that a significant familiarity effect emerged for seating/proximity scores during sessions 1 and 5 for both groups. The researcher believed that fact related to subjects sitting longer as they got to know the therapist over time, especially in one-to-one situations. The author also identified facial recognition as a possible contributing factor to this finding (Groene, 1993).

The author suggested that future replication of this research be conducted to take into consideration the effects of situation and environment. Effects of individual wandering routes, the session area, distractions, the type of facility program, variability in
music and reading preferences, skill and knowledge level of the music therapist, and individual participant differences also should be considered (Groene, 1993).

Further research could benefit both patients and caregivers by assessing the effectiveness of music therapy services in facilitating the safe reduction of chemical and physical restraints for those who are agitated. This study is germane to the current research in that it examined the effectiveness of music therapy with Alzheimer’s disease patients. However, Groene (1993) compared wandering behaviors between music therapy and reading therapy, while the current study compared behaviors before and after music therapy.

Mornhigweg and Voignier (1995) conducted a study entitled, Music for Sleep Disturbance in the Elderly. This study examined music therapy’s effect on sleep disturbances (Mornhigweg & Voignier, 1995).

The independent variable studied was music therapy. The dependent variable was sleep disturbance. For the purpose of the study, sleep disturbance was defined as difficulty falling asleep, awakening earlier/later than desired, and/or not feeling well rested (Mornhigweg & Voignier, 1995).
A descriptive design was used for the study. There was no control group. The sample consisted of 25 community-residing subjects. They were recruited through a newspaper column that explained the study and asked for volunteers. The average age for the participants was 74 years with a range from 55 to 89. Criteria for participation were as follows: (a) able to understand and follow directions; (b) manage a tape player, headset, and battery change; and (c) perceived themselves to have a sleep disturbance (Mornhigweg & Voignier, 1995).

Subjects were given tapes of New Age and Baroque music to be played at bedtime. They were also requested to play each type of music for 5 days with 2 days without music in between the two music sessions. Participants were instructed to keep their usual bedtime rituals and to play the music until they decided to turn it off. Upon awakening, they were requested to record the music/sleep experience in a log (Mornhigweg & Voignier, 1995).

Twenty-four of the 25 subjects felt that their sleep disturbance was at least somewhat reduced by music. The majority of the subjects felt that the music helped them fall asleep, return to sleep quicker if awakened, or sleep longer in the morning (Mornhigweg & Voignier, 1995).
Both types of music appeared to assist the subjects to reduce their sleep disturbance. Many subjects reported that during the two nights in which no music was played, the music was missed and the participants had difficulty falling asleep or sleeping as long (Mornhigweg & Voignier, 1995).

The researchers recommended that a duplicate study be conducted examining the effects of preferred music, music with less than 60 beats, and a control group. Also they suggested examining a larger sample size with different age groups and settings (Mornhigweg & Voignier, 1995).

This study was relevant to the research with Alzheimer’s disease patients of the noted calming effects that music had on the elderly subjects in the study. While the Mornhigweg and Voignier study examined the effects of music on sleep disturbances of elders, the current investigation attempted to determine the effects of music therapy on behaviors of Alzheimer’s disease patients.

Marshall and Tomcala (1981) conducted a study to determine whether different genres of music were associated with different levels of stress reduction. The study was conducted using patients who were hospitalized for stress and/or substance abuse problems. A sample
population of 50 was utilized in the study. Participants were males and females between the ages of 15 and 25 years (Marshall & Tomcala, 1981).

The subjects were introduced to biofeedback training and received regular treatments. Along with the biofeedback, they received individual, coupled, and group psychotherapy, self-help counseling, and physical fitness training (Marshall & Tomcala, 1981).

The sample listened to training tapes played through headphones while connected to a Biofeedback Systems Electromyographic Feedback System Model PE-100. All measurements were taken from the meter on the biofeedback machine (Marshall & Tomcala, 1981).

Four types of music were used in this study. They were as follows: (a) classical, (b) jazz, (c) minimalism, and (d) rock. The music recordings selected were selections that were not widely known to help prevent familiarity effects (Marshall & Tomcala, 1981).

Each subject was given two sessions that consisted of listening to an explanation on tape of biofeedback and a discussion and short demonstration of the principles of stress reduction. After the two sessions, the subjects then listened to a tape on progressive relaxation for
three presentations. After completing the three presentations of progressive relaxation, each subject was given a music tape. The subjects were divided randomly into five groups of 10. Each group was randomly assigned a different type of music. The fifth group was assigned silence. The music tapes were presented one time with no more than one session per day. Readings from the biofeedback machine were taken five times at 5-minute intervals for both training and music tapes (Marshall & Tomcala, 1981).

To determine whether or not different music treatments were associated with different levels of stress reduction, the analysis of covariance design, using the baseline scores as the covariant, was utilized for individual differences. A one-way analysis of covariance revealed no significant difference among the treatment conditions (Marshall & Tomcala, 1981).

The researchers felt that the lack of significant differences could be a result of the time factor or a result of the single treatment exposure and lack of control for extraneous variables in the study. The researchers used this study as a pilot study and initiated
a second study in which all participants received all five treatments (Marshall & Tomcala, 1981).

This study was relevant to the current study in that music was utilized to relax patients. The Marshall and Tomcala (1981) study compared levels of stress with different genres of music. The current study compared a change in behaviors with and without music therapy.

A study examining the use of pet therapy with the elderly in nursing homes was conducted by Sutton in 1984. The purpose of this research was to study the effect of pets used in therapy with elderly depressed and withdrawn nursing home residents (Sutton, 1984).

The participants in the study were 31 Caucasian nursing home residents. Sixteen females and 15 males were selected by the personnel of the nursing facility to participate in the study. Criteria for participation were being depressed and withdrawn and receiving no regular visitors. The subjects were then randomly assigned to one of three groups. Ten subjects received pet therapy, 10 received visitors only, and 10 served as a control group. The remaining subject served as a replacement if necessary. The replacement subject was utilized in the group that received pet therapy after the death of a
resident assigned to that group. It was necessary to drop two residents from the pet therapy group due to demonstration of extreme fear to the dog used in the study. Also, one resident in the visitor group was withdrawn from the study because the visitor did not follow the required guidelines (Sutton, 1984).

The three interventions were conducted simultaneously. The first compared differences on dependent variables in each of the three groups. The dependent variables included speaking to peers and staff members, making eye contact, smiling, reaching out to another person, responding to researcher’s smile, and initiating conversation. The second study measured the individual response of people receiving pet therapy over time, while the third study was a single-case experiment design (Sutton, 1984).

Two dogs were utilized in the pet therapy. The dogs were comparable in size and temperament. Both dogs were health-certified and disposition was approved. Pets and visitors were scheduled for 15 minutes once a week for a 6-week period. Visits took place in the residents’ rooms. Visitors were life support volunteers. The same volunteer
visited the same resident each time for 6 weeks (Sutton, 1984).

In the first study, each participant was observed for a 15-minute period with no intervention. Scoring was done on a Baseline Behavior Observation Form. This form measured seven criteria: speaks to peers, speaks to staff member, makes eye contact, smiles, reaches out to another person, responds to researcher’s smile, and initiates conversation with researcher. Two minutes before the end of the observation period the researcher approached the subject while smiling. Participants were allowed 15 seconds to respond to the smile and initiate conversation. The researcher initiated the conversation if no response was obtained from the resident (Sutton, 1984).

