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The Effect of Expressive and Instrumental Touch on the Behavior States of Older Adults with Late-Stage Dementia of the Alzheimer's Type and on Music Therapist's Perceived Rapport

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THE EFFECT OF EXPRESSIVE AND INSTRUMENTAL TOUCH ON
THE BEHAVIOR STATES OF OLDER ADULTS WITH
LATE-STAGE DEMENTIA OF THE ALZHEIMER'S TYPE AND ON
MUSIC THERAPIST'S PERCEIVED RAPPORT

By

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ABSTRACT

The purpose of this study was to examine the effect of music therapy interventions utilizing two types of touch—expressive touch and instrumental touch, on the behavior states of older adults who have late-stage dementia of the Alzheimer’s type. A secondary purpose of this study was to examine the music therapist’s perceived rapport when expressive and instrumental touches were used in therapy. Participants were 9 older adults (ranging from 60-100 years of age) who had late stage dementia of the Alzheimer’s type. A within-subject design was used with each participant receiving three sessions in each of the experimental conditions: no touch, expressive touch, and instrumental touch. All sessions were videotaped for analysis and coding to: 1) measure the time participants spent in alert behavior states according to the behavior state coding system (Guess et al., 1990) and 2) rate the music therapist’s client rapport. When all experimental sessions were combined (initial, first, and second repetitions), the instrumental touch condition was significantly more effective than the no touch condition in eliciting and maintaining participants’ alert behaviors. Further analysis of conditions and repetitions revealed that during the initial touch sessions, expressive touch was significantly more effective than the control conditions in eliciting and maintaining participants’ alert behaviors; however, during the first and second repetitions, there was no significant difference between experimental and control conditions in eliciting and maintaining participants’ alert behaviors. Independent observers’ rapport ratings revealed that the therapist’s client rapport was perceived to be significantly higher during the expressive and instrumental touch conditions than the control condition. These findings have important implications for music therapy practice and the use of nonverbal forms of communication.

CHAPTER I

INTRODUCTION

A decline in cognitive functioning is one of the common characteristics associated with aging. Researchers have attempted to identify the difference between normal age related cognitive declines and those declines associated with illnesses such as Alzheimer's disease. When cognitive functioning continues to decline past what is considered normal for a particular age group, an individual usually undergoes cognitive testing to determine the extent of impairment, as well as to establish a diagnosis. When cognitive impairment is paired with a decline in behavioral skills, one is confirmed to have Alzheimer's disease.

Alzheimer's Disease

Today over 4.5 million Americans are diagnosed with Alzheimer's disease, and it is estimated that by the year 2050 a total of 16 million Americans will be diagnosed with this illness. Alzheimer's disease is a form of dementia defined as a disorder of the brain's nerve cells that impairs memory, thinking, and behavior (Alzheimer's Association, 2006). Due to the degenerative nature of this disease, these impairments continue to decline as the disease progresses. Researchers continue to develop effective treatment options that help individuals function at their highest level throughout the disease process.

Two common brain abnormalities that occur throughout the disease process of those who suffer from Alzheimer's disease are senile plaques and neurofibrillary tangles (Charles, Truesdell, & Wood, 1982). Senile plaques are caused by an increase of amyloid deposits, a form of protein, and neurofibrillary tangles are caused by thickening and twisting of cell bodies and dendrites. Both of these abnormalities hinder the performance of neurotransmitters over time, and information has difficulty traveling through the brain (Fassano, 1986). The area of the brain where this frequently occurs is in the hippocampus, which is directly responsible for memory. Research studies confirm that when an autopsy is performed the amount of senile plaques found in the brain tissue is directly related to the degree of cognitive impairment on neuropsychological testing (Sloan, 1998). The results of these abnormalities are demonstrated through changes in

behavior, and cognitive abilities throughout the disease progression. These declines present challenges to health care workers and family members who provide care to these individuals. Given that the disease is irreversible and degenerative in nature, interventions are created to help individuals maintain the highest levels of functioning at all stages. Restoration of abilities is not possible at this time. Individuals with Alzheimer's disease often use nonverbal communication for self-expression and interaction as a result of the decline in speech production and comprehension (Reisberg & Franssen, 1999). There have been several studies conducted with individuals who have Alzheimer's disease to determine how they use and interpret nonverbal communication. Many of these studies have shown evidence that individuals in all stages of Alzheimer's disease can use nonverbal communication to enhance as well as replace verbal communication (Bartol, 1979; Kovach, & Magliocco, 1998; Magi, Cohen, Gomberg, Malatesta, & Culver, 1996; Mayhew, Acton, Yauk, & Hopkins, 2001).

Music Therapy and Alzheimer's Disease

Music therapy is an effective research-based treatment that has been utilized with individuals at all stages of Alzheimer's disease. Music therapy has been used to achieve goals such as reorientation to time and place, participation in exercise programs, maintenance of social behaviors, maintenance of receptive and expressive language skills, reduction of anxiety, maintenance of memory functions, and increased positive affect (Carruth, 1997; Clair, 1996; Clair & Bernstein, 1990; Hanson, Gfeller, Woodworth, Swanson, & Garland, 1996; Pollack & Namazi, 1992; Smith, 1986). Some of the activities employed in music therapy interventions are: reminiscing, instrument playing, singing, songwriting, and memory training.

Researchers have employed music therapy interventions with persons who are in various stages of cognitive decline. The majority of these researchers have been concerned with maintaining the communicative skills of persons who are in the early to middle stages of dementia by examining interventions for increasing active participation and social behaviors, decreasing disruptive behaviors and depressive symptoms, and improving language functioning (Brotons & Pickett-Cooper, 1996; Cevasco & Grant, 2003; Clair & Bernstein, 1990; Clair, Mathews, & Kosloski, 2005; Hanson, Gfeller, Woodworth, Swanson, & Garand, 1996; Olderog-

Millard & Smith, 1989; Pollack & Namazi, 1992). As individuals progress through Alzheimer's disease, music therapy interventions are adapted to assist clients in maintaining their level of functioning. When individuals progress through later stages, loss of language as well as deterioration of other cognitive and behavioral skills result in their decreased communication abilities. There are few music therapy studies that have included participants who are in the late stages of dementia, and those that exist were designed to improve the interactions between these individuals and their caregivers as well as to increase clients' alert responses (Clair, 1996; Clair, 2002; Clair & Ebberts, 1997). Behavior observation is one measurement system used in these research studies to examine the effectiveness of interventions employed with individuals who have late stage Alzheimer's disease (Clair, 1996; Clair, 2002; Clair & Ebberts, 1997). Behavior observation is applicable to this population because it does not require verbal communication which is declining and eventually lacking at this stage.

Behavior States

The process of identifying behavior states originated in infants and was developed to categorize infants' alert, awake, and sleep periods (Wolff, 1959). Seven behavior states have been identified: regular sleep, irregular sleep, periodic sleep, drowsiness, alert activity, waking activity, and crying. These states describe how infants interact with their environment. Although the use of behavior states was originally introduced with infants, researchers have also applied the behavior state classification system to individuals with profound disabilities (Guess, Mulligan-Ault, Roberts, Struth, Siegel-Causey, Thompson, Bronicki, & Guy, 1988).

The behavior state classification system consists of eight behavior states: Asleep-Inactive (S^1), Asleep-Active (S^2), Drowsy (DR), Daze (DA), Awake Inactive-Alert (A^1), Awake Active-Alert (A^2), Awake-Active/Self Stimulatory (A^2/S), and Crying/Agitated (C/A). This classification system has been used to determine the amount of time individuals with profound disabilities spend in each behavior state throughout the day. The system can then be utilized as a measurement tool to determine if various interventions result in an increased amount of time spent in the preferred behavior states of awake and alert.

This standardized classification system developed by Guess, Ault, Roberts, Struth, Siegel, Causey, Thompson, Bronicki, & Guy (1988) has not been employed with individuals who have Alzheimer's disease. However, since a few studies have used non-standardized behavior state classification systems to describe participants who have stage dementia, it appears that this scale may be an appropriate measurement system for this population (Clair, 1996; Clair, 2002; Clair & Ebberts, 1997; Norberg, Melin, & Asplund, 2003). As mentioned earlier, individuals in the later stages of dementia experience difficulty in communicating with others. This communication problem is a result of the deterioration of language production and comprehension that occurs during the later stages of this illness. It is necessary, therefore, for health care workers and caregivers to find alternative ways to communicate with their clients or loved ones in the later stages of Alzheimer's disease.

Touch as a Communication System with Older Adults

Touch has been identified as a successful form of nonverbal communication for persons of all ages, especially with older adults. As part of the aging process, older adults frequently experience declines in vision and hearing, which are the two most common senses used to communicate with others. With the decrease of these senses, it is important to cultivate other effective avenues of communication that can be utilized with aging clients. Researchers have examined the effect of different types of touch on older adults' behaviors such as participation and attention. Results of these studies indicate that touch can be used to decrease agitation, increase sensory stimulation and relaxation, and increase the orientation to one's environment and to other individuals (Busch, 2001; Hollinger, 1986; Kim & Buschmann, 1999; Kramer & Gibson, 1992; Langland & Panicucci, 1982; Norbert, Melin, & Asplund, 2003).

Purpose of Study

The primary purpose of this study was to examine the effect of music therapy interventions utilizing two types of touch on the behavior states of older adults who have late-stage dementia of the Alzheimer's type. The types of touch used were:

Expressive touch – defined as a nurturing or caring touch. This touch is often applied to the shoulder, arm, or hand to express feelings of comfort or reassurance.

Instrumental touch – defined as a touch used to assist in completion of a task. This touch is applied to the appropriate part of the body that is needed to complete a musical task. In this study the music task consists of playing instruments, wind chimes and rattle, or moving a scarf to music. A secondary purpose of this study was to examine the perceived rapport of the music therapist when expressive and instrumental touch was used with older adults who have late-stage dementia of the Alzheimer's type.

CHAPTER II

REVIEW OF LITERATURE

This review of literature discusses the progression of Alzheimer's disease, effective interventions employed with this population, and measurement tools utilized to determine the benefits of these interventions. Two interventions commonly used with individuals who have Alzheimer's disease are music therapy and touch. Separately, the benefits of both interventions are well documented throughout the literature. A few studies have utilized the combination of music therapy and touch (Clair, 1996; Norberg, Melin, & Asplund, 2003). However, these studies did not focus on the combination of these two interventions or examine the use of one music therapy intervention with a specific type of touch. This literature review will provide a framework for the current study by exploring how music therapy and touch interventions have been used with individuals who have Alzheimer's disease.

Alzheimer's Disease

Although the cause of Alzheimer's disease is unknown, there are three well-known theories of causation that exist: the neurotransmitter theory, the genetic theory, and the toxin theory. The neurotransmitter theory proposes that Alzheimer's disease is caused by the decreased production of three neurotransmitters dopamine, acetylcholine, and serotonin, in the brains of people with Alzheimer's disease. The genetic theory proposes that Alzheimer's disease is caused by changes in the amyloid beta protein which leads to an increase of these deposits. The toxin theory proposes that Alzheimer's disease is caused by exposure to aluminum salts (Andresen, 1995). With no definite cause or cure for the disease, scientists continue to research the changes that occur in the brain during the disease progression. As a result of this research, established guidelines have been created that explain the types and length of declines that occur in this illness.

