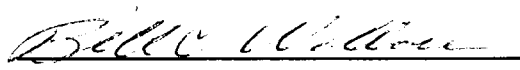
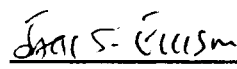


To the Graduate Council:

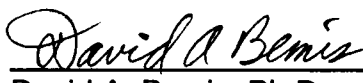
I am submitting herewith a dissertation written by Catherine Smith Hagmann entitled **"The Effect of Animal-Assisted Therapy on Levels of Measured Anxiety and Depression in Residents of Assisted Living and Health Care Communities."** I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Human Ecology.

  
Bill C. Wallace, Major Professor

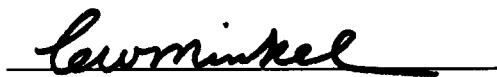
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**THE EFFECT OF ANIMAL-ASSISTED THERAPY ON  
LEVELS OF MEASURED ANXIETY AND  
DEPRESSION IN RESIDENTS OF ASSISTED LIVING  
AND HEALTH CARE COMMUNITIES**

A Dissertation  
Presented for the  
Doctor of Philosophy  
Degree

The University of Tennessee, Knoxville

Catherine Smith Hagmann

December 1997



*"It's not that nursing homes are going to the dogs; quite the opposite. The dogs are going to the nursing homes - and every indication is that the homes' residents love it. Happiness really is a warm puppy" (Lewis, 1982).*

## **DEDICATION**

This dissertation is dedicated to my mother and father

**D. A. Nelson-Smith**

**and**

**Tyler W. Smith**

and to my brother

**Edward Smith**

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## **ABSTRACT**

The purpose of this study was to determine the effect of animal-assisted therapy (AAT) on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare the experimental groups' and the control groups' attitudes about human and animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

The experimental group (N=41) had been receiving AAT for an average of 8.4 years per facility (N=5), and the control group (N=39) members at seven separate facilities had not been receiving AAT. All participants voluntarily took part in the study.

The Beck Anxiety Inventory (BAI), the Beck Depression Inventory (BDI), and Attitudes About Human And Animal Bonds were administered in a pre-test manner to all participants. One group (N=9) composed of volunteers from the original experimental group (N=41) and a separate group (N=13) composed of volunteers from the original control group

(N=39) completed time series designed post-testing which employed the instruments. In the case of the experimental group post-test<sub>1</sub> was administered six weeks after the original pre-test, which allowed for the participants to spend 30 minutes in the presence of a trained, approved AAT dog for no less than two weeks out of a six week period. Post-test<sub>2</sub> was administered 24 hours after post-test<sub>1</sub>, and post-test<sub>3</sub> was administered two weeks after post-test<sub>2</sub>. Post-test<sub>1</sub> was administered to the control group two to four weeks after the original pretest, but no AAT was administered. Post-test<sub>2</sub> was administered 24 hours after post-test<sub>1</sub>, and post-test<sub>3</sub> was administered two or two and one-half weeks after post-test<sub>2</sub>.

SPSS (Statistical Package for The Social Sciences) was used to generate a repeated measures variance of analysis, one with within-subject factor = time, and one with between-subject factor = group. This general linear model or ANOVA produced paired samples t-tests for all groups compared. All statistical analyses were computed using alpha = .05 as the determining level of significance.

The instrument, Staff Attitudes About Animal-Assisted Therapy, was employed. Staff responses were analyzed by numerically coding the data obtained from staff at sites which had AAT (N=63) and from staff at sites which did not have AAT (N=33).

Based on the findings, the following are the major conclusions:

1. When the effect of AAT on levels of measured anxiety and depression in residents of assisted living and health care communities is examined by employing the BAI and the BDI, AAT does not contribute significantly to the reduction of anxiety; however, AAT does contribute significantly to the reduction of depression.
2. After two weeks of exposure to an AAT dog, there is an increase in levels of measured anxiety and depression in the experimental group (N=9), and there is a decrease in levels of measured anxiety and depression from the time of pre-test to the time of post-test<sub>3</sub> in the control group (N=13).
3. Members of the original experimental group and members of the original control group have positive attitudes about human and animal bonds. Increasing the participants length of exposure time to an AAT dog to 30 minutes per week for two weeks results in a slight increase in the group's positive attitude about human and animal bonds.
4. Staff perceptions that AAT is more effective at helping residents of assisted living and health care centers cope with depression, when considering anxiety and depression, are accurate when based on results from the BAI and the BDI.