In study number two, the residents in pet therapy were observed at each pet visit. The Resident/Pet Observation Form measured nine criteria: speaks to pet, speaks to pet owner, makes eye contact with pet, makes eye contact with pet owner, reaches out to pet, touches pet, touches pet owner, smiles, and laughs audibly (Sutton, 1984).

After observations, the dog was withheld from one resident in the pet therapy group for 2 weeks and an
interim observation was done. After the 2 weeks, the dog was returned to the resident and a final observation was made after 2 weeks (Sutton, 1984).

After comparing the three groups in study number one, which looked at seven specific behaviors, analysis of variance was performed to test the effects of group membership on various dependent variables, including speaks to peers, speaks to staff member, makes eye contact, smiles, reaches out to another person, responds to researcher’s smile, and initiates conversation with researcher. Of the variables, four were significant at $p = .05$ level. The results suggested that residents in the pet therapy group engaged in more social behaviors, such as speaking to peers, making eye contact, smiling, and initiating conversation with the researcher (Sutton, 1984).

Individual changes in pet therapy condition over time was measured in study number two. "Changes were measured on the variables: Speaks to pet, Speaks to pet owner, Makes eye contact with pet owner, Reaches out to pet, Touches pet, Touches pet owner, Smiles, Laughs audibly" (Sutton, 1984, p. 14). Increases were noted in each variable over the 6-week period (Sutton, 1984).
Study number three was a case study with one individual. Baseline behavior for the subject demonstrated that he was not verbal, did not reach out to anyone, did not smile, and made eye contact only once during conversation. During the first session of pet therapy, his behavior in these areas increased, especially in the areas of speaking to peers, making eye contact, smiling, and reaching out to a person. Behaviors decreased when the pet was withdrawn for a 2-week period. When the pet was returned, the behaviors once again increased greatly (Sutton, 1984).

The hypothesis for study number one was supported for four of the variables: speaks to peers, makes eye contact, smiles, and initiates conversation with researcher. For the second study, it appeared that pet therapy led to major positive changes in behavior. In study number three, the administration of pet therapy improved social behaviors in the manner hypothesized. There was partial support of the overall hypothesis (Sutton, 1984). There were factors identified that may have been responsible for not achieving significant results on all the variables, such as residents' past experiences with pets, health
problems of the subjects, and, with one resident, deep concern over a seriously ill spouse (Sutton, 1984).

In some cases, residents formed relationships with the pet owners. This could have compounded the study given that the pets were always with the pet owners (Sutton, 1984).

Sutton suggested that further research be done to see whether pets improve the cognitive performance of elderly. Also, the areas of general health and morale improvement were suggested to be pursued (Sutton, 1984).

Relevance of this study to the current study was related to the use of alternative therapies with confused elderly patients. Sutton’s study examined the use of pet therapy to improve cognition while the current research examined differences in behavior before and after music therapy in patients with Alzheimer’s disease.

In 1989 Millard and Smith investigated the influence of therapeutic group singing on the behavior of Alzheimer’s disease patients. The therapeutic singing of familiar songs was examined to determine if the activity had significant effects on a number of behaviors exhibited by Alzheimer’s disease patients while singing as well as after singing (Millard & Smith, 1989).
There were three hypotheses tested in the study. The first hypothesis was that the frequencies of physical and social behaviors exhibited during and/or immediately following therapeutic group singing sessions would be significantly different from discussion sessions. The second hypothesis was that the amount of vocal/verbal participation would be significantly higher in therapeutic group singing than in discussion sessions. Finally, the third hypothesis was that group singing therapy would have a significant effect on the frequencies of physical and social behaviors exhibited after the therapeutic sessions demonstrated by an interaction effect between singing and discussion sessions (Millard & Smith, 1989).

Ten patients were selected as subjects. There were 7 female and 3 male subjects ranging in age from 71 to 98 years. Criteria for selection were based on three requirements:

1. Patients were diagnosed with Alzheimer’s disease or a more general diagnosis.

2. Patients were classified as being in the middle stages of Alzheimer’s disease.
3. Patients had attended at least half of the pilot music therapy sessions. Subjects resided on a special care unit of a nursing facility (Millard & Smith, 1989).

Sessions were 30 minutes in length and were held twice weekly at 3:00 p.m. over a period of 5 weeks, for a total of 10 sessions. The design for the study was a reversal design, and the subjects served as their own control.

Baseline information was obtained by the subjects being taken to the dining room for a discussion session. During this time, the researcher presented visual prompts that provided stimulus for discussion. Each discussion lasted 30 minutes (Millard & Smith, 1989).

The treatment sessions consisted of the subjects being taken to the dining room for a singing session. During this time the researcher played the guitar and sang familiar songs to the subjects. The singing sessions also lasted for 30 minutes, and the subjects were encouraged to sing along (Millard & Smith, 1989).

Data were obtained through a technique known as "behavior mapping." This technique involves direct observation of behavior frequencies over a specific period
of time. A checklist developed by the researchers was used to record behavior frequencies (Millard & Smith, 1989).

Analysis of data was performed using a two-way within-subjects analysis of variance. Differences in the levels of behavior between the experimental/control groups, and any interaction between the experimental/control conditions were calculated (Millard & Smith, 1989).

In testing the first hypothesis, it was noted that the frequencies of physical and social behaviors exhibited during and/or immediately following therapeutic group singing sessions were significantly different from the discussion sessions. The first hypothesis was accepted (Millard & Smith, 1989).

Results demonstrated that the amount of vocal/verbal participation was significantly higher in therapeutic group singing sessions than in discussion sessions. The researchers accepted the second hypothesis (Millard & Smith, 1989).

The third hypothesis measured the frequencies of physical and social behaviors. Results demonstrated that there was a significant effect on the frequencies of physical and social behaviors demonstrated by an
interactive effect between singing and discussion sessions. The researchers accepted the third hypothesis (Millard & Smith, 1989).

A serendipitous finding noted in the study was that attendance between singing and discussion sessions were different. Attendance was significantly higher in the singing sessions (Millard & Smith, 1989).

Recommendations for further research included obtaining a more extensive record of day-to-day behaviors before conducting the study and then comparing these to day-to-day behaviors at the completion of the study. Also, it was recommended that the behavioral checklist be refined (Millard & Smith, 1989).

Although this study consisted solely of singing, it was relevant to the current study as it demonstrated that music was one intervention that seems to be effective when caring for Alzheimer’s disease patients. This study and similar studies were an attempt to obtain empirical support validating the use of music with Alzheimer’s disease patients.

Janelli and Kanski (1997) conducted a study to determine if music could have positive effects on restrained patients. They felt that being restrained could
be associated with loss of control and anxiety. With their study, they sought to show that music might counterbalance these responses by occupying a patient’s mind with something familiar, preferred, and soothing (Janelli & Kanski, 1997).

The study was conducted over a 3-month period and included a sample of 30 older patients in a large acute care hospital. Criteria for the subjects included: (a) age of at least 50 years old, (b) location on a medical-surgical unit, (c) having physical restraints in place, and (d) able to hear sounds within the normal speaking range and have basic understanding of English. Physical restraints were considered to be Posey vest, chest restraints, wristlets, anklets, mitts, and waistbelts. Ages of the subjects ranged from 59 to 92 years (Janelli & Kanski, 1997).