The progression of Alzheimer's disease is identified by changes and declines in cognitive skills, functioning ability, and behaviors. The most common scale used to measure these changes is the Global Deterioration Scale (GDS) which consists of seven stages that individuals typically

progress through when living with Alzheimer's disease (Reisberg & Franssen, 1999). The seven identified stages are:

Stage 1–No Cognitive Decline: At this stage there are no apparent deficits in cognitive functioning.

Stage 2–Very Mild Cognitive Decline: During this stage, individuals experience normal age related declines, which are often expressed in the form of forgetfulness, misplacing their keys, or forgetting where they placed their check book. Other declines occur in the areas of expressive language skills, such as word fluency and object naming (Reisberg & Franssen, 1999).

Stage 3–Mild Cognitive Decline: Individuals in this stage start to exhibit mild changes in cognitive skills. Difficulty learning new skills and declines in their level of concentration and attention occur. The identification of these declines, however, depends on one's activity level. For example, the cognitive declines of individuals who have decreased their activity level through retirement, or of individuals who are not required to learn new tasks, will often go unnoticed until nearly halfway through this stage or near the end of this stage.

Stage 4–Moderate Cognitive Decline: Individuals in this stage have declines in the following areas: memory and recall for events, language, and complex activities of daily living, such as paying bills, shopping, and cooking. The display of a flat affect often hides the cognitive declines and deficits one experiences.

Stage 5–Early Dementia/Moderately Severe Cognitive Decline: Individuals in this stage may require assistance with basic activities of daily life, and are consequently no longer able to live independently. There is also an increase in their short term and long term memory deficits.

Stage 6–Middle Dementia/Severe Cognitive Decline: At this stage, there is a significant decline in cognitive functioning that interferes with most activities of daily life, requiring individuals to have assistance with bathing and other personal hygiene tasks. These individuals exhibit more memory deficits, displayed through confusing and/or interchanging names of spouses, children, and other individuals with whom they interact. Wandering, expressions of anger, fidgeting, and other disruptive behaviors are also common at this stage.

Stage 7–Late Dementia/Very Severe Cognitive Decline: This is the final stage of Alzheimer’s disease and is characterized by individuals’ need for complete assistance with activities of daily life. Individuals experience a significant decrease in their speech, (i.e. an average of six or fewer intelligible words leading to eventual loss of speech), loss of mobility and ambulation, and eventual loss of the ability to sit up independently.

Another common scale used to determine the progression of Alzheimer’s disease is the Functional Assessment Staging (FAST) (Reisberg, 1988). This scale also consists of seven major categories that correspond to the seven stages of the Global Deterioration Scale. The major distinction of the FAST scale is that it contains five detailed subscales in stage 6 and six detailed subscales in stage 7.

Communication Abilities of Individuals who Have Alzheimer’s Disease

Due to the degenerative nature of this disease, as an individual enters the later stages of Alzheimer’s disease, focus is often placed on the abilities that are lost over time. It is often assumed that individuals in the later stages of Alzheimer’s disease are unable to express themselves, and when speech is used, it is often described as incoherent and unproductive. These views may unknowingly contribute to the isolation of individuals in later stages of this disease. People often feel a connection with others through the use of verbal communication. When this connection is lost between family members and individuals with Alzheimer’s disease, meaningful interactions may begin to decrease. A substantial number of empirical studies have been conducted with individuals in later stages of Alzheimer’s disease which reveal that they are able to meaningfully interact and express themselves (Bartol, 1979; Clair, 1996; Clair, 2002; Clair, & Ebberts, 1997; Kovach, & Magliocco, 1998; Magai, Cohen, Gomberg, Malatesta, & Culver, 1996; Mayhew, Acton, Yauk, & Hopkins, 2001).

Mayhew, Acton, Yuak, & Hopkins (2001) conducted a study to demonstrate that individuals in later stages can communicate meaningfully. In their study participants were asked to share a story about their life. All participants were able to express themselves verbally and in addition used nonverbal communication to convey their ideas and emotions. Types of nonverbal communication utilized by the participants were touch, affect, tone of voice, body posture, and

movement. These findings are similar to Magai, Cohen, Gomberg, Malatesta, & Culver (1996) who found that individuals in middle to late-stage dementia could express a variety of emotions through nonverbal communication. Results showed that individuals in middle and late stages of dementia were able to express a variety of emotions through facial affect.

An early study conducted by Bartol (1979) presented case studies on the use of nonverbal communication to decrease disruptive behaviors of individuals who have Alzheimer's disease. The case studies included observations of the participants' interactions with caregivers on a special care unit. Observers recorded the number of disruptive physical and vocal behaviors during interactions with staff and other residents. This study showed that disruptive behaviors of participants decreased with implementation of nonverbal communication, such as touch, active listening, and observation and interpretation of behaviors.

Hubbard, Cook, Tester, and Downs (2002) explored the use of nonverbal communication by individuals with dementia and healthcare workers who interacted with them. The participants were observed interacting with group members at an adult day care center to obtain what forms of nonverbal communication the participants used. Results showed that older adults with dementia used and interpreted multiple forms of nonverbal communication when interacting with other participants. Touch, proximity, body posture, position, affect, and gestures were all used to enhance verbal communication, and in the place of verbal communication, with touch utilized most frequently. The researchers speculated that touch was used by participants for orientation to their environment as well as to improve their interactions with others.

These studies demonstrate that some communication abilities are maintained as individuals' progress through Alzheimer's disease. It is the role of researchers to identify successful interventions to facilitate the use of these communication skills. Individuals who have late-stage dementia are able to meaningfully interact with their environment through nonverbal communication as well as participate in a variety of activities that are adapted to their functioning level. Kovach and Magliocco (1998) explored the behaviors and levels of participation for individuals with late-stage dementia during activity programming. The objective of activity programming was to stimulate senses in order to increase orientation and interaction with their

environment. Results showed that individuals were able to actively participate in a variety of programming, and their participation increased when multiple senses of the individuals were stimulated.

Music Therapy and Alzheimer's Disease

Music therapy interventions have been successfully employed to increase physical exercise, maintain cognitive skills, and decrease disruptive behaviors in individuals with Alzheimer's disease (Carruth, 1997; Clair, 1996; Clair & Bernstein, 1990; Hanson, Gfeller, Woodworth, Swanson, & Garland, 1996; Pollack & Namazi, 1992; Smith, 1986). Physical exercise is important in maintaining strength and flexibility. Individuals with dementia often develop rigidity and contractures of their extremities and joints as the disease progresses (Reisberg & Frannssen, 1999). Their involvement in physical exercise can assist in delaying physical declines; however participation is often difficult due to decreased levels in attention and alertness. The inclusion of music in exercise sessions can motivate individuals to participate as well as structure these sessions to elicit purposeful responses (Cevasco & Grant, 2003; Mathews, Clair, & Kosloski, 2001).

Mathews, Clair, & Kosloski (2001) examined the use of recorded music in an exercise program to increase participation of individuals with dementia. The instrumental music was created to match each set of exercises. Participants experienced exercise sessions with and without recorded music and were rated on their attendance and level of participation in weekly scheduled social activities. Results showed that participation increased overall for all participants. However, regular involvement in an exercise program was dependent on the likelihood of each person to participate in other social activities.

Numerous research studies demonstrate that music therapy interventions are beneficial to maintain cognitive skills for individuals who have Alzheimer's disease (Brotons & Koger, 2000; Carruth, 1997; Prickett & Moore, 1991; Smith, 1986). Brotons and Koger (2000) evaluated the effect of reminiscing through music on language functioning as measured by speech content and fluency. Participants received reminiscing sessions with verbal conversation and reminiscing sessions with music. For each session, five topics were chosen and either music or pictures were

presented that related to the topics. Results showed that participants had greater improvement in speech content and fluency after reminiscing sessions with music.

Smith (1986) also examined the effect of reminiscing interventions on maintaining cognitive functioning in individuals who have Alzheimer's disease. This study examined the use of three different treatment sessions on cognitive functioning, (orientation, attention, and language) measured by the Mini Mental Status Exam (Folstein, 1975). Participants received sessions that included musically cued reminiscing, verbally cued reminiscing, and music only with no emphasis on reminiscing. Results showed that the music only sessions led to an increased overall score on the Mini Mental Status exam. Both musically cued and verbally cued reminiscing sessions increased language scores on the Mini Mental Status exam.

Another cognitive deficit that occurs in individuals who have Alzheimer's disease is face name recognition. They often confuse the names of facility caregivers with family members or others (Reisberg & Frannssen, 1999). An effective intervention for maintaining face name recall in individuals with Alzheimer's disease is the spaced retrieval technique. The spaced retrieval technique uses shaping to learn and retain information in long term memory (Abrahams, 1993; Camp, 1998). In this technique, an individual is presented an object and told the name of that specific item. The individual is then asked to recall the item when it is presented. The space between presentation and recall of the item is gradually increased with an expectation that the information will be stored in long term memory and can be recalled days or weeks after (Abrahams, 1993; Camp, 1998). Carruth (1997) examined the use of this memory training technique paired with singing to increase face name recognition in older adults with memory loss. The sample was comprised of older adults diagnosed with Alzheimer's disease, stroke, or chronic obstructive pulmonary disease. The participants were presented with pictures of staff members at their long term care facility. The space between the picture presentation and recall was filled with singing. Each music condition was the same and consisted of singing a familiar song with new words two times. Results showed that three of four participants with Alzheimer's disease demonstrated improvement in face name recall after music therapy sessions paired with the spaced retrieval technique.

Aggressive behaviors such as yelling, abusive language, and kicking are common disruptive behaviors displayed by individuals with Alzheimer's disease. Disruptive behaviors often occur when individuals cannot express themselves or when they do not understand a task they are required to perform (Reisberg & Frannssen, 1999). Disruptive behaviors are a common occurrence during bath times. A study conducted by Clark, Lipe, and Bilbrey (1998) examined the use of recorded preferred music during bath time to decrease aggressive behaviors. The researchers identified fifteen aggressive behaviors that participants displayed during bath time: yelling, abusive language, hitting, verbal resistance, crying, physical resistance, grabbing, pinching, kicking, spitting, wandering, biting, throwing, scratching, and gouging. Results showed an overall decrease in aggressive behaviors when preferred music was used during bath times. Reports from caregivers stated that the participants displayed elevated mood and increased cooperation when music was used during bath times.

Although the previously described research studies documented the benefits of utilizing music therapy interventions with individuals who have Alzheimer's disease, the participants' stage of decline was not noted. As music therapy research with this population has grown, researchers have begun to identify participants' stage of Alzheimer's disease. By identifying these stages of decline for participants who have Alzheimer's disease in empirical studies, research in music therapy can continue to identify appropriate and effective interventions to elicit responses as individuals progress through this disease.