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# **CHAPTER I**

## **INTRODUCTION**

This chapter covers the following topics: introduction to the objective, task and population of this study, statement of the problem, purpose of the study, research questions, need for the study, basic assumptions, delimitations, limitations, definitions of terms, a chapter summary, and organization of the investigation.

Animal-assisted therapy (AAT) is currently an acceptable term for what was originally called pet therapy, pet-facilitated therapy, or animal-facilitated therapy. The use of companion animals to help people with special needs is an age-old concept, so simple, that until relatively recently, it was often overlooked. Companion or service pets have been a common denominator in the communal experience of American households and a dynamic example of psychological symbiosis at work in daily living. Pets need people to care for them; and some people love to care for pets. An increasing number of medical practitioners, veterinarians, health care professionals, and others in diverse, interdisciplinary fields are tapping this unique bonding relationship for its potential therapeutic value (Arkow, 1990).

The AAT volunteers who participated in this study were members of an East Tennessee humane society sponsored AAT program, which loaned appropriate animals to volunteers, or they were members of a local nonprofit

community-based AAT volunteer organization which used volunteer-owned animals that were approved for those of all ages in a variety of settings such as assisted living and health care centers, hospitals, mental health facilities, inner-city schools, and other human service organizations. As such, the accompanying human AAT volunteers were well trained in guidance regarding pet visitation, facility program development, and evaluation. Participating animals were required to pass a medical and a behavioral screening before approval for visitations. Weekly visitations were the general rule; however, visitations ranged from three to fifteen times per month and depended on the number of available volunteers and animals.

Involvement with AAT provides tremendous personal satisfaction for the human volunteers. The human volunteers in this study represented a convenience sample of experienced AAT volunteers, thus, they were not representative of AAT volunteers in general. Answers obtained on the form in Appendix A presented various motivations for participating as animal-assisted therapy volunteers (Figure 1).

The rewards of using animal-assisted therapy in long-term care facilities are definitely worth the efforts put forth by the human and the accompanying animal volunteers. Results of increased socialization, heightened anticipation of each new day, increased physical activity, and the minimization of loneliness are but a few of the possible benefits that can occur. We can put joy into our care and smiles on the residents' faces by

- ◆ To give individuals who are animal lovers (and no longer have one of their own) an opportunity to snuggle with a cat.
- ◆ It is a wonderful program. My dog worked at Patricia Neal and is a "Specialty Command". It is so wonderful to bring joy to those who love animals and can't have one with them.
- ◆ Because I love my dog!
- ◆ Love to share my love of animals with others!
- ◆ My animals and I enjoy the people we visit and the happiness it brings to all of us.
- ◆ I feel good about volunteering/contributing.
- ◆ It benefits patients. It benefits my pet. It benefits me = WIN.
- ◆ The benefit to the people visited coming from the animal.
- ◆ My mother was a resident here before she died. She enjoyed the pets.
- ◆ The pleasure we can give is worth the time and effort the visits require. I love meeting new people.
- ◆ Because it is great!
- ◆ I love people and animals. This program gives me a chance to interact with both. I feel that I get more out of my visit than I give. I have two animals so I try to show both.
- ◆ It is the most wonderful experience for my dog and for me. The people love her and look forward to her visit.
- ◆ I work at the facility.

**Figure 1**

**Statements Made By A Convenience Sample Of Experienced  
Animal-Assisted Therapy Volunteers**

utilizing the profound effect that animals have on human behavior (Hoffman, 1991).