The researchers developed the Behavior Instrument Checklist. The checklist consisted of 39 items that described states of consciousness, verbalizations, and nonverbal behaviors. The checklist included 18 positive behaviors and 21 negative behaviors. Definitions were devised for 10 of the behaviors that were felt not to be self-explanatory (Janelli & Kanski, 1997).
Baseline data were obtained by observing patients for a minimum of 10 minutes while they were in restraints. During the observation, behaviors were recorded on the Behavior Instrument Checklist (Janelli & Kanski, 1997).

After baseline information was obtained, patients or their families were allowed to choose one of four musical tapes. The choices were classical, popular, country, or big band music. Big band music was the most frequently chosen. With the restraints removed, the subjects listened to their selected music through cushioned head phones for a maximum of 60 minutes. While the patients were listening to the music, the patients were observed and their behaviors were recorded on another behavior instrument checklist. When the music ended, the restraints were reapplied and the subject was observed for an additional 10 minutes. The behaviors noted after the music therapy was recorded on a third behavior instrument checklist (Janelli & Kanski, 1997).

The music therapy was administered only once for each patient. Music therapy was administered at different times during the day, but the majority of sessions took place in the evening (Janelli & Kanski, 1997).
Each patient served as his or her own control. Frequency distributions were utilized to analyze data. The frequencies of both the negative and positive behaviors that occurred before, during, and after the interventions were counted and compared. A matched-pair signed rank test was performed to determine if there was a significance in the direction and magnitude of the behaviors observed before, during, and after the music therapy was administered (Janelli & Kanski, 1997).

Janelli and Kanski concluded that there were no significant differences between preintervention and intervention negative behaviors. Significant differences did exist between preintervention and intervention positive behaviors (Z = -2.52, p = .01). No significant differences were found in the number of negative behaviors, but a significant difference did exist in the number of positive behaviors (Z = -3.17, p = .001). Positive behaviors were more frequent during the intervention than during the postintervention period (Janelli & Kanski, 1997).

A recommendation for the study was that the music therapy be administered more than one time per day. Also the researchers recommended that a larger sample with a
control group be utilized in another study (Janelli & Kanski, 1997).

This study was relevant to the current study in that music may be used to alter behaviors and reduce the need for physical restraints. The current investigation compared behaviors of Alzheimer’s disease patients before and after music therapy. The Janelli and Kanski (1997) study compared the behaviors of restrained patients before, during, and after music therapy.

In a study conducted by Pollack and Namazi (1992) the relationship between music participation and social behavior of moderately to severely impaired Alzheimer’s disease patients was examined. The purpose of this study was to determine the effect of individualized music activity on the social behavior of Alzheimer’s disease patients immediately following the music session (Pollack & Namazi, 1992).

The study was conducted with Alzheimer’s disease patients residing in a 24-bed facility for Alzheimer’s care and research. Eight subjects between the ages of 67 and 85 years were chosen for the study. Each participant was diagnosed with probable Alzheimer’s disease at the moderate or severe level (Pollack & Namazi, 1992).
The subjects participated in a 20-minute music session with a music therapist in one or more selected music activities. Activities for each individual were selected based on preferred music responses. The specific activities utilized in the sessions were (a) singing, vocalizing or whistling to familiar songs or familiar songs played on the piano, (b) dancing to taped folk or ethnic music, and (c) playing hand percussion instruments (Pollack & Namazi, 1992).

Subjects met with the music therapist in six scheduled individual sessions. The sessions were held three times a week over a 2-week period. Prior to the sessions, the subject was observed for a 15-minute interval on the unit with the subject carrying on his or her daily routine (Pollack & Namazi, 1992).

After the baseline information was obtained, the music therapist would invite the subject to participate in a music activity. The subject was then taken to the music room and began the music session. A narrative recording of each subject’s performance, level of participation, and enjoyment of the activity was documented. After the session the subject was taken out of the music room and allowed to reengage in an activity of choice. The
therapist would then observe the subject’s post-session behaviors for a 15-minute interval (Pollack & Namazi, 1992).

During the 15-minute interval observational periods, behaviors were recorded on a 26-item behavioral checklist. The behaviors were classified as social or nonsocial and grouped according to type of interaction or degree of activity (Pollack & Namazi, 1992).

The dependent variable in the study was the frequency of social behavior. Data obtained for social behavior before and after the music showed an increase of 24% in social behavior and a decrease of 14% in nonsocial behavior after treatment. A chi-square test demonstrated significant results ($\chi^2 = 14.2$, df = 1, p < .001) (Pollack & Namazi, 1992).

Recommendations for further studies were to use a larger sample size and a longer length of observation. Also, the researchers noted that the addition of a second observer would increase the objectivity and reliability of these data. In further studies, it was also recommended that treatments utilize changing music conditions to pinpoint the effects of specific music (Pollack & Namazi, 1992).
The results of this study suggested that music therapy could be used to encourage social interaction to moderately to severely impaired Alzheimer’s disease patients. This research was relevant to the current research as both studies attempted to ascertain the effects of music therapy on specific behaviors of Alzheimer’s disease patients.

Aldridge (1995) conducted a case study in which music therapy was used as one modality of a comprehensive treatment package. A 55-year-old female Alzheimer’s disease patient was followed on an outpatient basis at a general hospital. The patient at age 40 had begun to play the piano without formal lessons. This led the researcher to believe that music therapy could have the potential as an intervention in adjunct to the patient’s medical treatment (Aldridge, 1995).

The patient was originally referred to the hospital when the family became aware of the deteriorating condition. The patient was experiencing difficulties finding items, could not cook for herself, and was unable to write her name. The Alzheimer’s disease patient also had difficulty in finding words in conversation and appeared to be depressed (Aldridge, 1995).
The patient was brought to the hospital for a series of 10 sessions. Each session lasted for 40 minutes. In all 10 sessions the patient demonstrated the ability to play and keep a rhythmical pattern in a 4/4 time using two sticks and a single drum. In almost all the sessions, the patient’s performance followed the same pattern. The initial impulse of the rhythmical playing was clear and precise. Gradually the impulse deteriorated as the patient lost concentration and ability to continue with the task at hand. When the music therapist offered structure by playing a known piece of music, the patient could then regain precision of rhythm (Aldridge, 1995).

The patient made it clear during the first session of the intent to sit at the piano and play whatever tunes were desired by the participant. This wish and willpower were shown in all the sessions (Aldridge, 1995).

At the end of the treatment sessions, the patient was able to cook for herself and could find things around the house. The psychiatrist assigned to therapeutic management reported an overall improvement in the subject’s interest in the environment. The patient regained the ability to sign her name. The patient continued to have difficulty in
finding the correct words in conversation (Aldridge, 1995).

The conclusion reached by the researcher was that active music therapy promoted interaction between persons involved and promoted initiatives in communication. Also it was noted that a contraindication for music therapy with Alzheimer's disease patients was with patients who were aware of their problems. The awareness of further problems experienced by playing instruments could exacerbate any underlying depression and hinder the patient in continuing the therapy (Aldridge, 1995).

Aldridge recommended that future research coordinate the role of rhythm in human cognition and consciousness. This case study was relevant to the current research in that both studies utilized music therapy. A single case study was used in the Aldridge (1995) research while the current study utilized a group of 18 subjects.