Music Therapy for Individuals with Early and Middle Stage Dementia

The benefits of music therapy interventions with individuals who are in the early and middle stages of Alzheimer's disease are well documented (Brotons & Pickett-Cooper, 1996; Cevasco & Grant, 2003; Clair & Bernstein, 1990; Hanson, Gfeller, Woodworth, Swanson, & Garand, 1996; Pollack, & Namazi, 1992). Interventions for these individuals included instrument playing, singing, and movement. These interventions were used to increase purposeful responses, maintain social behaviors, and decrease agitation behaviors (Brotons & Pickett-Cooper, 1996; Cevasco & Grant, 2003; Clair & Bernstein, 1990; Pollack & Namazi, 1992).

A study by Clair & Bernstein (1990) measured the participatory responses of individuals with early and middle stage dementia in music therapy sessions. The sessions included two different types of drum playing (vibrotactile instrument playing-drum playing with the drum placed on the laps of participants, and nonvibrotactile instrument playing-drum playing with the drum held in front of the participants), and singing. Results showed that the highest participatory responses occurred when the drum was placed on the laps of the participants (vibrotactile instrument playing).

Another early study conducted by Hanson, Gfeller, Woodworth, Swanson, and Garand (1996) examined the effectiveness of music therapy interventions to increase participatory responses in individuals with early and middle stages of Alzheimer's disease and related disorders. Music therapy interventions utilized in this study were movement, instrument play, and singing. Each activity contained tasks that required low and high levels of participation. Results showed that all individuals participated most during movement and that they were most passive during singing.

Cevasco and Grant (2003) conducted a two-part study to examine the effect of different types of music and multiple cueing systems on eliciting participation in exercise-to-music sessions for individuals in the early and middle stages of dementia. The first experiment examined the use of two multiple cueing systems. During system one, the participants received one verbal cue paired with continuous visual cueing for both easy and hard movement tasks. During system two, participants received continual verbal and visual cueing for both easy and hard movement tasks. Results showed that increased participation occurred when a continuous verbal cueing system and easy movement task were used. The second experiment examined the effect of vocal versus instrumental music and the use of instrument play to elicit participation in an exercise to music session. Participants received four interventions: exercise to vocal music, exercise to instrumental music, exercise while playing instruments to instrumental music, and exercising while playing instruments to vocal music. Results showed that the highest level of participation occurred with exercise to instrumental music.

Olderog-Millard and Smith (1989) measured the influence of therapeutic singing on physical and social behaviors of individuals with middle stage dementia. Physical and social behaviors were identified as sitting, standing still, walking alone and walking with others, watching others, smiling, touching others, talking to self, and watching TV with others. Participants attended reminiscing groups and therapeutic singing groups to determine if either intervention was more effective for increasing the occurrence of physical and social behaviors. Results showed that therapeutic singing was most effective for increasing behaviors of sitting and walking with others. Active participation also occurred more in the therapeutic singing groups.

Pollack and Namazi (1992) conducted a similar study. They examined the use of music therapy interventions to increase social behaviors of individuals with early and middle stage dementia. Social behaviors were identified as direct or indirect interactions with others. Nonsocial behaviors were identified as passive or active periods when participants did not interact with others. Individual music therapy sessions were designed according to the participants' preferred interventions of singing, movement, or instrument playing. Results showed that participants exhibited increased social behaviors and decreased non-social behaviors after music therapy sessions.

As individuals progress through the early and middle stages of Alzheimer's disease, they often exhibit agitated behaviors which are the result of changes caused by cognitive decline. Brotons and Pickett-Cooper (1996) measured the effectiveness of music therapy interventions to decrease agitation during and after music therapy sessions in individuals who were in the early and middle stages of dementia. A secondary purpose of this study explored the relationship between previous music experiences and responses to music therapy interventions. Participants were considered to have previous music experience if they were involved in an ensemble or received music instruction for three or more years. Results showed that periods of agitation were significantly lower during and after music therapy sessions. Results also showed that previous music experience was not a factor in participation during the sessions or in the occurrence of agitation behaviors.

A recent study designed by Clair, Mathews, and Kosloski (2005) examined the level of participation for individuals in music therapy assessment sessions and how their participation would predict involvement in future music therapy sessions. Participants in the middle stages of dementia were observed during assessment sessions consisting of singing, physical exercise, and rhythm instrument playing. Participants were then labeled as immediate participators, ready participators, reluctant participators, or non participators. Labels were based on their level of participation, which was defined as how many verbal prompts were needed to initiate participation. The findings showed that the initial assessment of participation was an accurate representation of participation across sessions of singing, physical exercise, and rhythm instrument playing.

Music Therapy with Late-stage dementia

There are a limited number of music therapy research studies conducted with individuals who are in the late stages of dementia (Clair, 1996; Clair, 2002; Clair & Ebberts, 1997). This omission is likely the result of a limited number of observable responses with individuals at this stage. The few empirical studies conducted employed music therapy interventions to elicit purposeful responses and to improve interactions between caregivers and individuals with late-stage dementia of the Alzheimer's type. Clair (1996) conducted a study to determine the effect of singing on alert responses in individuals who had late-stage dementia. Participants received sessions that consisted of unaccompanied singing, reading, and silence conditions. Alert responses were identified as vocalizations and different non-verbal responses such as opening of eyes, turning one's head to localize sounds, and other body movements. Findings from this study revealed that subjects exhibited more alert responses during unaccompanied singing and reading. This study supports the notion that individuals in late-stage dementia can provide purposeful responses when provided with auditory stimulation.

Clair (2002) examined the efficacy of a music therapy training program designed for caregivers to use when visiting their loved ones who suffer from late-stage dementia. The experimental sessions were designed for each couple, caregiver and individual with late-stage dementia, based on the preference and active participation of the person with late-stage dementia.

The results showed that interactions increased across eight sessions between caregivers and participants with late-stage dementia, and a carry over effect was noted in a non-music visit after the experimental sessions. Caregivers in this experiment expressed that they felt comfortable using music activities and would use music activities in the future.

Clair and Ebberts (1997) examined the effect of music therapy sessions on two elements of interactions between caregivers and individuals with late-stage dementia. The two elements were identified as: purposeful interactions and the use of touch between caregivers and participants with late-stage dementia. The caregivers and participants received music therapy sessions which included conversation, singing, dancing, and instrument playing with drums. The caregivers reported greater satisfaction during music therapy visits and perceived increased purposeful interactions with their loved ones who had late-stage dementia. Caregivers and individuals with late-stage dementia participated most during instrument playing with drums. Caregivers and participants with late-stage dementia both initiated and received touch during music sessions. Caregivers initiated touch more but were slower to respond when participants initiated touch. The researchers suggested that caregivers are probably more familiar with the role of touch initiator and therefore may need training to identify nonverbal communication systems of individuals who have late-stage dementia. This study supports the need for an increased use of touch as a nonverbal communication when interacting with people with late-stage dementia. It is important to identify appropriate music therapy interventions to increase purposeful responses in individuals who have late-stage dementia. One approach to measure the effectiveness of these interventions is the use of behavior observations. Behavior observations can be a useful assessment tool when working with this population due to the declines that occur in the later stages.

Behavioral State Classification System

The classification of behavioral states as a coding system was conceptualized to describe how infants interact with their internal and external environments (Brazelton, 1973; Thoman, 1985; Wolf, 1959). As described earlier in the introduction, Wolf (1959) was one of the pioneers in this field of research, creating one of the first behavioral state classification systems. Since

then other researchers have adapted his coding system to create similar behavioral state scales (Brazelton, 1973; Thoman, 1985).

The most well-liked and recognized behavioral state system is the Neonatal Behavioral Assessment Scale (Brazelton, 1973). This assessment measures six states of sleep and wakefulness in infants. The six states are as follows: deep sleep, light sleep, indeterminate drowsy, wide awake alert, fussy alert, and crying. The measuring of behavioral states of infants assists in understanding how an individual interacts and adapts to his or her environment. For example, when an infant is crying, or exhibiting signs of agitation, this can be a result of over stimulation from something in his environment. Once behavioral states are identified one can structure an environment to facilitate awareness and attempt to decrease any stimuli that is overwhelming for an infant. One of the major benefits of using behavioral state observations is that it is adaptable to each infant and can be used for all infants, including those born preterm and those born with neurological disorders (Brazelton, Nugent, & Lester, 1987).

Thoman (1985) developed another behavioral state system. This system is similar to the Neonatal Behavioral Assessment scale in that it measures states of sleep and wakefulness in infants. This scale measures ten behavioral states: alert, nonalert waking, fuss, cry, drowse, daze, sleep-wake transition, active sleep, quiet sleep, active quite transition sleep (Thoman & Whitney, 1990). Behavioral state coding is a reliable assessment of an individual's behavior patterns and has been successfully utilized with other age groups.

One population that behavioral state coding has been adapted successfully for is individuals with severe and profound mentally handicapping conditions (Ghetti, 2002; Guess, Mulligan-Ault, Roberts, Struth, Siegel-Causey, Thompson, Bronicki, & Guy, 1988; Guess, Siegel-Causey, Roberts, Rues, Thompson, & Siegel-Causey, 1990; Guess, Siegel-Causey, Roberts, Guy, Mulligan-Ault, & Rues, 1993; Mulligan-Ault, Guy, Guess, Bashinski, & Roberts, 1995; Guess, Roberts, & Rues, 2002). The behavioral state coding system used with these individuals has been adapted from the Neonatal Behavioral Assessment Scale (Brazelton, 1973). Guess et al. (1988) was influential in adapting behavior state coding to individuals with severe and profoundly handicapping conditions. See Table 1 for a detailed description of behavior state

categories. A number of earlier research studies with this adapted coding system were conducted to first create an appropriate measurement scale and then to demonstrate the efficacy of the scale when working with individuals in this population.

Guess et al. (1990) conducted a study to examine the effectiveness of using behavior state coding with students who have profoundly handicapping conditions. Students were observed in their classroom activities to measure the amount of time spent in preferred awake states over a given time. Results from this study showed that behavior state coding could be easily applied to the classroom setting. Students observed in this study spent a limited time in preferred awake states. These findings suggested that once it is determined what behavior states a student spends most of her time in, created interventions can be used to increase the quantity of times spent in preferred awake states.

A study based on the findings that students who have profoundly handicapping conditions do not always spend the majority of their day in preferred awake states was conducted by Mulligan-Ault, Guy, Guess, Bashinski, & Roberts (1995). This two-part study questioned if training teachers in the behavior state coding system would improve the selection of teaching interventions they use so as to increase the time spent in preferred awake states. During the first part of the experiment, teachers were trained on how to apply behavior state coding to their students. Teachers then identified the time spent in each behavior state for each student. From this classification teachers then selected the desired behavior state for each student and the interventions they would use to increase the amount of time each student spent in preferred awake states. The majority of the teachers utilized sensory stimulation interventions to increase awake and alert states in students. Tactile and auditory stimulation were employed the most during teacher student interactions. Results showed that when teachers created interventions for students based on their observed and desired behaviors states, the students were able to increase the amount of time spent in alert states.