The increasing number of elderly will place greater demands on all health care providers (Fraser, 1992). Many American senior citizens will find themselves relegated to living out their 'golden years' in retirement communities, nursing homes or convalescent centers. The transition for elderly family members into the long-term care facility environment can often lead to a sense of helplessness and hopelessness. Their possessions are often reduced to a shoebox full of memories and their acquaintances preselected by an administrator. In this environment, their personal dilemmas are complicated by a confusing new social structure. Their freedom and independence is replaced by a regular routine of meals cooked by someone else; their sense of personal and private space is now shared with a roommate not of their choosing; their need for peace and quiet may be disturbed daily by objectionable neighbors down the hall. They may feel sorry for themselves, abandoned by their families and loved ones, and apprehensive about the future (Arkow, 1990). Reactions after admission to a long-term facility frequently result in depression, helplessness, disorganization, and rapid physical or mental deterioration (Rosswurm, 1983).

Erickson, 1985, summarized the adaptive effects that pets could provide for elderly persons: combating loneliness, caring and responsibility, keeping active, touching and fondling, watching and playing, feeling safe, health promotion, longevity, stimulation and exercise. As the social circle narrows for the elderly, pets regain a prominent position of importance, providing feelings of security. The companion animal accepts the elderly, despite the elderly person's level of self-esteem, role changes, and physical changes (Levinson, 1969).

The most commonly encountered psychological disorders in medical patients are anxiety and depression, which frequently coexist. The depressive disorders precede the anxiety disorders in most patients. Clinical experience with patients with physical illness, however, suggests that it is often difficult to distinguish anxiety from depression (Morey, Greer, Watson, Gorman, Rowden, Tunmore, Robertson and Bliss, 1991).

Health educators and other professionals need greater insight into their potential for empowering the patient institutionalized in a long-term care facility. It must be cautioned that animal-assisted therapy is not yet regarded by the medical profession as a primary therapeutic technique, therefore, AAT cannot replace more traditional treatment modalities. AAT is offered as an adjunct to other therapeutic regimens. It is by no means a panacea. It has,

however, been called a naturalistic approach to learning and living (Clayton, 1976).

Our elderly deserve to love and be loved, and so does the nation's pet population. It's about time that we offered each group the chance to help the other (Wright and Dribben-Gutman, 1981).

## **STATEMENT OF THE PROBLEM**

The problem addressed in this study dealt with the issue of the effectiveness of animal-assisted therapy on levels of measured anxiety and/or depression of elderly residents in long-term care, assisted living and health care, facilities. To the extent that it could be determined, no empirical evidence was found that such an adjunctive therapy had any effect on reducing levels of anxiety and/or depression in the above-stated population.

## **PURPOSE OF THE STUDY**

The primary purpose of this study was to determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare the experimental groups' and the control groups' attitudes about human and

animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

## **RESEARCH QUESTIONS**

In order to address the purposes of the study the following research questions were formulated:

**Research question 1:** What will an analysis of pre-test scores on the Beck Anxiety Inventory (BAI) and an analysis of pre-test scores on the Beck Depression Inventory (BDI) indicate, when scores obtained from the experimental group, which had been receiving AAT for an average of 8.4 years, are compared with scores obtained from residents in the control group, who received no AAT?

**Research question 2:** What changes will occur in levels of measured anxiety or in levels of measured depression experienced by a group of residents from the original experimental group, who are visited by an AAT dog for an increased time period per week for two weeks, and what changes will occur in levels of measured anxiety or in levels of measured depression experienced by a group of residents from the original control group when each respective group's pre-test scores on the BAI and on the BDI are compared with their series of scores on three post-tests on the BAI and on the BDI?

**Research question 3:** What will the various forms of Attitudes About Human & Animal Bonds indicate when administered to the experimental group in a pre-test and post-test format?

**Research question 4:** What will analysis of Staff Attitudes About Animal-Assisted Therapy indicate?

## **NEED FOR THE STUDY**

Technological advances are proliferating in the health care field with a resulting increase in the complexity of medical care. Simpler and more cost-effective interventions, such as the therapeutic use of animals to reduce levels of anxiety and/or depression, should be considered.

One of the most challenging aspects of AAT is attempting to document its effectiveness. Although there is a notable increase in efforts to measure physiological, sociological, and psychological improvements in human functioning or development, there is a need for quantitative data-based evaluation of AAT programs to balance the anecdotal evidence which permeates much of the animal-assisted therapy's legacy to date (Arkow, 1990). AAT can benefit institutions as a cost-effective adjunctive therapy while it provides opportunities for positive public relations by involving volunteers, their animals, and community groups (Barba, 1995).