In the review of literature, no study was found that exactly matched the current study. All studies looked at alternative interventions for managing behavioral symptoms. Of the 10 studies reviewed, nine examined music therapy and one examined pet therapy as an intervention. One study compared the use of reading to music therapy as
an intervention for agitated behavior. All studies supported the use of alternative interventions with Alzheimer’s disease patients. Further, all studies recommended further research in the area of music therapy and the treatment of Alzheimer’s disease.
Chapter III
The Method

The purpose of this study was to determine if there was a difference before and after music therapy in the behavior of Alzheimer’s disease patients. This study also adds to the existing body of knowledge about the use of alternative therapies with Alzheimer’s disease patients.

Design of the Study

A quasi-experimental, one-group design was employed in this study to determine if there was a difference in the behavior of Alzheimer’s disease patients before and after music therapy. This type of design involves the manipulation of an independent variable but lacks the characteristic of randomization. The design was deemed appropriate due to the inability to randomly select subjects.

Variables

The independent variable was music therapy, and the dependent variable was the behaviors of the Alzheimer’s
disease patients. Controlling for extraneous variables was attempted by using a written script for instructing the three assistants in the recording of behaviors (see Appendix A). Other extraneous variables that might affect behavior, such as hunger, thirst, illness, or lack of sleep, were unable to be controlled.

Limitations

Limitations of the study were identified as (a) nonrandom selection of the sample, (b) small sample size, (c) length of observation time, and (d) inter-rater reliability as more than one person recorded the behavioral data.

Setting, Population, and Sample

The setting was an Alzheimer’s unit in a long-term care facility in Northeast Mississippi. The Alzheimer’s unit was connected to a long-term care/subacute care nursing facility in a rural area in Northeast Mississippi. Total bed occupancy for the facility was 130. The Alzheimer’s unit had a bed occupancy of 18 and was secluded from the rest of the facility by security doors. No overhead intercom system was present in the Alzheimer’s unit. The same group of personnel was utilized to staff
the Alzheimer’s unit in an attempt to maintain organization and structure for the residents.

The residents were allowed to freely move about inside the unit but were not allowed to leave the unit unsupervised. All patients residing in the Alzheimer’s unit required approximately the same amount of assistance with their activities of daily living and were all ambulatory.

At the time of the study there were 17 females and one male residing in the unit. The male resident was not included in the study because it was believed that the disproportion between the male and female residents would skew the results of the study. One of the residents did not participate in the study due to being hospitalized at the time of the study. Another female resident was not included in the study as permission was not granted by the responsible party. In order to participate in the study the subjects were required to reside in the Alzheimer’s unit of the facility.

The ages of the subjects ranged from 65 years to 90 years. Permission for participation in the study by the Alzheimer’s disease patients was received from the responsible parties of each resident prior to the study.
The sample used in this study was one of convenience. Fifteen female Alzheimer’s disease patients participated in the study. All participants of the study were of the Caucasian race.

Procedure

Prior to the study, permission was obtained from Mississippi University for Women Committee on Use of Human Subjects in Experimentation (see Appendix B). In addition, consent was obtained for the use of the Jackson Mood and Tracking Instrument and implementation of the study on the premises of the Alzheimer’s unit (see Appendices C and D). The responsible parties of each qualified participant were sent a letter of consent (see Appendix E). These letters of consent were returned to the researcher giving permission for each subject to participate in the study. Each responsible party was informed of the purpose of the study and the plan for implementing the study. They were also assured of confidentiality and informed that they were allowed to withdraw from the study at any time. Data collectors also were asked to sign a consent form for recording (see Appendix F). After completion of the study,
participants’ families were sent a thank you letter and a summary of the study results (see Appendix G).

Instrumentation

The Jackson Mood and Behavior Tracking Instrument was used to record behavioral observations (see Appendix H). The tool consisted of a list of 10 different behaviors and the description of each behavior. The 10 behaviors listed were as follows: (a) Verbally abusive--Others were threatened, screamed at, or cursed at; (b) Physically abusive--Others were hit, shoved, scratched, or sexually abusive; (d) Repetitive questions--Where do I go and what do I do? (e) Expressions of what appear to be unrealistic fears--Fear of abandonment, being with others, (f) Repetitive health complaints--Seeks medical attention, obsessive concern with body functions, (g) Repetitive anxious complaints--Seeks attention/reassurance re: schedules, meals, etc., (h) Sad, pained, worried facial expressions--Furrowed brow, (i) Persistent anger with self/others, anger at nursing home placement, care received, etc., (j) Trying to get visitors to take home or attempting to get outside door, and (k) Hoarding--Hiding silverware.
Spaces were provided to record each time a particular behavior was observed on each day, during the observation time, of the 2-week period. Consequently, three additional behaviors were added to the instrument as write-in responses (#11, 12, and 13). Each individual subject was assigned one tracking instrument for the 2-week period before music therapy and one tracking instrument for the 2-week period with music therapy. All behaviors were recorded on the Jackson Mood and Behavior Tracking Instrument. Each time a behavior was observed, a mark was placed on the Jackson Mood and Behavior Tracking Instrument in the space that corresponded to the behavior observed. There were spaces available for the staff to record any behavior observed that was not listed on the Jackson Mood and Behavior Tracking Instrument. No reliability or validity was established for the Jackson Mood and Behavior Tracking Instrument. However, face validity of the Jackson Mood and Behavior Tracking Instrument was established prior to the study by presenting the instrument to a panel of experts.
Prior to the study implementation, permission was obtained from the administrator of the nursing home to conduct the study. The researcher next solicited written consent to participate from two licensed practical nurses that were involved in data collection. Verbal consent for participation by the activities director of the facility was also obtained prior to the study since this individual participated by playing the music used in the intervention. All personnel involved in instrumentation and data collection were informed of the purpose and design of the study and were required to give verbal understanding of the data collection process. The two licensed practical nurses who collected the data were familiar with the behavior tracking tool as this was the instrument utilized in the institution where the research was conducted. Both licensed practical nurses had been instructed in the use of the instrument.

Behaviors were directly observed and recorded on the Jackson Mood and Behavior Tracking Instrument by the two licensed practical nurses for a 2-week period during the hours of 2:00 p.m. to 6:00 p.m. while no music therapy was administered. After obtaining this baseline data, the
subject’s behavior, immediately after one half hour of music therapy, was directly observed by licensed practical nurses during the hours of 2:00 p.m. to 6:00 p.m. and was recorded on the Jackson Mood and Behavior Tracking Instrument.

Music therapy consisted of the playing of a 30-minute gospel music cassette tape from 1:30 p.m. until 2:00 p.m. each day. The music was played simultaneously in the living room, dining room, and in the hallway of the Alzheimer’s unit. The cassette tape also was played in the room of any resident who was in their room during the specified time for administration of music therapy. The researcher was responsible for turning on the music at the specified time. On the days the researcher was unable to be present, the activities director was responsible for turning on the music. There was no interaction by the researcher or the activities director with the participants during the administration of music therapy. Subjects were allowed to carry on their daily routine throughout the study.

Behaviors of the subjects were directly observed and recorded by the same licensed practical nurses for the entire length of the study to ensure greater consistency.
Any behavior exhibited, outlined on the Jackson Mood and Behavior Tracking Instrument, was recorded by the licensed practical nurses on the Jackson Mood and Behavior Tracking Instrument. A separate tracking instrument was provided for each individual subject. Each participant was given a number in order to maintain confidentiality.