Table 1: Definitions of Behavior States

Sleep states	<p>S¹: Asleep-Inactive</p> <p>Person's eyes are closed. Respiration is relatively slow and regular. Exhibits little or no motor activity.</p>	<p>S²: Asleep-Active</p> <p>Person's eyes are closed. Respiration is generally uneven. Sporadic movements (tossing and turning, head and limb twitching) may occur but muscle tone is generally low between movements. Person may exhibit rapid eye movements (REM). Other behaviors may include facial expressions (smile, grimaces, frowns) and/or vocalizations (sighs, grunting, gurgling).</p>
Indeterminate states	<p>DR: Drowsy</p> <p>Person's eyes are either open and eyelids appear "heavy" or eyes are opening/closing repeatedly. Vocalizations may occur.</p>	<p>DA: Daze</p> <p>Non-orientation to visual, auditory, or tactile stimuli predominates. If person's vision is intact, eyes are open and appear glassy, dull and immobile. Motor movements (that are not orienting) may occur, such as brief limb/body movements, startles. Respiration is regular.</p>
Preferred awake states	<p>A¹: Awake Inactive-Alert</p> <p>Person's eyes are open and some active visual or auditory orientation, focusing, or tracking is displayed (oriented/focused on stimuli, or following stimuli). Motor Movements (that are not orienting) may occur, such as brief limb/body movements, startles. Demonstrates regular respiration. Vocalizations may occur.</p>	<p>A²: Awake Active-Alert</p> <p>Person attempts to engage/interact using visual, auditory, or tactile modes. If person's vision is intact, eyes are open, bright, and shiny. Visual, auditory, or tactile interaction patterns are exhibited with distinct fine and gross motor movements (reaching, leaning toward/away, moving toward/away, eating, touching, etc.). Vocalizations may occur.</p>
Other awake states	<p>A²/S: Awake-Active/Stereotypy</p> <p>Person exhibits behaviors of A² with movements that are self-stimulatory or stereotypical (idiosyncratic, repetitive rhythmic movements of body or body parts). Movements may include head weaving, rocking, mouthing hand or objects, arm and finger flapping.</p>	<p>C/A: Crying/Agitated</p> <p>Person may exhibit intense vocalizing, crying, or screaming. Self-injurious behavior possible. Respiration may be irregular and eyes may be open or closed. Intense motor activity possible.</p>

* Reprinted with permission from Guy, Guess, and Mulligan-Ault (1993).

Ghetti (2002) further expanded the use of behavior state coding by applying this system to measure the efficacy of music therapy interventions for students with profound disabilities. The students participated in three music therapy interventions that varied in the level of activity required. The interventions were as follows: rhythmic stimulation, singing, and multi-sensory rhythm instrument playing. The results showed that no specific intervention significantly increased the time spent in alert behavior states. However, participants did spend up to 90% of their time in alert behavior states during music conditions.

The behavior state coding system developed by Guess et al. (1993) was used in the previous study to measure the efficacy of music therapy interventions to increase alert states for individuals with severe and profound handicapping conditions. Individuals who have late-stage dementia also spend a decreased amount of time in alert behavior states throughout the day. It appears that the behaviors of individuals who have Alzheimer's disease can be measured with this same coding system. Perhaps then this scale can be used to determine the efficacy of different interventions employed with individuals who have Alzheimer's disease.

Touch as a Nonverbal Communication System

Humans have an innate need to interact with others either through verbal or nonverbal communication. Verbal communication is defined as communication with words, whereas nonverbal communication is defined as communication without words (Epstein, 1980; Remland, 2004). The main purpose of all communication is to transmit information to others (Steel, 1980). In order for communication to occur there are five factors that must be present: 1) a message: something transmitted between people, 2) a sender: someone sending a message to another person, 3) a transmission channel: the use of a system such as speech, touch, gaze, etc. to send the message, 4) a receiver: someone receiving the message that was sent, and 5) a response: which is made by the receiver regarding the message sent (Hollinger, 1986; Remland, 2004). Three theories of communication have emerged based upon the importance of each factor: the communication behavior perspective, the communication process perspective, and the communication code perspective (Remland, 2004). The communication behavior perspective focuses on what occurs within the individual attempting to send a message or the individual

receiving a message. Communication has occurred in this theory when either the sender feels he has sent a message or when the receiver feels he has received a message to interpret (Remland, 2004). The communication process focuses on the active participation of two or more individuals. This theory is based on the active involvement of more than one person in order for communication to occur. This theory allows for a clearer definition of communication and limits people from interpreting all behavior as communication (Remland, 2004). The communication code perspective focuses on the types of signaling systems used for communication. Although there is not a great variety in verbal signaling systems, there are many nonverbal signaling systems. Some of the most commonly identified nonverbal signaling systems are the human body, space, gaze, touch, facial expression, voice, and gesture. Each of these categories is used to send and receive messages, which in turn can then be interpreted and a response can be sent utilizing the same signaling system. One category that is important in nonverbal communication is touch (Remland, 2004).

Touch is a simple form of nonverbal communication. It develops early in one's life and is often used as a tool to communicate. Research has been done to show the benefits of touch for infants and children. Touch has been documented to be instrumental in an individual's growth as it is one of the first senses to develop. Touch is also important for perception, movement, and intelligence (Hollinger, 1986; Jones & Yarbrough, 1985; Vortherms, 1991). Another reason why touch is important is because it works as a stimulus to the central nervous system. It assists with weight gain and can also decrease stress (Van Boven, 1997). Touch as a nonverbal signaling system follows the same rules as other systems when it is used as a means to communicate. There are various factors that affect how touch is interpreted: the type of touch, the location of the touch, the duration of the touch, the intensity of the touch, the frequency of the touch, and sensation that the touch brings (Vortherms, 1991).

In a study by Jones and Yarbrough (1985), participants were surveyed about the types of touch they used in their daily lives. Seven major categories of touch were identified: positive affect touch, playful touch, control touch, ritualistic touch, hybrid touch, task related touch, and accidental touch. Positive affect touch expresses feelings of support, appreciation, sexual

interest, inclusion and affection. Playful touch expresses feelings of playful affection and playful aggression. Control touch can be used to demand compliance, gain someone's attention, or announce a response. Ritualistic touch is used for greetings and departures. Hybrid touch is a combination of ritualistic and affection touches. Task related touch is used to assist in completing a task. Accidental touch happens unintentionally (Jones & Yarbrough, 1985).

Throughout the research there are different terms for touch which fall into two categories: positive affect touch and task related touch. Protective touch, expressive touch, caring touch, non-necessary touch, non-procedural touch and comforting touch are all considered forms of positive affect touch. Functional touch, instrumental touch, necessary touch, and procedural touch are all considered forms of task related touch (Bush, 2001; Gleeson & Timmins, 2004; Hollinger & Buschmann, 1993; Jones & Yarbrough, 1985; Vortherms, 1991). The exceptions of touch terms located in the literature are therapeutic massage and therapeutic touch. Therapeutic massage is defined as the manipulation of the soft tissue structures of the body to prevent and alleviate pain, discomfort, muscle spasm, and stress as well as to promote health and wellness (ICBS, 1998). Therapeutic touch is defined as a type of energy medicine whereby the therapist moves his or her hands over an individual's "energy field," to heal the person (Caroll, 2005).

One factor that affects touch is the location of the touch. The location of touch can be divided into two categories non-vulnerable body parts and vulnerable body parts. Non-vulnerable body parts consist of hands, arms, shoulders, and upper back. Vulnerable body parts consist of head, neck, torso, lower back, buttocks, legs, and feet (Jones & Yarbrough, 1985).

Duration, frequency, and sensations are also important in identifying how a touch is sent and received. Duration refers to the length of time a touch has occurred, frequency refers to how many times a touch is offered, and sensation refers to the feeling one has when giving or receiving a specific touch. Although there are six independent factors that can affect the message given or received by an individual touch, some factors are dependent upon others. For example, the sensation brought about by touch such as comfort or control is closely related to the type of touch, the location of touch, the frequency of the touch, and the duration of the touch (Jones & Yarbrough, 1985).

As one of the first senses developed, many benefits from the use of touch in infants and childhood have been identified. Touch remains an important avenue for communication and everyday functioning for individuals of all ages. As individuals age they experience a loss in their vision and hearing, which are the two most common senses used to send or receive messages. With the decrease of these senses, it is important to find other ways to communicate with the aging population. The use of touch as a communication system can be implemented to compensate for the other two senses that are decreasing with age. Research in this field is growing, and the majority of the experiments are being done with nurses and older adults in long-term care settings (Epstein, 1980).

The Perception of Touch Among Older Adults

Common problems of older adults living in long-term care facilities are: dementia, stroke, Parkinson's, depression, anxiety, stroke, congestive heart failure, and confusion which results in a decreased ability to understand or use verbal communication. All of these illnesses can lead to social, physical, and intellectual isolation (Bush, 2001; Hollinger, 1980; Hollinger & Buschmann, 1993; Kramer & Gibson, 1992; Steel, 1980; Vortherms, 1991). Touch, when used with this population, can be a helpful tool for communication, as the elderly persons' senses decrease and the loss of cognitive functioning increases.

Studies show that older adults in long-term care facilities do not receive touch as often as people in other life stages. Vortherms (1991) stated that a decrease in touch could result in "skin hunger" which is defined as the need to be in human contact with others. Older adults may feel unworthy of touch is because of visible changes that occur in their body (Tobin & Gustafson, 1987). Some of the reasons that older adults in long-term care facilities experience decreased amounts of touch are because of their appearance as well as physical barriers, such as wheelchairs, geri chairs, or bed rails of those patients that are bedridden (Hollinger & Buschmann, 1993).

As stated previously, a major benefit of touch is its ability to be used as a communication system. One aspect of touch with older adults that has been researched is their perception of touch from people in their environment. Understanding how older adults perceive different types

of touch is beneficial for anyone interacting with these individuals, including family members and health care workers. A study conducted by Moore and Gilbert (1995) provided four videotaped interactions of four nurses and a patient in a hospital setting. In two of the interactions the nurse touched the patient during the interactions, in the other two interactions the nurse did not touch the patient. Older adults observed the videotaped interactions and perceived that the nurses who provided touch expressed affection, comfort, and care to the patient.

Gleeson and Timmins (2004) examined the perception of touch in older adults residing in a long-term care facility. The two touches administered were necessary touch, a form of task related touch, and non-necessary touch, a form of positive affect touch. Results showed that when nurses used non-necessary touch, the residents perceived the nurses to comfort them and the residents felt an increase in their self-confidence and security.

Another study measured the perception of touch for nursing home residents and their health caregivers. All participants, staff and nursing home residents, received vignettes that described touch interactions between nursing staff and residents of a long-term care facility. The two types of touches used in the study were procedural touch, a form of task related touch and nonprocedural touch, a form of positive affect touch. The touches were applied either above the waist or below the waist. Residents perceived the touch from nurse aides as more positive than touch from licensed practical nurses and registered nurses. Both residents and registered nurses perceived nonprocedural touch as more positive than procedural touch. Licensed practical nurses however, perceived the exact opposite. They identified procedural touch as more positive than nonprocedural touch. Residents and all staff found touches above the waist more positive than touches applied below the waist (Hollinger & Buschmann, 1993).