Particularly at risk for problems associated with 'aloneness' are the institutionalized elderly. Reasons for this are the isolating effects of sensory

deficits, speech and mobility impairment, and altered thought processes (Hoffman, 1992). The use of companion animals, or pets, is gaining popularity as a therapeutic approach for older patients living in long-term care facilities, such as assisted living communities, nursing homes, rehabilitation centers, prisons, and even hospitals (Davis, 1984; Erickson, 1985; Rapelje, 1983). Watching a depressed patient's smiling face while having his/her chin licked by a black and tan mutt is enough to raise any caregiver's spirits (Haggard, 1985).

What was perceived by some as merely a passing fad a decade ago is slowly maturing and showing promising signs of becoming a multidisciplinary specialization. Fortunately, there has not developed any interprofessional rivalry, as all disciplines involved seem to have recognized the valuable contributions made to this field by anthropologists, psychologists, psychiatrists, veterinarians, social workers, criminologists, gerontologists, and many others. If anything, this cross-fertilization has served to broaden the field, although at times the professional and language barriers have been troublesome (Arkow, 1990).

The increase in animal-assisted therapy programs and the growing public awareness about them have not been accompanied by a comparable amount of empirical research on how these AAT programs affect the people they are meant to serve. In the research done so far, little attention has been

given to AAT programs where animals are present on a visiting basis rather than as permanent residents (Savishinsky, 1986). Animal-assisted therapy successes and failures should be documented. Experiences with failure form an important record for those instances in which AAT may not be useful, or where there has been a system breakdown that is correctable. The strong bias that AAT works must be tempered with objective scientific observations (McCulloch, 1982). By the same token, if AAT offers hope for relief of human suffering, then it is our professional obligation as health educators to explore every available avenue for its use as a therapeutic support to be offered to diverse special needs populations.

If the following quote by an unknown author is true, the value of scientifically designing research investigations and subsequently documenting the result of those research investigations of AAT visits to residents of long-term care communities should require little effort. The real meaning of having people keep pets is that "the gentleness of their souls becomes part of ours" (Savishinsky, 1986).

## **BASIC ASSUMPTIONS**

The basic assumptions made regarding this study were as follows:

1. It was assumed that the Beck Anxiety Inventory and the Beck Depression Inventory, as instruments to measure anxiety and

depression in the specified population, were valid and reliable instruments.

2. It was assumed that the residents who participated in this research responded honestly and accurately to the instrumentation used.
3. It was assumed that AAT was a facilitator to enhance emotional well-being and not a treatment nor a cure for psychological disorders (i.e. anxiety and/or depression).
4. It was assumed that the participating facilities, the volunteering residents, and the AAT volunteers would cooperate during the research study.

### **DELIMITATIONS**

For the purposes of this study the following delimitations were made:

1. The resident populations, in both the experimental and the control groups, were delimited to those patients who voluntarily agreed to participate in this study in a group setting, regardless of any prior diagnosis of anxiety and/or depression and regardless of any prescribed medications being taken to treat anxiety and/or depression in these participating residents.
2. The time period for conducting the study was delimited to a six month period.

3. The human volunteers were delimited to those trained, observed, and subsequently approved by a local nonprofit AAT program or by a regional humane society program, while the animal volunteers were delimited to animals which passed medical and behavioral screenings as deemed appropriate by the AAT programs.

## **LIMITATIONS**

The investigation was limited in the following ways:

1. Maintenance of the original resident population in the long-term care facilities was limited due to injury, illness, or death; therefore, the research design took into account that the initial population needed to be as large as possible to account for subject attrition.
2. Limiting the population studied to assisted living communities and health care centers decreased generalizability of the results of this study.
3. In reference to the animal volunteer, it was not possible to control for fatigue and 'burn-out' which could have affected the animal's enthusiasm to attend to each participating resident's requests for an audience as the animal visited for a thirty minute period.
4. It was not possible to control the type of medication, the dosage administered, or the length of time that a resident may have

received medication to treat anxiety and/or depression, nor was it possible to control for the fact that the original experimental group of 41 residents had received AAT for an average of 8.4 years per facility while the control group had not received any AAT during the same time period, and it was also not possible to control for the Hawthorne effect after introducing this study to the voluntary participants.