Data Analysis

Data were collected on individual subjects and then combined to form two groups consisting of pre- and post-treatment scores for each observed behavior. The Jackson Mood and Behavior Tracking Instrument was scored so that each mark in a given space was counted as one point. Descriptive statistics identified for each group included frequencies of each behavior and percentages of each specific behavior for the group before and after music therapy. In order to determine if there were any significant differences in agitated behaviors between the groups before and after music therapy, a dependent t test was applied to the data collected.

The purpose of the study was to determine if there was a difference between behaviors before and after music therapy. Data were collected as outlined in this chapter.
and then analyzed utilizing a dependent t test and descriptive statistics. Chapter IV will present the findings of the study.
Chapter IV
The Findings

The purpose of this study was to determine if there was a difference before and after music therapy in the behavior of Alzheimer’s disease patients. This study also sought to add to the existing body of knowledge concerning the use of alternative therapies with Alzheimer’s disease patients. A quasi-experimental, one-group design was employed in this study. In this chapter, a description of the sample is presented as well as the findings from the data analysis. Data were analyzed using descriptive statistics, such as frequencies, means, and percentages for each behavior. In order to determine if there were any significant differences in behaviors between the groups before and after music therapy, a dependent t test was applied to the data collected.

Description of Sample

The convenience sample (N = 15) consisted of female Alzheimer’s disease patients residing in an Alzheimer’s unit of a long-term care facility. The ages of the
participants ranged from 65 to 90 years. All participants were of the Caucasian race. A summary of the sample characteristics of age is depicted in Table 1.

Table 1

Summary of Sample Characteristics for Age by Frequency and Percentage

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>f²</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>70-74</td>
<td>4</td>
<td>27.0</td>
</tr>
<tr>
<td>75-79</td>
<td>4</td>
<td>27.0</td>
</tr>
<tr>
<td>80-84</td>
<td>2</td>
<td>13.0</td>
</tr>
<tr>
<td>85-90</td>
<td>2</td>
<td>13.0</td>
</tr>
</tbody>
</table>

²N = 15.

Results of Data Analysis

One research hypothesis was generated for this study. The null hypothesis tested was as follows: There will be no difference in the behaviors of Alzheimer’s disease patients before and after music therapy. A dependent t test was utilized to test the null hypothesis.

In order to test the research hypothesis, the participants were observed daily between the hours of 2:00
p.m. and 6:00 p.m. for a 2-week period while no music therapy was administered to determine baseline behaviors. These behaviors were recorded on the Jackson Mood and Behavior Tracking Instrument. After this baseline information was obtained, participants were observed daily between the hours of 2:00 p.m. and 6:00 p.m. for a 2-week period immediately after the administration of music therapy. The observed behaviors were recorded on the Jackson Mood and Behavior Tracking Instrument. Music therapy consisted of the playing of a 30-minute gospel cassette tape daily from 1:30 p.m. to 2:00 p.m.

A total of 13 different behaviors were observed and recorded. Three of the behaviors, resisting activities of daily living, resisting eating, and crying, were written on the tool by the data collectors in the additional spaces provided. Findings regarding the observed behaviors before and after music therapy are presented in Table 2.
Table 2

Comparison of Observed Behaviors Before and After Music Therapy by Means

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Before Therapy</th>
<th></th>
<th>After Therapy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Verbal abuse</td>
<td>6.60</td>
<td>2.87</td>
<td>3.00</td>
<td>2.56</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>3.00</td>
<td>2.20</td>
<td>1.60</td>
<td>0.74</td>
</tr>
<tr>
<td>Repetitive questions</td>
<td>4.47</td>
<td>3.38</td>
<td>1.40</td>
<td>2.26</td>
</tr>
<tr>
<td>Expressions of unrealistic fears</td>
<td>5.20</td>
<td>3.91</td>
<td>0.47</td>
<td>0.64</td>
</tr>
<tr>
<td>Repetitive health complaints</td>
<td>2.60</td>
<td>3.64</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Repetitive anxious complaints</td>
<td>4.47</td>
<td>3.83</td>
<td>2.20</td>
<td>2.65</td>
</tr>
<tr>
<td>Sad, pained, worried facial expressions</td>
<td>8.93</td>
<td>3.08</td>
<td>6.80</td>
<td>3.53</td>
</tr>
<tr>
<td>Persistent anger with self/others</td>
<td>1.80</td>
<td>2.37</td>
<td>0.67</td>
<td>1.63</td>
</tr>
<tr>
<td>Trying to get visitors to take home</td>
<td>2.27</td>
<td>2.25</td>
<td>0.87</td>
<td>2.10</td>
</tr>
<tr>
<td>Hoarding</td>
<td>1.60</td>
<td>3.20</td>
<td>0.40</td>
<td>1.12</td>
</tr>
<tr>
<td>Resisting ADLs</td>
<td>1.73</td>
<td>4.57</td>
<td>1.07</td>
<td>2.19</td>
</tr>
<tr>
<td>Resisting eating</td>
<td>6.33</td>
<td>5.89</td>
<td>0.27</td>
<td>1.03</td>
</tr>
<tr>
<td>Crying</td>
<td>1.00</td>
<td>2.17</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. N = 15.
When data were analyzed using a dependent t test, it was found that six of the behaviors were significantly reduced after music therapy. The first behavior observed was verbal abuse. There was a significant reduction in this behavior from the baseline level to after music therapy, $t(14) = 3.94, p = .001$.

Physical abuse was the second behavior observed. There was also a significant reduction in this behavior from the baseline level to after music therapy, $t(14) = 3.80, p = .002$.

Repetitive questions, the third behavior, was noted to have a significant reduction from the baseline level to after music therapy, $t(14) = 2.92, p = .011$. The fourth behavior observed was expressions of what appear to be unrealistic fears. There was a significant reduction in the behavior from the baseline level to after music therapy, $t(14) = 4.44, p = .001$.

Behavior number five, repetitive health complaints, also was found to be significantly reduced from the baseline level to after music therapy, $t(14) = 2.77, p = .015$. The final significant reduction in behavior occurred in number 12, resisting eating, from the baseline level to after music therapy, $t(14) = 3.75, p = .002$. 
There were seven observed behaviors that were not significantly reduced after music therapy. Repetitive anxious complaints, which was behavior number six, was not found to be significantly reduced from the baseline level to after music therapy, $t(14) = 1.63$, $p = .126$. There was no significant reduction in the seventh behavior, sad, pained, worried facial expressions, from the baseline level to after music therapy, $t(14) = 1.90$, $p = .079$. No significant reduction was found in persistent anger with self/others, the eighth behavior, from the baseline level to after music therapy, $t(14) = 1.72$, $p = .108$.

Trying to get visitors to take home was observed as the ninth behavior. There was no significant reduction in the behavior from the baseline level to after music therapy, $t(14) = 1.69$, $p = .113$. Behavior number 10 was hoarding. There was no significant reduction from the baseline level to after music therapy, $t(14) = 1.43$, $p = .175$.

Resisting assistance with activities of daily living was observed behavior number 11. There was no significant reduction from the baseline level to after music therapy, $t(14) = .474$, $p = .643$. The last behavior observed was crying. There was no significant reduction in the behavior
from the baseline level to after music therapy, \( t(14) = 1.78, p = .096 \).