There are a limited number of research studies on the perception of touch conducted with older adults (Hollinger, 1980; Hollinger & Buschmann, 1993; Moore & Gilbert, 1995). Perhaps one reason for this lack of research is due to the decreased ability for this population to communicate which creates difficulty for them to express how they perceive touch. Research has also been conducted to examine the use of touch to change behaviors of older adults. Researchers have utilized findings from previous studies, such as the type of touch and

perception of touch to further their knowledge on how these factors affect the behaviors of older adults.

Touch to Change Behaviors of Older Adults

A substantial number of research studies have been conducted to determine how touch affects various behaviors of older adults (Copstead, 1980; Hollinger, 1986; Kim & Buschmann, 1999; Kramer & Gibson, 1992; Langland & Panicucci, 1982; Weisberg & Haberman, 1989). Touch can be used to improve typical emotions and behaviors, such as isolation and disorientation that occur with older adults, especially those living in long-term care facilities. One study looked at the effects of nonprocedural touch, a form of positive affect touch, on verbal responses of participants with physical impairments in a rehabilitation hospital. The study measured the duration and frequency of verbal responses during nonprocedural touch interactions between participants and nurses. Results showed that both duration and frequency of verbal responses increased when procedural touch was used during interactions (Hollinger, 1986).

Weisberg and Haberman (1989) created a hugging week for residents in their nursing home. Weisberg and Haberman wanted affective touch to become a part of the daily care routine in their facility. The implementation of a hugging week resulted in the active engagement of residents, staff, and family members connected to the nursing home in the hugging week. Residents also began initiating affective touches as well as asking for affective touches.

A study by Kim and Buschmann (1999) explored the effect of calming speech paired with expressive physical touch, a form of positive affect touch, on disruptive behaviors and pulse rate of individuals who had dementia. Results showed that anxiety, which was measured by pulse rate, and disruptive behavior decreased immediately after the intervention. Follow up measures indicated that disruptive behavior decreased for participants up to ten days after the intervention was implemented.

Another factor that affects touch is the intensity of the touch. A study by Copstead (1980) examined the effect of touch intensity on the interactions and self-appraisal of residents in a nursing home. The types of intensity used were: light intensity which can be described as accidental, medium intensity which can be described as purposive and task oriented, and heavy

intensity which can be described as purposive or non-purposive and of long duration. The results showed that most residents received medium intensity of touch and as a result had more positive self-appraisals than those who were not touched.

Langland and Panicucci (1982) examined the effect of touch on attention and response to a verbal request with confused older adults. Attention was measured through various nonverbal behaviors such as facial expression, eye contact, and body movement. Response was measured by appropriate verbal and action response to verbal questions. The findings showed increased attention in participants when touch was used.

The use of touch can be beneficial in improving communication between older adults and individuals in their environment, as well as in building a therapeutic relationship with healthcare workers. Touch has been shown to affect the physical, psychosocial, and spiritual health of older adults with and without cognitive impairments. While touch can be used to decrease agitation, it can also increase sensory stimulation, increase relaxation, and increase orientation to others in their environment (Bush, 2001).

Some researchers have measured touch along with other communication systems to determine the most effective communication system to use with the elderly. Kramer and Gibson (1992) examined the effect of touch paired with verbal cues on participatory responses of older adults in a group activity. Researchers observed the frequency of communication among participants and the rate of their responses to verbal requests. Observations occurred under the following conditions: verbal communication alone, verbal cue paired with touch, verbal cue paired with eye contact, touch paired with eye contact, and verbal cue, touch, and eye contact combined. The results showed that responses to verbal requests increased when more than one type of communication system was used, and that responses of cognitively impaired older adults decreased when only verbal cues were used. Although patients responded most when there was more than one type of communication utilized, this form of communication is not always encouraged among individuals who interact with older adults.

Norberg, Melin, and Asplund (2003) conducted a study measuring the effect of touch and sensory stimulation interventions on participatory responses of two individuals who had late-

stage dementia. Each participant received auditory stimulation through preferred recorded music and tactile, visual, and olfactory stimulation through object presentation. One participant responded with increased eye blinking during object presentation which stimulated his tactile, visual, and olfactory senses. The same participant responded with more mouth movements, raised head, and increased pulse rate after specific songs. The other participant responded with open eyes and verbal reactions during object presentation. This second participant also had increased pulse rate after specific songs. Although each participant responded differently to stimulation of different senses, a case can be made on the importance of stimulating as many of the senses as possible, including touch, with this population to increase purposeful responses.

Many studies support the need for employing both expressive and instrumental touch during interactions with older adults, with expressive touch being preferred due to the message of comfort and care that it communicates to those receiving the touch (Vortherms, 1991; Watson, 1975). Considering all the benefits that older adults can receive when touch is used, it seems advantageous that all individuals working in healthcare should utilize some form of touch when interacting with older adults. Although touch is important, it may not be applicable to everyone, for there are those who may find touch unwanted or uncomfortable. When using touch, one must look for signs of unwanted touch or over stimulation from touch, such as an older adult backing away from the source of touch (Kim & Buschmann, 1999).

Rationale for Study

This study addresses an omission that exists in the research literature in regard to individuals with late-stage dementia. Research studies in this area are lacking, possibly due to the limited observable behavioral changes of individuals in this stage of Alzheimer's disease. Touch and music therapy are both successful interventions that have been employed with individuals in all stages of dementia. Studies conducted with individuals in the later stages use behavior observations to measure alert responses, yet none of these studies have utilized a standardized or formal behavior observation system (Clair, 1996; Norberg, Melin, & Asplund, 2003). Procedures in the present study combine the interventions of music and touch, and

analyses of these procedures utilize a behavior state coding system standardized by Guess et al. (1990).

Studies that examine individuals' perception of touch have mostly been conducted with older adults and nursing staff (Gleeson & Timmins, 2004; Hollinger & Buschmann, 1993; Moore & Gilbert, 1995). These studies have measured older adults' and nursing staffs' perception of care and comfort expressed when touch was used. However, the perception of touch by administrators, other healthcare workers, and family members are also important. Healthcare workers administering touch during interactions with older adults may appear to express comfort and care, and may be perceived to be more effective. This study also explored the perception of therapist-client interactions based on the use of touch.

Research Questions

1. Does expressive touch or instrumental touch paired with unaccompanied singing have an effect on the percentage of time spent in alert behavior states for individuals with late-stage dementia?
2. Are music therapist-client interactions involving expressive or instrumental touch perceived more positively than interactions without touch?

CHAPTER III

METHOD

Participants

Participants for this study were recruited from a hospice program in North Florida that serves individuals diagnosed with late-stage dementia of the Alzheimer's type. Participants resided in one of six nursing homes or a group home. Criteria for participation in this study required individuals to have a Functional Assessment Staging (FAST) score of at least 7 and a diagnosis of dementia. Participants' diagnoses were determined by a physician and reported in their medical records. Once participants were deemed appropriate for participation in this study, their legal guardian was contacted by the researcher and given verbal and written explanations of the study. Approval to use individuals in this research project and to use video recording to analyze data away from the session was received from legal guardians through a letter of formal consent. Twenty individuals were identified as possible participants for this study. Legal guardians were contacted for all 20 individuals, and of these 20 individuals, permission was received from 10 legal guardians. One participant died before data collection began, leaving 9 participants in this study. A within subject design was used with participants each serving as their own control. Demographic data on the participants (age, gender, and diagnosis) are reported in Table 2.

Setting

All music therapy sessions were held in the participants' home or in private rooms at a long-term care facility. Participants were in bed or in a wheelchair. The music therapist provided music therapy sessions either at bedside or seated across from the participant in a chair.

Equipment

A Yamaha steel string acoustic guitar was used to provide guitar accompaniment. A seed pod cacho rattle, wind chimes, and a scarf were used for the instrumental touch interventions. A

song list of ten songs was compiled for the following genres of music: golden oldies (ranging from the 1920's through the 1950's), gospel, and country. A study conducted by Gibbons (1977) determined music preferences of many older adults to be songs that were popular when they were between the ages of 20-30 years of age. This song list was based on music that was popular when the participants were young adults. The songs lists are provided in Appendix A.

Table 2

Participants Demographic Data

Participant	Age	Gender	Diagnosis
1	85	F	End Stage Dementia
2	100	F	Dementia
3	81	F	Alzheimer's Disease
4	60	F	Alzheimer's
5	98	F	Dementia
6	88	F	Dementia
7	100	F	Dementia
8	95	F	Dementia
9	93	F	Dementia

Additional research has documented favorable responses from individuals when their preferred music is used in therapy sessions (Davis & Thaut, 1989; Macnay, 1995; Otto, Cochran, Johnson, & Clair, 1999; Standley, 1986). The researcher used songs that varied in tempo for each music category. A videotape recorder was also used to videotape all sessions for the purpose of observation and data collection. A digital stopwatch was also used to time the sessions and interventions.

Design and Explanation of Experimental Variables

The independent variable in this study was the use of touch within the music therapy sessions. Two types of touch were used: expressive touch and instrumental touch. In this study,

each participant received nine 30-minute music therapy sessions over a two-week period. The participants experienced each of the treatment conditions three times: baseline-no touch, expressive touch, and instrumental touch, with the order of treatment counterbalanced over the nine sessions.

All 30-minute music therapy sessions consisted of the same format. The sessions began with a 10-minute introductory period, a 15-minute treatment intervention, and a 5-minute closing period. The introduction period included a verbal greeting of the participant and an opening song performed with live vocals and guitar accompaniment to orient the participant to the music therapy session. The next 15 minutes of the music therapy session utilized the treatment of no touch, expressive touch, or instrumental touch paired with unaccompanied singing. The last five minutes of the music therapy session consisted of closing music provided with live vocals, guitar accompaniment, and a verbal closure.

Baseline Condition. Baseline consisted of the researcher singing to the participant, unaccompanied for 15 minutes, with no touch provided to the participant. The researcher selected songs from music books that contained gospel music, country music, and golden oldies that were popular during each participant's young adult years.

Musical Condition One. The intervention portion of this condition consisted of the researcher singing to the participant unaccompanied for 15 minutes paired with expressive touch. Expressive touch is generally defined as touch that is meant to express feelings of comfort or care. Expressive touch used in this study was defined as touch applied to the shoulder, arm, or hand. These areas, shoulder, arm, and hand, have been identified as non-vulnerable body parts, and thus more acceptable areas for receiving touch (Jones & Yarbrough, 1985). Duration of touch in songs that were in 4/4 meter, consisted of two measures of touch followed by two measures of no touch. Duration of touch in songs that were in 3/4 meter, consisted of two measures of touch followed by two measures of no touch. For example, the researcher applied touch to the shoulder, arm, or hand for two measures and then continued singing without applying touch for two measures. Approximately 90 touches occurred for the entire condition, an

average of 15 touches per song. The songs used in this condition were the same songs used in the baseline condition, and appear in Appendix A.