## **DEFINITIONS OF TERMS**

Specific terms defined for purposes of this study are as follows:

**Animal-Assisted Therapy (AAT)** - Based on the growing knowledge of benefits that animals provide to the sick, elderly, and isolated, AAT, which was formerly called pet therapy, is a therapeutic adjunct to more traditional forms of therapy that brings animals and persons with physical and/or emotional needs together after careful planning with clear patient goals and appropriate precautions in mind (Barba, 1995; Carmack, 1984). Animal-assisted therapy is an applied science using animals to solve a human problem. It is an interdisciplinary approach using animals as an adjunct to other therapies (Gammonley and Yates, 1991). For the purposes of this study, AAT was defined as receiving visits from a dog or cat from three to fifteen times per month at a participating long-term care facility.

**Measured Anxiety** - The apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension, as measured by the Beck Anxiety Inventory for the purposes of this study.

**Measured Depression** - An affective disorder characterized by a profound feeling of sadness, usually accompanied by sleep disorders, loss of energy, loss of perseverance, and/or loss of enthusiasm, poor self-image, and changes in appetite and weight, as measured by the Beck Depression Inventory for the purposes of this study.

**Resident of an Assisted Living Community** - An individual who resides in a special combination of housing, which may also be called a residential care facility, an adult congregate living facility, a personal care home, or a catered living facility, which provides supportive services with activities of daily living and health care designed to meet his/her needs, but which is not the skilled medical care provided in a health care center.

**Resident of a Health Care Center** - An individual who resides in an extended care facility, which may also be called a nursing home or a retirement center, established for people who need medical attention of the type and complexity which does not require hospitalization.

## **SUMMARY OF CHAPTER I**

The odds are great that one will need long-term care at some point in one's lifetime. Specifically, statistics from the Health Insurance Association of America (1994) indicate that forty percent of people age 65 and older risk spending time in a nursing home at some point in their lives.

Animal-assisted therapy is not a panacea for all ills; it is not universally effective, nor is it appropriate for all individuals. When used as a part of a comprehensive medical care plan, AAT provides many obvious and subtle benefits for many people (Barba, 1995). AAT is coming of age, and people are recognizing animals intrinsically and symbiotically for their uniqueness and for the ways they enhance human lives (Arkow, 1990).

Perhaps because of uneasiness with the recognition that humankind is part of the animal kingdom, and subject to the cycle of life and death, the importance of the human and other animal bond may be often conveniently forgotten. The addition of pets to the long-term care environment may enhance the health status of patients. The rewards of AAT are well worth the effort (Hoffman, 1992). Health educators and health promoters can benefit from learning additional ways of communicating with patients/people.

Rewards may be reaped from extending research arenas into AAT, therefore, learning about interdisciplinary cooperation by collaborating with specialists in multidisciplinary areas of expertise.

If animal-assisted therapy offers hope for relief of human suffering, it is our professional obligation to explore every available avenue for its use. Cure when possible, but comfort always (McCulloch, 1982).

## **ORGANIZATION OF THE INVESTIGATION**

The investigation is divided into six chapters. Chapter I includes an introduction, statement of the problem, purpose of the study, research questions, need for the study, basic assumptions, delimitations, limitations, definitions of terms, a chapter summary, and organization of the investigation. Chapter II consists of a review of related literature and is further subdivided according to literature related in content and methodology, literature related in content, and literature related in methodology. A summary of Chapter II concludes the chapter. Chapter III describes the methodology utilized in the investigation, therefore, it describes and discusses sample selection, instrumentation, collection of data, statistical analysis and concludes with a summary of Chapter III. The analysis and interpretation of the data is presented in Chapter IV. Chapter V includes the findings, conclusions, recommendations, and summary remarks. Chapter VI presents a review of the study in retrospect.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

#### **INTRODUCTION**

This review of related literature covers the following topics: animal-assisted therapy (AAT): overview and future direction, companion animals and anxiety and depression in the elderly: the psychology of animal-assisted therapy, the human companion-animal bond: benefits and strategies, and a summary of Chapter II.