There was one hypothesis generated for this study. The null hypothesis was as follows: There will be no difference in behaviors of Alzheimer’s disease patients before and after music therapy. Since there was a significant reduction in 6 out of the 13 observed behaviors after music therapy and the researcher had hypothesized that there would be a significant change in at least one third of the behaviors, the researcher rejected the null hypothesis.

The above analysis of data is summarized and presented in Table 3.

Table 3

Comparison of Observed Behaviors in Elderly Alzheimer’s Disease Patients Utilizing a Dependent t Test

<table>
<thead>
<tr>
<th>Behavior</th>
<th>( t )</th>
<th>df</th>
<th>( p )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal abuse</td>
<td>3.94</td>
<td>14</td>
<td>.001*</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>3.80</td>
<td>14</td>
<td>.002*</td>
</tr>
<tr>
<td>Repetitive questions</td>
<td>2.92</td>
<td>14</td>
<td>.011*</td>
</tr>
</tbody>
</table>

(table continues)
Table 3. (continued)

<table>
<thead>
<tr>
<th>Behavior</th>
<th>t</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expressions of unrealistic fears</td>
<td>4.44</td>
<td>14</td>
<td>.001*</td>
</tr>
<tr>
<td>Repetitive health complaints</td>
<td>2.77</td>
<td>14</td>
<td>.015*</td>
</tr>
<tr>
<td>Repetitive anxious complaints</td>
<td>1.63</td>
<td>14</td>
<td>.126</td>
</tr>
<tr>
<td>Sad, pained, worried facial expressions</td>
<td>1.90</td>
<td>14</td>
<td>.079</td>
</tr>
<tr>
<td>Persistent anger with self/others</td>
<td>1.72</td>
<td>14</td>
<td>.108</td>
</tr>
<tr>
<td>Trying to get visitors to take home</td>
<td>1.69</td>
<td>14</td>
<td>.113</td>
</tr>
<tr>
<td>Hoarding</td>
<td>1.43</td>
<td>14</td>
<td>.175</td>
</tr>
<tr>
<td>Resisting ADLs</td>
<td>.47</td>
<td>14</td>
<td>.643</td>
</tr>
<tr>
<td>Resisting eating</td>
<td>3.75</td>
<td>14</td>
<td>.002*</td>
</tr>
<tr>
<td>Crying</td>
<td>1.78</td>
<td>14</td>
<td>.096</td>
</tr>
</tbody>
</table>

Note. N = 15.

*p < .05.
Summary

The purpose of this study was to determine if there is a difference before and after music therapy in the behavior of Alzheimer’s disease patients. Fifteen female, Caucasian, Alzheimer’s disease patients participated in the study. Descriptive analysis using frequency means was used to analyze the data. A dependent t test was applied to the data collected. Since there was a significant change in 6 out of 13 observed behaviors for these Alzheimer’s disease patients after music therapy, the null hypothesis was rejected.
Chapter V
The Outcomes

Four million Americans have been diagnosed with Alzheimer’s disease (Taylor, 1998). It is estimated that 14 million Americans will have Alzheimer’s disease by the middle of the next century unless a cure or prevention is found. Alzheimer’s disease is the fourth leading cause of death among adults (“Facts about Alzheimer’s,” 1998).

Since there is currently no cure for Alzheimer’s disease, managing the behavioral problems of these patients may contribute to improving the quality of life for the patient and relieving stress for both the patient and caregiver (Brontons & Pickett-Cooper, 1996). Managing the behavioral problems of Alzheimer’s disease patients has become the goal of therapy. For this reason, the purpose of this study was to determine if there was a difference in the behaviors of Alzheimer’s disease patients before and after music therapy. The study also sought to add to the existing body of knowledge about the use of alternative interventions with Alzheimer’s
patients. Rogers' (1983) Science of Unitary Human Beings: A Paradigm for Nursing was used as the theoretical framework for this study. The following null hypothesis guided the study: There will be no difference in the behaviors of Alzheimer’s disease patients before and after music therapy.

The sample used in this study was one of convenience. Participants were accessed from an Alzheimer’s unit in a local long-term care facility. Fifteen female, Caucasian, Alzheimer’s disease patients participated in the study. The Jackson Mood and Behavior Tracking Instrument was used to record behavioral observations. Data were analyzed using descriptive statistics of frequencies and percentages, as well as utilizing a dependent t test. This chapter summarizes and discusses the findings, conclusions, implications for nursing, and recommendations for further research.

Summary of the Findings

The sample consisted of 15 female, Alzheimer’s disease patients residing in an Alzheimer’s unit of a local long-term care facility. Participants ranged from age 65 to 90 years. All of the sample was of the Caucasian race.
Participants were observed daily for a 2-week period between the hours of 2:00 p.m. and 6:00 p.m. without music therapy. Behaviors observed during this period were recorded on the Jackson Mood and Behavior Tracking Instrument and served as baseline data for the group. After the baseline data were collected, participants were observed daily for a 2-week period between the hours of 2:00 p.m. and 6:00 p.m. with music therapy. Behaviors observed were recorded on the Jackson Mood and Behavior Tracking Instrument. Music therapy consisted of the playing of a 30-minute gospel cassette tape daily from 1:30 p.m. to 2:00 p.m.

One research hypothesis guided the study. The null hypothesis tested was as follows: There will be no difference in the behavior of Alzheimer's disease patients before and after music therapy. A dependent t test revealed a significant reduction in 6 of the 13 observed behaviors from the baseline levels to after music therapy.

Discussion

The findings of the current study support the use of Rogers' (1983) Science of Unitary Human Beings: A Paradigm for Nursing. The significant findings of the study showed that modifying a person's environment can help to
facilitate and promote the process of healing within the patient. In this study, the researcher modified the environment of the participants using music therapy. As a result of this environmental modification, the energy fields of the participants were modified and behaviors changed.

The findings of the current study were similar to the studies in the researcher’s review of literature. All of the studies reviewed looked at alternative interventions for managing behavioral symptoms. Additionally, all of the studies supported the use of alternative interventions with Alzheimer’s disease patients. The conclusions of the current study also supported the use of alternative therapy with Alzheimer’s patients. Both the current study and the studies in the review of literature recommended further research in the area of music therapy and treatment of Alzheimer’s disease.

The findings of the current research were similar to those of Ragneskog (1996) concerning behaviors at mealtime. Ragneskog (1996) concluded that music therapy beneficially affected restlessness and agitated demented patients. In the Ragneskog study music was shown to be a means of increasing time spent at dinner and allowing the
participants to spend their dinner more calmly (Ragneskog, 1996). In the current study, participants resisted eating significantly less with music therapy than without music therapy.

Another similar finding of the current research was noted in a study conducted by Brontons and Pickett-Cooper (1996). Brontons and Pickett-Cooper found that music therapy effectively managed agitated behaviors exhibited by Alzheimer’s disease patients. The current study found a significant reduction in repetitive anxious complaints, repetitive health complaints, repetitive questions, and expressions of unrealistic fears after music therapy was administered.

The current study demonstrated a significant reduction in physical and verbal abuse. Pollack and Namazi (1992) conducted a study that demonstrated how that music significantly decreased nonsocial behavior in Alzheimer’s disease patients.