Musical Condition Two. The treatment portion of this condition consisted of the researcher singing to the participant unaccompanied for 15 minutes paired with instrumental touch. Instrumental touch is generally defined as touch used to assist completion of a task. Instrumental touch for this study was defined as touch used to assist with musical tasks. The tasks used in this study were shaking/holding a seed pod cacho rattle, moving hand/fingers across wind chimes, and moving a scarf. Duration of touch in songs that were in 4/4 meter, consisted of two measures of touch followed by two measures of no touch. Duration of touch in songs that were in 3/4 meter, consisted of two measures of touch followed by two measures of no touch. For example, the researcher applied touch to the clients' hand to assist with playing instruments or moving scarf for two measures and then continued singing without applying touch for two measures. Approximately 90 touches occurred for the entire condition, an average of 15 touches per song. The songs used in this condition were the same songs used in the baseline condition and musical condition one, and appear in Appendix A.

Behavior States. The dependent variable for this study was the observed behavior states of the participants. Behavior states consist of eight observable levels of behavior for an individual, ranging from sleep to awake. The eight states are categorized according to four observable levels: sleep state, indeterminate state, preferred awake state, and other awake state: they are further divided into two categories of active behavior or inactive behavior. The sleep state is identified as either asleep inactive (S^1) or sleep active (S^2). The intermediate state is identified as either drowsy (DR) or daze (DA). The preferred awake state is identified as either awake inactive-alert (A^1) or awake active-alert (A^2). The other awake state is identified as either awake-active/stereotypy (A^2/S) or crying/agitated (C/A). Each state is determined by a list of observable behaviors related to each state (Guess, Causey, Roberts, Rues, Thompson, & Causey, 1990).

Behavior states were determined and coded by raters utilizing a Behavior State Observation Sheet, located in Appendix B. All sessions were recorded using a Sony digital video camera for later analysis. The videotapes were edited and viewed by raters without sound for the 15-minutes of treatment only so that the raters were not influenced by the music therapist's musicality or behavior state of the participant in the introductory or closing sections of the session. The researcher and the reliability observer participated in behavior state training which included identifying behaviors of each category in the behavior state coding system. Additionally, the researcher and two reliability observers applied the behavior state coding system to training video tapes. Once a reliability of 85% occurred with the training tapes, the researcher and observers began coding the experimental data. The formula used to measure interobserver reliability was:

$$\frac{\text{number of agreements}}{(\text{total agreements} + \text{total disagreements})} \times 100$$

The researcher and two observers viewed videotapes while listening to a compact disc with a recorded voice indicating periods for observing and recording. For each 15-minute session, the rater observed for 10 seconds and then recorded for five seconds for a total of 60 observation intervals. Data sheets were labeled with the participant number and treatment number that corresponded to the videotape excerpt.

Rapport Ratings

Four health-related professional observers were selected to view randomly selected video clips of each experimental condition: no touch, expressive touch, and instrumental touch. Ages of observers ranged from 24-27 years of age. Each observer viewed four 30-second excerpts of three experimental conditions for a total of 108 excerpts (12 clips X 9 participants). The observers rated their perception of the music therapist's rapport with the participant on a 10-point Likert scale ranging from 1 being poor client rapport to 10 being exceptional client rapport. The rating form used in this study is found in Appendix C.

CHAPTER IV

RESULTS

Data Analyses for Research Question One

Does expressive touch or instrumental touch paired with unaccompanied singing have an effect on the percentage of time spent in alert behavior states in individuals with late-stage dementia?

Raw data for the nine participants consisting of time spent in the eight behavior states are included in Appendix D. Raw data for the nine participants used in the statistical analysis (for the combined alert states of A¹ and A², identified as the preferred alert states) are located in Appendix E. Graphs of the behavior states for each participant across all sessions are provided in Appendix F. Means and standard deviations for percentage of time spent in combined alert states of A¹ and A² for the three baseline conditions as well as for the three expressive touch conditions and the three instrumental touch conditions are presented in Table 3.

Data were analyzed using a One-Way within-subjects Analysis of Variance (ANOVA) to determine if either expressive touch or instrumental touch paired with unaccompanied singing was more effective than the baseline condition in sustaining an alert behavior state (combined state of A¹ and A²). Wilks' lambda (Λ) was chosen as the test statistic for the multivariate tests. Firstly, the means of the baseline conditions were compared to determine if baselines changed significantly over time. Results of the analysis showed no significant difference for alert behavior state during the baseline conditions (Wilks' $\Lambda = .93$, $F(2, 16) = .26$, $p = .78$).

Once it was determined that the baselines were not significantly different from each other, two One-Way within-subjects ANOVAs were then computed to determine if either touch condition was influential in eliciting and sustaining alert behavior states. Results of the analysis showed that the instrumental touch condition was significantly more effective in eliciting and sustaining participants' alert behavior states (Wilks' $\Lambda = .39$, $F(2, 16) = 5.53$, $p = .04$). However, a significant difference was not found in participants' alert behavior states during the

experimental touch condition, (Wilks' $\Lambda = .29$, $F(2, 16) = 1.45$, $p = .30$). Results of the baseline analysis are compared to the results of the treatment conditions in Table 4. Figures 1 and 2 display graphically the means for all baseline and treatment conditions, per repetition and per participant.

Table 3

Combined Means and Standard Deviations for All Participants for Percentage of Time Spent in the Combined Alert States of A¹ and A² for all Experimental Conditions and Repetitions

Conditions	<i>M</i>	<i>SD</i>
Baseline		
Initial condition	33.27	33.94
First repetition	32.96	37.09
Second repetition	43.15	48.80
Expressive touch		
Initial condition	69.63	39.92
First repetition	9.08	17.60
Second repetition	38.89	38.64
Instrumental touch		
Initial condition	63.15	42.39
First repetition	35.19	44.26
Second repetition	43.57	41.13

Table 4

Analysis of Variance for All Treatment Conditions

Condition	Wilks' Λ	<i>F</i>	<i>p</i>
Baseline	.93	.26	.78
Expressive	.29	1.45	.30
Instrumental	.39	5.53	.04*

* $p < .05$

Figure 1. Mean percentage of time spent in combined alert states of A^1 and A^2 during experimental conditions and repetitions.

Figure 2. Mean percentage of time spent in combined alert states of A^1 and A^2 for all participants during experimental conditions.¹

¹ Participant 3 only exhibited alert state behaviors for 1.67% during one instrumental touch condition.

Data were further analyzed to determine if there was a significant difference between treatment conditions based on the repetition (initial, one, and two). Baseline was compared to both expressive and instrumental touch conditions during repetition (initial, one, and two). Results from the statistical test revealed a significant difference for expressive touch during the initial touch condition (Wilks' $\Lambda = F(1, 8) = 8.45, p = .02$). Significance was not obtained for instrumental touch during initial condition (Wilks' $\Lambda = F(1, 8) = 3.09, p = .12$).

Secondly, baseline was then compared to expressive and instrumental touch during repetition 1. Significance was not obtained during repetition 1 for expressive touch (Wilks' $\Lambda = F(1, 8) = 4.52, p = .07$). Significance was also not obtained during repetition 1 for instrumental touch (Wilks' $\Lambda = F(1, 8) = .01, p = .92$). Baseline was finally compared to expressive and instrumental touch during repetition 2. Significance was not obtained during repetition 2 for expressive touch (Wilks' $\Lambda = F(1, 8) = .08, p = .78$). Significance was also not obtained for instrumental touch during repetition 2 (Wilks' $\Lambda = F(1, 8) = .00, p = .98$).

Figures 3 through 11 displays graphically the mean time spent in alert states per repetition for each participant. These results suggest that expressive touch during the initial condition was more effective than instrumental touch and baseline in eliciting and sustaining an alert behavior state.

Figure 3. Mean time spent in alert behavior state per repetition for participant 1.

Figure 4. Mean time spent in alert behavior state per repetition for participant 2.

Figure 5. Mean time spent in alert behavior state per repetition for participant 3.

Figure 6. Mean time spent in alert behavior state per repetition for participant 4.

Figure 7. Mean time spent in alert behavior state per repetition for participant 5.

Figure 8. Mean time spent in alert behavior state per repetition for participant 6.

Figure 9. Mean time spent in alert behavior state per repetition for participant 7.

Figure 10. Mean time spent in alert behavior state per repetition for participant 8.

Figure 11. Mean time spent in alert behavior state per repetition for participant 9.

Data Analyses for Research Question Two

Are music therapist-client interactions involving expressive or instrumental touch perceived more positively than interactions without touch?

The raters' rapport scores were analyzed to determine inter-rater reliability. A Cronbach's α coefficient of .77 was obtained suggesting that raters had reasonable agreement across all observations. The no-touch condition was then compared to the expressive touch condition to determine if the music therapist's perceived rapport with participants was significantly higher in either condition. A One-Way ANOVA resulted in a significantly higher therapist rapport rating for the expressive touch condition ($F(1, 8) = 6.24, p = .04$). The no-touch condition was also compared to the instrumental touch condition to determine if the music therapist's perceived rapport with participants was higher in either condition. A One-Way ANOVA resulted in a significantly higher therapist rapport rating for the instrumental touch condition ($F(1, 8) = 20.71, p < .00$). Finally, the expressive touch condition was compared to the instrumental touch condition to determine if the music therapist's perceived rapport was higher in either condition. A One-Way ANOVA revealed no significant difference in perceived rapport between the two conditions, ($F(1, 8) = 2.29, p = .17$). Figures 12 display graphically the average rapport ratings for experimental conditions.

Figure 12. Average rapport ratings for rater for all experimental conditions.

CHAPTER V

DISCUSSION

The purpose of this study was to determine the effectiveness of expressive touch and instrumental touch paired with unaccompanied singing to elicit and maintain the alert behavior states of individuals who have late-stage dementia of the Alzheimer's type. Results show that overall instrumental touch was more effective than the baseline condition in eliciting and maintaining alert behavior states. However, results revealed that expressive touch was more effective during the initial touch session than either the baseline condition of unaccompanied singing without touch, or the instrumental touch in eliciting and maintaining behavior states of A¹: awake inactive-alert or A²: awake active-alert. Neither expressive touch nor instrumental touch was more effective than the baseline condition in eliciting and maintaining behavior states of A¹: awake inactive-alert or A²: awake active-alert during the second or third repetition of the experimental conditions.

When interpreting the graphical representation of the data for each participant, it was determined that most individuals spent more time in alert behavior states during touch interventions, although not significantly so. Only two of nine participants spent more time in alert behavior states during baseline conditions. Seven of nine participants spent more time in alert behavior states during expressive and instrumental touch conditions. The expressive touch conditions exhibited more time in alert states for two of the nine participants while the instrumental touch condition exhibited more time spent in alert states for five of the nine participants. Findings from this study are not conclusive regarding the benefits of touch, and while encouraging, should be interpreted with caution since this is the first study to utilize touch and singing together as a music therapy intervention for individuals with late-stage dementia

Relationship to Extant Literature

The varied results of the present study are similar to those of Norberg, Melin, and Asplund (2003) who examined the use of music, touch, and object presentation to elicit alert responses in two individuals who have late-stage dementia. These researchers found that both

individuals responded to stimuli differently. While both participants in their study responded positively to music, their responses to both touch and object presentation differed. Clair (1996) suggests that individuals in the late stages of dementia respond differently to stimuli in their environment. The high standard deviations in the present study can thus be attributed to the variation of responses from individuals who have late-stage dementia and are supported by the findings of Clair (1996) and Norberg, Melin, and Asplund (2003). Perhaps the benefits of expressive or instrumental touch are each dependent on the individual. Raw data of participants suggest that touch may be beneficial in maintaining time spent in alert behavior states for individuals with late-stage dementia. Three of the nine participants initiated touch with the researcher by reaching out and holding on to the researcher's hand or arm.

Although expressive touch (a touch to the arm or hand) elicited and maintained alert behavior states significantly so for participants, this effect occurred only during the initial session of the condition. During repetitions one and two, expressive touch was the least influential in maintaining alert states. One explanation can be that introducing a new intervention of touch to individuals resulted in their increased alert states. However, over time this type of touch paired with unaccompanied singing could perhaps facilitate relaxation and comfort resulting in decreased alert states. Also expressive touch is active for the individual initiating the touch, which in this study was the researcher, but it is a passive experience for the participant receiving the touch.

During the instrumental touch condition, when compared to the baseline of no touch, participants consistently exhibited more time in alert states. Regardless of whether individuals were able to independently manipulate objects or needed assistance to do so, the art of moving a hand or fingers to grasp and play instruments or to hold and move a scarf in rhythm to music requires active participation by the individual with late-stage dementia. These findings lend support for the importance of utilizing active and multi-sensory interventions when working with individuals who have late-stage dementia. By utilizing touch, singing, and instrument playing, individuals can be engaged actively through tactile, visual, and auditory stimulation.

A secondary purpose of this study was to examine the perception of the music therapist's effectiveness as measured by therapist-client rapport. Raters perceived the music therapist's rapport with participants to be significantly higher during both the expressive and instrumental touch conditions than the no touch conditions. These findings are similar to those of Moore and Gilbert (1995) who found that older adult participants perceived nursing staff to communicate more care and comfort when touch was used during the nurses' interactions with patients. The findings of the present study and those of Moore and Gilbert (1995) suggest that observers, regardless of age or profession, perceive touch, when used appropriately, to communicate positive messages not only to those receiving the touch, but also to those individuals observing interactions involving touch. In this study, therapist-client rapport was perceived highest during interactions when instrumental touch was used, and most participants exhibited greater time spent in alert states during this condition. Instrumental touch may have been perceived to facilitate better therapist-client rapport for several reasons: the condition required active engagement by the participant, instrumental touch may have appeared to be more appropriate to a music therapy intervention, and the use of instrumental touch may have been considered to be less contrived or patronizing than expressive touch.

Limitations of the Present Study

There are several factors that may have influenced the varied results and lack of significant difference in participants' alert states between experimental conditions for repetitions one and two. The sample size, participants' late stage of dementia thus requiring end-of-life care, and the time frame for data collection are all factors that may have contributed to the varied results. Sample size for this study was limited to nine participants, although 20 participants were deemed appropriate. Consent was difficult to obtain from legal guardians for a number of reasons. Reasons for not giving consent were based on the use of videotape to record each session, the behavioral, physical, and cognitive state of potential participants, and the frequency of experimental interventions.

Hospice services provide end-of-life care to individuals who have terminal illnesses. Individuals typically have a prognosis of six months to a year to live when they are referred to

hospice services. During the time frame that individuals are enrolled in such services, they begin to experience increased periods of drowsiness, unresponsiveness, and decreased interactions with their environment, of which are all signals that end of life is approaching. By receiving palliative care services, it is assumed that individuals are in the most advanced stages of terminal illnesses. Individuals are more limited in their ability to alter behavior states due to the medications administered during this time and the advanced stage of the illness. Replications of this study should be conducted with individuals who are not enrolled in hospice services to determine the benefits of touch to those in the later stages of dementia.

Participants in this study received nine experimental sessions over a period of nine days, with each day representing a different treatment condition. Behavior states for participants change on a daily basis and can be affected by confounding factors, such as medication, grooming, and comfort. These factors must be taken into consideration when comparing the behavior states of participants across nine days. Future researchers might examine changes in behavior state when participants receive all experimental conditions in one session, which would perhaps result in a better control of such factors. Another limitation to this study was the time of day that sessions were conducted. The researcher attempted to keep the time of day constant for each participant, but doing so was difficult due to facility schedules and patient needs. In future studies, all experimental conditions should be provided at the same time of day for all participants.

Suggestions for Future Research

As stated earlier, replications of this study using music and touch interventions should be conducted not only with individuals who have late-stage dementia, but also those in the earlier stages of Alzheimer's disease. Future researchers might examine the benefits of expressive and instrumental touch in maintaining cognitive and behavioral abilities for individuals who are in the early and middle stages of Alzheimer's disease. Individuals in earlier stages of Alzheimer's disease are able to respond to their environments and thus alter their behavior states more than those who are in the later stages of Alzheimer's disease. Therefore, the use of behavior state

coding with individuals who have dementia may also be more effective with individuals in the earlier and middle stages.

Findings from this study indicate that expressive and instrumental touch were more beneficial than no touch in changing behavior states of individuals who have late-stage dementia, thus providing a framework for the benefits of employing touch in music therapy touch interventions with individuals who have late-stage dementia: 1) seven of nine participants exhibited more alert behavior states during touch conditions and, 2) all observers rated the music therapist's rapport significantly higher during touch conditions. These preliminary findings suggest that touch in music therapy sessions can be appropriate and effective. Instrumental touch may be more appropriate than expressive touch in music therapy sessions because of the manipulation of objects required to engage in an activity. The data regarding instrumental touch found in the present study corroborate previous music therapy research with individuals who have Alzheimer's disease (Clair, 2002; Clair & Bernstein, 1990; Clair & Ebberts, 1997; Clair, Mathews, & Kosloski, 2005; Hanson, Gfeller, Woodworth, Swanson, & Garland, 1996). Many of these previous studies demonstrate the maintained ability of those in any stage of Alzheimer's disease to actively engage in instrument play when singing abilities have decreased.

Conclusions

Health-related professionals perceived higher therapist-client rapport during sessions when expressive or instrumental touch was employed than during sessions with no touch. Therapist-client rapport during instrumental touch sessions was perceived to be higher than during both expressive touch and no touch sessions. This finding is likely due to the active involvement of both therapist and client during this type of touch. Results support the utilization of rhythm instruments and other tactile objects paired with touch in a music therapy session, and indicate that such a pairing is beneficial as well as functional. Pairing music therapy interventions with touch and other forms of nonverbal communication may provide appropriate and effective ways to interact with additional populations that also exhibit decreased verbal communication abilities. The pairing of music therapy and various forms of nonverbal communication can lead to a field of study that has not yet been fully explored.

APPENDIX A
SONG LISTS

Songs Lists Used for This Study

Country	Gospel	Oldies
Back in the Saddle Again	How Great Thou Art	Ain't She Sweet
Crazy	I'll Fly Away	Always
Don't Fence Me In	In The Sweet By and By	Carolina Moon
For the Good Times	In the Garden	Five Foot Two
Hey Good Looking	Just a Closer Walk	Let Me Call You Sweetheart
I Fall to Pieces	Old Time Religion	Moonlight Bay
Please Release Me	Old Rugged Cross	Show Me the Way
Rocky Top	Swing Low Sweet Chariot	When You're Smiling
Tennessee Waltz	This Little Light of Mine	Yes Sir That's My Baby
Your Cheating Heart	What a Friend We Have in Jesus	You are My Sunshine

APPENDIX B
BEHAVIOR STATE OBSERVATION SHEET

Behavior State Observation Sheet

Subject number: _____

Session number: _____

Circle one: Baseline

Expressive Touch

Instrumental Touch

1	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	2	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	3	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	4	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
5	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	6	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	7	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	8	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
9	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	10	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	11	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	12	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
13	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	14	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	15	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	16	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
17	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	18	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	19	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	20	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
21	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	22	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	23	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	24	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
25	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	26	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	27	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	28	S^1 S^2 DR DA A^1 A^2 A^2/S C/A
29	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	30	S^1 S^2 DR DA A^1 A^2 A^2/S C/A	SUBTOTAL: S^1 ____ S^2 ____ A^1 ____ A^2 ____ A^2/S ____ C/A____			

APPENDIX C
RAPPORT RATINGS

Directions for Rapport Ratings

You will see excerpts of a music therapist working with nine different clients. These excerpts were taken from a random selection of sessions with each of the clients. Each segment is approximately 30 seconds. Your task is to give the therapist a perceived rating of client rapport for each excerpt? How well do you think she is relating to the client during this particular session segment? You will assign her an overall rating based on a 10-point scale with 1 being poor client rapport to 10 being exceptional client rapport. Your rating can be anywhere from 1 to 10. Next to your numeric rating, please write any quick comments you would like to make. Let's begin – and thank you for your participation.

Client

Rapport rating:

1 2 3 4 5 6 7 8 9 10
poor exceptional

Excerpt Rating	Comments
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
6. _____	_____
7. _____	_____
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____

APPENDIX D
RAW DATA FOR ALL BEHAVIOR STATES

	S ¹	S ²	DR	DA	A ¹	A ²	A ² /S	CA
Participant 1								
Baseline	56.67	28.89	0.00	0.00	13.33	1.11	0.00	0.00
Expressive	46.11	13.33	0.00	0.00	40.56	0.00	0.00	0.00
Instrumental	50.00	17.22	0.00	0.00	25.56	7.22	0.00	0.00
Participant 2								
Baseline	50.00	1.11	1.11	0.00	31.11	16.67	0.00	0.00
Expressive	55.55	2.78	3.33	0.00	37.76	.56	0.00	0.00
Instrumental	0.00	0.00	0.00	0.00	26.67	73.33	0.00	0.00
Participant 3								
Baseline	91.67	8.33	0.00	0.00	0.00	0.00	0.00	0.00
Expressive	95.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00
Instrumental	95.55	3.89	0.00	0.00	.56	0.00	0.00	0.00
Participant 4								
Baseline	78.89	4.44	4.45	1.11	11.11	0.00	0.00	0.00
Expressive	73.34	4.44	6.11	0.00	26.11	0.00	0.00	0.00
Instrumental	54.45	4.44	.56	.56	40.00	0.00	0.00	0.00
Participant 5								
Baseline	37.78	5.00	20.00	1.67	32.78	2.78	0.00	0.00
Expressive	44.45	19.44	6.11	0.00	28.33	1.67	0.00	0.00
Instrumental	62.22	7.22	0.00	1.67	21.67	7.22	0.00	0.00
Participant 6								
Baseline	22.22	11.11	0.00	0.00	56.11	10.56	0.00	0.00
Expressive	13.33	17.78	0.00	0.00	62.78	6.11	0.00	0.00
Instrumental	23.89	2.78	0.00	0.00	35.55	37.78	0.00	0.00
Participant 7								
Baseline	1.85	0.00	3.70	0.00	86.48	.56	0.00	7.41
Expressive	64.44	0.00	1.67	0.00	26.11	7.78	0.00	0.00
Instrumental	61.11	14.45	1.11	0.00	13.89	9.44	0.00	0.00
Participant 8								
Baseline	42.78	29.44	5.56	0.00	15.56	6.11	.56	0.00
Expressive	30.56	15.56	0.00	0.00	38.33	9.44	6.11	0.00
Instrumental	12.78	2.22	0.00	0.00	30.56	47.22	7.22	0.00
Participant 9								
Baseline	23.89	1.67	23.33	0.00	51.11	0.00	0.00	0.00
Expressive	11.11	10.00	11.67	0.00	67.22	0.00	0.00	0.00
Instrumental	45.28	1.26	4.40	0.00	47.95	1.11	0.00	0.00