The current researcher proposed several reasons for why music therapy significantly changed the behavior of the participants. Perhaps, the older group of participants could relate to soothing gospel music because of a religious background. The probability of the participants
having a religious background was high since the study was conducted in the Bible Belt region of the country.

Another possible reason for the impact of music therapy on the behaviors was that the participants may have been homemakers and spent a lot of time in the home where they could have listened to soothing gospel music on the radio for many years. These women came from a rural area where many radio stations played gospel music. This music may have subconsciously evoked memories of a happier time. The music utilized for the music therapy in this study may have counterbalanced anxiety by occupying the participant’s mind with something familiar, preferred, or soothing.

The researcher also proposed why certain behaviors were not changed. The behaviors that remained unchanged after music therapy may have been more ingrained into their personality and music therapy was unable to change it. Most demented nursing home residents do not believe that they live at the nursing home. They continually wonder when they are going home. Therefore, behavior in which residents tried to get visitors to take them home may not have changed. For this reason, music may not have been successful in reducing the desire to go home.
There was no significant change in hoarding behavior. The failure to change may be explained by values instilled early in life for this generation. This age group lived through the depression and were inculcated with the belief that nothing should be wasted. These behaviors also may be related to alternatives in brain anatomy and dysregulation of neurotransmitters secondary to the disease process since some of these behaviors are compulsive and obsessive in nature.

The researcher noted that residents continued to resist activities of daily living. This may have been due to the approach of the hurried staff in carrying out activities of daily living. This behavior may also go back to teaching instilled in early childhood. Most children are taught that bathing and toileting are very personal and that they should not allow strangers to be present during these activities.

The other behaviors that were not significantly changed included: crying, sad, pained, worried facial expressions, and persistent anger with others. These behaviors may have been indicative of depression and anxiety. Alzheimer’s patients may lack other appropriate
ways to cope with these feelings; therefore, the expressive behaviors remained unchanged.

Limitations

The current study had three limitations. The first was potential sample bias. The sample size utilized in the present study may not have been representative of all Alzheimer’s disease patients since this was a small convenience sample. A larger sample size may have presented different findings.

A second bias concerned instrumentation. The instrument utilized had no established reliability or validity. However, face validity of the Jackson Mood and Behavior Tracking Instrument was established prior to the study by presenting the instrument to a panel of experts.

A third limitation was data collectors in recording the responses. A thorough teaching session of how to record the data was given to each of the two nurses who were data collectors; however, the recorders may have unintentionally wanted to please the researcher and inadvertently recorded biased responses.
Conclusions

Based on the results of this study, the following conclusions were made:

1. For the participants of this study, the incidence of verbal abuse decreased significantly after music therapy.

2. For the participants of this study, the incidence of physical abuse decreased significantly after music therapy.

3. For the participants of this study, the incidence of repetitive questions decreased significantly after music therapy.

4. For the participants of this study, the incidence of repetitive health complaints decreased significantly after music therapy.

5. For the participants of this study, the incidence of expressions of what appears to be unrealistic fears decreased significantly after music therapy.

6. For the participants of this study, the incidence of resisting eating decreased significantly after music therapy.

7. Rogers’ (1983) Science of Unitary Human Beings: A Paradigm for Nursing was an appropriate framework for
investigation of alternative methods for managing behaviors of Alzheimer’s disease patients.

Implications for Nursing

Results from this study impact nursing in the areas of research, practice, and theory. The use of music therapy for Alzheimer’s disease patients is significant to nursing in the areas of practice, theory, and research.

With the increasing incidence of Alzheimer’s disease, an effective means of managing the behavioral problems of Alzheimer’s disease patients is becoming the goal of treatment. Effective management of the behavioral problems may contribute to improving the quality of life of the patient and relieving stress for both the patient and caregiver (Brontons & Pickett-Cooper, 1996). Nurse practitioners function as primary health care providers and provide treatment for Alzheimer’s disease patients. The current study has shown that music therapy significantly reduces certain particular behaviors. By decreasing these behaviors with the use of music therapy, nurse practitioners can assist in improving the quality of life for these patients by prescribing music therapy.

Music therapy can be utilized by nurse practitioners in the long-term care setting or in the home setting to
modify the behaviors of Alzheimer’s patients. In the long-term setting music could be played during the time of day when agitation tends to occur. CAREGivers could be taught to play music at specific times during the day to decrease agitation. This practice could reduce the amount of chemical and physical restraints required in the long-term setting and could make it easier for family members to care for Alzheimer’s patients at home.

This study also contributes to nursing science in the areas of theory and research. The current study adds to the existing body of knowledge concerning the use of alternative therapies with Alzheimer’s disease patients. It helps to support Rogers’ (1983) theory in that by modifying the individual’s environment, the nurse practitioner can modify the energy field of the individual. This study might also help to validate the need for insurance coverage for music therapy.

Recommendations for Further Study

Based on the findings of this study, the following recommendations were made:

1. Replication of the study using a larger random sample which is more culturally diverse to represent the population.
2. Replication of the study using participants at different stages of Alzheimer’s disease.

3. Replication of the study using different genres of music as therapy medium.

4. Replication of the study using a longer observation period.

5. Utilization of a variety of instruments for use with monitoring and recording specific behaviors of Alzheimer’s patients to compare with and further validate the Jackson Mood and Behavior Tracking Instrument.

6. Conduction of more research using Rogers’ theory as a framework for examining effective means of managing behaviors of patients.

7. Replication of this study correlating demographic characteristics with the changes in behavior.
REFERENCES
References


Instructions for Recorders

Observe for behaviors listed on the Jackson Mood and Behavior Tracking Instrument. If a behavior is observed, place a single mark in the space corresponding to the observed behavior. A mark is to be recorded each time the behavior occurs during the hours of 2:00 p.m. to 6:00 p.m. Additional spaces will be provided in order for any observed behaviors that are unlisted by the Jackson Mood and Behavioral Tracking Instrument to be recorded.
APPENDIX B

APPROVAL OF COMMITTEE ON USE OF HUMAN SUBJECTS IN EXPERIMENTATION OF MISSISSIPPI UNIVERSITY FOR WOMEN
March 1, 1999

Ms. Jody Jackson  
c/o Graduate Program in Nursing  
Campus

Dear Ms. Jackson:

I am pleased to inform you that the members of the Committee on Human Subjects in Experimentation have approved your proposed research on the condition that LPN’s sign a consent form acknowledging that they have had training to conduct the test and that they are aware of ethical responsibility. Only those who have received training should be allowed to conduct the research. You are cautioned to keep all materials confidential and under lock and key.

I wish you much success in your research.

Sincerely,

Susan Kupisch, Ph.D.  
Vice President for Academic Affairs

SK: wr

cc: Mr. Jim Davidson  
      Dr. Mary Pat Curtis  
      Dr. Lynn Chilton
APPENDIX C

CONSENT TO UTILIZE MOOD AND BEHAVIOR TRACKING INSTRUMENT
Dear XX. XXXXXXX:

I am a registered nurse and a graduate student at Mississippi University for Women, School of Nursing, in Columbus, Mississippi. In partial fulfillment of the Master of Science in Nursing degree, I plan to undertake a study entitled, Effects of Music Therapy on the Behaviors of Alzheimer’s Disease Patients.

The purpose of this study will be to determine if there is a difference in the behavior of Alzheimer’s patients before and after music therapy. I am interested in examining alternative methods in treating agitation in patients. I am requesting your assistance and written permission to utilize your facility’s Mood/Behavior Tracking Instrument in my proposed research study.