APPENDIX E
RAW DATA USED FOR STATISTICAL ANALYSIS

Participant Number	Treatment	Repetition	Percentage in A1 and A2
1	Baseline	1	20
1	Baseline	2	0
1	Baseline	3	0
1	Expressive	1	100
1	Expressive	2	0
1	Expressive	3	21.67
1	Instrumental	1	81.67
1	Instrumental	2	16.67
1	Instrumental	3	0
2	Baseline	1	0
2	Baseline	2	46.67
2	Baseline	3	96.67
2	Expressive	1	61.67
2	Expressive	2	1.67
2	Expressive	3	51.67
2	Instrumental	1	100
2	Instrumental	2	100
2	Instrumental	3	100
3	Baseline	1	0
3	Baseline	2	0
3	Baseline	3	0
3	Expressive	1	0
3	Expressive	2	0
3	Expressive	3	0
3	Instrumental	1	0
3	Instrumental	2	0
3	Instrumental	3	1.67
4	Baseline	1	8.33
4	Baseline	2	21.67
4	Baseline	3	3.33
4	Expressive	1	78.33
4	Expressive	2	0
4	Expressive	3	0
4	Instrumental	1	96.67
4	Instrumental	2	0
4	Instrumental	3	23.33
5	Baseline	1	25
5	Baseline	2	75
5	Baseline	3	6.67
5	Expressive	1	6.68
5	Expressive	2	55
5	Expressive	3	28.33
5	Instrumental	1	0
5	Instrumental	2	1.67
5	Instrumental	3	85
6	Baseline	1	100

6	Baseline	2	0
6	Baseline	3	100
6	Expressive	1	100
6	Expressive	2	6.67
6	Expressive	3	100
6	Instrumental	1	100
6	Instrumental	2	100
6	Instrumental	3	20
7	Baseline	1	61.11
7	Baseline	2	100
7	Baseline	3	100
7	Expressive	1	100
7	Expressive	2	1.67
7	Expressive	3	0
7	Instrumental	1	35
7	Instrumental	2	20
7	Instrumental	3	15
8	Baseline	1	61.66
8	Baseline	2	3.34
8	Baseline	3	1.67
8	Expressive	1	80
8	Expressive	2	6.67
8	Expressive	3	56.66
8	Instrumental	1	55
8	Instrumental	2	78.34
8	Instrumental	3	100
9	Baseline	1	23.33
9	Baseline	2	50
9	Baseline	3	80
9	Expressive	1	100
9	Expressive	2	10
9	Expressive	3	91.67
9	Instrumental	1	100
9	Instrumental	2	0
9	Instrumental	3	47.17

APPENDIX F
GRAPHS OF BEHAVIOR STATE FOR EACH PARTICIPANT

Participant 1

Participant 2

Participant 3

Participant 4

Participant 5

Participant 6

Participant 7

Participant 8

Participant 9

APPENDIX G
IRB APPROVAL AND CONSENT FORM

Office of the Vice President For Research
Human Subjects Committee
Tallahassee, Florida 32306-2742
(850) 644-8633 · FAX (850) 644-4392

APPROVAL MEMORANDUM

Date: 4/27/2006

To
Melita Belgrave
2241 Treco Lane
Tallahassee, FL 32301

Dept. **MUSIC THERAPY**

From: **Thomas L. Jacobson, Chair**

A handwritten signature in black ink, appearing to read "Thomas Jacobson", with a long horizontal line extending to the right.

Re: **Use of Human Subjects in Research**
The effect of instrumental and expressive touch on behavior states in persons with late-stage dementia

The forms that you submitted to this office in regard to the use of human subjects in the proposal referenced above have been reviewed by the Human Subjects Committee at its meeting on **3/15/2006**. Your project was approved by the Committee.

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

If the project has not been completed by **3/14/2007** you must request renewed approval for continuation of the project.

You are advised that any change in protocol in this project must be approved by resubmission of the project to the Committee for approval. The principal investigator must promptly report, in writing, any unexpected problems causing risks to research subjects or others.

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

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

cc. Alice-Ann Durrow
HSC No. 2006.0204

The Effect of Expressive and Instrumental Touch in a Music Therapy Setting on The Behavior State of Older Adults with Late-Stage Dementia of the Alzheimer's Type.

Dear Legal Guardian,

I am a graduate student under the direction of Dr. Alice-Ann Darrow in the Music Therapy Department in the School of Music, at Florida State University. I am conducting a research study to determine the effect of touch and music therapy on behavior states for persons with late-stage dementia of the Alzheimer's type. This study will examine the use of expressive touch, also identified as caring or nurturing touch, and instrumental touch, identified as touch used to accomplish a task during a music therapy session to determine if either affects the amount of time an individual spends in awake, alert, and responsive behavior states.

I am recruiting subjects to participate in six 30-minute music therapy sessions over a two week period. Every 30-minute music therapy session will consist of the same format. The sessions will begin with an introduction period of 10-minutes which will include a verbal greeting to the subject, and opening familiar music performed with live vocals and guitar accompaniment to orient the subject to the music therapy session. The next 15-minutes of the music therapy session will utilize the treatment of no touch, expressive touch, or instrumental touch, paired with unaccompanied singing. During the no touch sessions the researcher will provide 15-minutes of unaccompanied singing with no touch. During the expressive touch sessions the researcher will provide 15-minutes of unaccompanied singing paired with touch provided to the arm, shoulder, or hand. During instrumental touch sessions the researcher will provide touch while assisting the subject in completing a task of holding/shaking a rhythm instrument or scarf, or moving fingers/hand across wind chimes. The last 5-minutes of the music therapy session will consist of closing music provided with live vocals and guitar accompaniment and a verbal closure. Sessions will be videotaped for data collection and observation. The tapes will be securely housed when not in use and only viewed by those involved in the research project. The videotapes and data will be stored until 8/01/10 in a locked container in the researcher's home office for possible future observation and analysis.

Participation in this study is voluntary. If you choose for him/her not to participate or to withdraw from the study at any time, there will be no penalty, (it will not affect his/her care with Big Bend Hospice,). The results of the research may be published, but you or the participant's name will not be used.

If you are willing to have your dependent participate in this study please sign the informed consent as well as the release of videotape. If you have any questions concerning this research study, please feel free to contact me or my advisor by telephone or email.

Sincerely,

Melita Belgrave, MEd-BC, Principal Investigator
(850) 644-9397
mjbel04hi@fsu.edu

Alice-Ann Darrow, PhD, Faculty Advisor
Music Therapy Department
(850) 644-3434

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Initials

The Effect of Expressive and Instrumental Touch in a Music Therapy Setting on The Behavior State of Older Adults with Late-Stage Dementia of the Alzheimer's Type.

Permission for Consent and Videotape

I give permission for _____ to participate in Melita Belgrave's research study.

I also understand that each music therapy session will be videotaped by the researcher. These tapes and data will be kept by the researcher in a locked container located in the researcher's home office, and that they will be destroyed by August 1, 2010. I also give permission to the researcher to access this person's medical record to obtain information regarding age, diagnosis, and gender.

Primary Caregiver's signature

Date

With my signature I acknowledge that I have received a copy of this consent form to keep.

If you have any further questions about your loved ones participation in this study please feel free to contact Florida State University's Institutional Review Board at 850-644-8673.

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Initials

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BIOGRAPHICAL SKETCH

Education

- 09/94-05/99 Michigan State University
- Bachelor of Music in Music Therapy, with honors

Professional Experience

- 08/04-07/06 **Music Therapist, Big Bend Hospice** **Tallahassee, Florida**
- Responsible for planning and implementing music therapy interventions with hospice patients from a variety of age groups and diagnoses and their family members, and working as part of an interdisciplinary team.
 - Responsible for supervising college practicum students.
- 05/01-06/04 **Lifestyle Program Director, The Heritage at Gaines Ranch**
Austin, Texas
- Planned and implemented a scheduled lifestyle enrichment program for over 200 seniors in an independent and assisted living facility.
 - Scheduled, trained, and supervised activity assistants, other departmental staff, and department volunteers.
 - Monitored monthly, quarterly, and yearly departmental expenses with an annual budget of \$80,000.
- 03/00-05/01 **Registered Therapist III, Austin State Hospital** **Austin, Texas**
- Led group music therapy sessions with child, adolescent, adult, and geriatric patients in an in-patient psychiatric milieu.
 - Assessed and treated music therapy patients in coordination with treatment team goals.
 - Co-created hospital-wide music therapy manual, consisting of music therapy methodology, treatment goals and objectives, assessment tools, and inclusion/exclusion criteria.
- 01/00-10/03 **Music Director, Sunrise Community Church** **Austin, Texas**
- Led adult music team consisting of instrumentalists and vocalists in biweekly rehearsals for Sunday morning worship services.
 - Planned and provided piano music and guest artists for special events such as weddings, annual celebrations, and seasonal holiday services.
 - Facilitated a Christian-based positive coping skills group for children and their families through the “Confident Kids” program.
- 06/99-02/00 **Program Therapist, CCC Music Therapy Center** **Austin, Texas**
- Facilitated music, movement, and speech groups for clients with special needs, including patients in a gait training program. Music therapy population included children and adults with mental

retardation, visual and hearing impairments, Parkinson's disease, and patients who suffered strokes and traumatic brain injuries.

- Developed, promoted, and led music-based activities for summer music camps focused on children with and without special needs.
- Provided assessments and discharge summaries, as well as weekly, monthly, quarterly, and annual reports as requested by facility or client.

07/99-02/00 **Piano Teacher, Traveling Music Teachers' Network Austin, Texas**

- Provided private, in-home piano lessons for child, adolescent, and adult students.

10/98-04/99 **Music Therapist Intern, Waco Independent School District
Waco, Texas**

- Created, implemented, and evaluated interventions for music therapy sessions for use in special education departments.
- Provided individual and group music therapy to students aged 3-22 with special needs; including visual and hearing impairments, cerebral palsy, autism, and Down's Syndrome.
- Assessed students' needs for music therapy through a structured clinical assessment, provided summaries of students' assessment and progress toward goals, and participated in year-end conferences with parents and guardians.

Certifications and Training

Board Certified Music Therapist, #05638, Expiration Date: 12/31/09

Member of American Music Therapy Association (AMTA)

Trained in the Prevention and Management of Aggressive Behavior (PMAB)