To assure confidentiality, each subject will be given an identification number and the specific name of the instrument will not be identified.

I am enclosing a duplicate of this letter for your records. Please return the signed original to me in the enclosed envelope. Thank you for your consideration and attention to this request.

Sincerely,

Jody Jackson, RN, BSN

Your signature below indicates permission to utilize your facility’s Mood/Behavior Tracking Instrument in the proposed research study.

Signature: ___________________________ Date: ____________
APPENDIX D

CONSENT TO UTILIZE FACILITY
Dear XX. XXXXXXX:

I am a registered nurse and a graduate student at Mississippi University for Women, School of Nursing, in Columbus, Mississippi. In partial fulfillment of the Master of Science in Nursing degree, I plan to undertake a study entitled, Effects of Music Therapy on the Behaviors of Alzheimer’s Disease Patients.

The purpose of this study will be to determine if there is a difference in the behavior of Alzheimer’s patients before and after music therapy. It is my desire to examine the effectiveness of music therapy with Alzheimer’s disease patients and add to the existing body of knowledge about alternative interventions for agitation in patients. I am requesting your assistance and written permission to utilize your Alzheimer’s unit patients in my proposed research study.

Participation by the subjects will be on a voluntary basis. The responsible parties of qualified subjects will be informed of the details of the study and of their rights as subjects. Subjects will be assured that neither their agreement nor their refusal to participate in the study will affect the quality of care that they are presently receiving.

I am enclosing a duplicate of this letter for your records. Please return the signed original to me in the enclosed envelope. Thank you for your consideration and attention to this request.

Sincerely,

Jody Jackson, RN, BSN

Your signature below indicates permission to utilize the Alzheimer’s Unit of your facility in the proposed study.

Signature: ___________________________ Date: ___________________
APPENDIX E

INTRODUCTORY LETTER AND
INFORMED CONSENT
Dear Responsible Party:

My name is Jody Jackson. I am a registered nurse and a graduate student at Mississippi University for Women, School of Nursing in Columbus, Mississippi. In partial fulfillment of the Master of Science in Nursing degree, I plan to undertake a study entitled, Effects of Music Therapy on the Behaviors of Alzheimer’s Disease Patients.

The purpose of this study will be to determine if there is a difference in the behavior of Alzheimer’s patients before and after music therapy. I am requesting your permission for ________________ to participate in my proposed research study.

During the study, patient’s behavior before music therapy will be observed by staff nurses and will be recorded on a tracking form for a 2-week period. After this baseline information has been obtained, patient’s behavior following music therapy will be observed by staff nurses and will be recorded on a tracking form for a 2-week period. Music therapy will consist of the playing of a 30-minute cassette tape of gospel music daily from 1:30 p.m. to 2:00 p.m. for the 2-week period. Patient’s behaviors will be observed during the hours of 2:00 p.m. to 6:00 p.m.

Patients are not required to participate in the study. Patients will be given an identification number so that names may be kept confidential. There will be no change in the quality of care regardless of the choice to participate in the study. Patients will be allowed to withdraw from the study at any time. No harm is foreseen from music therapy.

Any questions regarding the proposed study may be mailed to the above address or you may contact me by telephone at (601) 862-2528.

Sincerely,

Jody Jackson, RN, BSN

Your signature below indicates your permission for participation in the above proposed research study by:

Patient Name: ___________________________ Date: ___________________________

Please Print

Responsible Party Signature: ___________________________ Date: ___________________________

Please return signed consent forms to me in the provided stamped envelopes.
APPENDIX F

CONSENT FOR RECORDERS
320 West Lake Drive
Fulton, MS  38843
March 15, 1999

Dear XX. XXXXXXX:

I am a registered nurse and a graduate student at Mississippi University for Women, School of Nursing in Columbus, Mississippi. In partial fulfillment of the Master of Science in Nursing degree, I plan to undertake a study entitled, Effects of Music Therapy on the Behaviors of Alzheimer’s Disease Patients.

The purpose of the study is to determine if there is a difference in the behavior of Alzheimer’s disease patients before and after music therapy. I am interested in examining alternative methods in treating agitation in Alzheimer’s disease patients. I am requesting your assistance in data collection in my proposed research study.

It will be your responsibility to observe participants for a 4-hour period daily for 2 weeks without music therapy and record behaviors on the Jackson Mood and Behavior Tracking Instrument. After these baseline data are obtained, it will then be your responsibility to observe participants for a 4-hour period daily for 2 weeks with music therapy and record behaviors on the Jackson Mood and Behavior Tracking Instrument. Please be aware that all information must be kept confidential. To assure confidentiality, names of participants will not be used. Each subject will be given an identification number.

I am enclosing a duplicate of this letter for your records. Please return the signed original to me in the enclosed envelope. Thank you for your consideration and attention to this request.

Sincerely,

Jody Jackson, RN, BSN

Your signature below indicates your consent to participate in the data collection process and your acknowledgment that you have received training to conduct the test and that you are aware of your ethical responsibilities.

Signature: ___________________________  Date: ___________________________
APPENDIX G

SUMMARY OF FINDINGS AND LETTER OF THANKS TO PARTICIPANTS
Dear __________________________,

Thank you for allowing your family member to participate in my study for graduate school at Mississippi University for Women. The study has now been completed. You will find a summary of the results of the study enclosed. A more complete listing of the results are available upon request. Again, your participation and cooperation have been appreciated.

Sincerely,

Jody Jackson, RN, BSN
Summary of Study Results

1. Verbal and physical abuse significantly decreased with the administration of music therapy.

2. Repetitive questions significantly decreased with the administration of music therapy.

3. Repetitive health complaints significantly decreased with the administration of music therapy.

4. Expressions of what appear to be unrealistic fears were significantly decreased with the administration of music therapy.

5. Resisting eating was significantly decreased with the administration of music therapy.

6. Behaviors were reduced in the above categories across all age groups of the participants.
APPENDIX H

JACKSON MOOD AND BEHAVIOR TRACKING INSTRUMENT
### Jackson Mood and Behavior Tracking Instrument

**Subject Number:**

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Verbal abuse: Others were threatened, screamed at, cursed at</td>
<td></td>
</tr>
<tr>
<td>2. Physical abuse: Others were hit, shoved, scratched, sexually abused</td>
<td></td>
</tr>
<tr>
<td>3. Repetitive questions: Where do I go, what do I do</td>
<td></td>
</tr>
<tr>
<td>4. Expressions of what appear to be unrealistic fears--fear of abandonment, being with others</td>
<td></td>
</tr>
<tr>
<td>5. Repetitive health complaints: Seeks medical attention, obsessive concern with body functions</td>
<td></td>
</tr>
<tr>
<td>6. Repetitive anxious complaints: Seeks attention/ reassurance re: schedules, meals, etc.</td>
<td></td>
</tr>
<tr>
<td>7. Sad, pained, worried facial expression--furrowed brow</td>
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</tr>
<tr>
<td>8. Persistent anger with self/others, anger at nursing home placement, care received, etc.</td>
<td></td>
</tr>
<tr>
<td>9. Trying to get visitors to take home--trying to get out the door</td>
<td></td>
</tr>
<tr>
<td>10. Hoarding--hiding silverware</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>