#### **LITERATURE RELATED IN CONTENT AND METHODOLOGY**

##### **Animal-Assisted Therapy (AAT): Overview And Future Direction**

Throughout history, animals, as significant others, have been utilized to improve the well-being of people, serving many roles - protection, companionship, work, sport, etc. (McCulloch, 1982). Dogs have not only guarded the home and protected its inhabitants, they have also served as guides for the blind. Both dogs and cats have served as ears for the hearing impaired. Monkeys have been trained to feed and perform other tasks for the physically handicapped. Also, animals have a positive value simply in terms of companions, as partners with people (Rapelje, 1983).

In recent years, there has been considerable interest in the ways animals can be used therapeutically to improve the physical and emotional

health of people. Programs are widespread and are directed toward people with specific health problems requiring rehabilitation, i.e., the physically handicapped, the hearing impaired, the blind, the emotionally ill, the medically ill, and the elderly. Many terms, such as pet-facilitated psychotherapy, pet-facilitated therapy, animal-assisted therapy (AAT) and pet therapy have been used to describe the use of animals in therapy. Many of these terms suggest a restricted use, and do not encompass the full range of therapeutic potential. The term, pet, for example, does not generally include farm animals, which may be part of a residential treatment facility. Although pet therapy will continue to be used to describe more specialized use of animals, animal-facilitated or animal-assisted therapy is, therefore, a more accurate and broader term which describes the therapeutic use of animals (McCulloch, 1982).

The relationship that people have with animals has also been described in various ways, leading to similar confusion in terms. Pet-owner bond, pet-owner relationship, people-pet bond, and human-animal bond are phrases which have gained some acceptance in recent years (McCulloch, 1982). The label human companion-animal bond is a more inclusive label since it includes all relationships between people and their animal companions, which can encompass farm animals, horses, and animals in the

wild, as well as animals customarily thought of as pets, such as dogs, cats, cage birds, and fish (Yoxall, 1979).

The earliest record of animals being used as therapy goes back to 1792 at the York Retreat in England, an institution for mentally disturbed people which was founded by the Society of Friends, a Quaker group. William Tuke began this effort in response to the inhumane methods of the lunatic asylums of that day (McCulloch, 1982). The basic methods used were Christianity and common sense (Jones, 1955). In 1867 Bethel in Bielefeld, West Germany, was begun as a residential treatment center for epileptics. Pets were an integral part of the center from its beginning, much like at the York Retreat. The animal therapy portion of Bethel has been expanded over the years to include farm animals and a wild game park. In addition, dogs, cats, horses, and numerous varieties of birds are present in the treatment milieu (Bustad, 1980). Caring for the animals at Bethel is an important part of the living environment. Unfortunately, no systematic attempt has been made to quantify or record observations of the effects of the animals on the patients and the staff (McCulloch, 1982).

Documentation in 1942 reflected on a program began at the Pawling Army Air Force Convalescent Center Hospital at Pawling, New York. Veterans convalescing from battle injuries or emotional trauma were provided with live-stock, horses, poultry, and dogs. The area also included

extensive park land, where one encountered animals in a natural setting. Animals were used to divert attention to constructive therapy efforts. No quantitative information was recorded on the effects of the animals on the veterans at this site either. The program was later abolished (Bustad, 1980).

In 1966 in Norway, Erling Stordahl, a blind musician, established Beitostolen, an extant rehabilitation center for the handicapped. The program is very sports oriented, with heavy emphasis on physical therapy. Horses and dogs play an active part in the program. Blind persons are taught to ski and to ride horses. Again, no data have been gathered (McCulloch, 1982).

Psychologist Boris Levinson was the first person to report in detail the therapeutic benefits of contact with pets for children and adults in both inpatient and outpatient settings. One day, quite by accident, his dog, Jingles, followed him to the door, where he helped greet a distraught mother and her disturbed youngster, who had arrived early for their appointment. The child's positive response to the dog hastened the development of rapport. Levinson later described the use of pets for children in residential treatment centers for the emotionally disturbed, in hospitals for somatic disorders, in training schools for the physically handicapped, the hearing impaired, the blind, and the mentally retarded, as well as in schools and classes for the emotionally disturbed. It was his view that a pet could

function as a transitional object where the child could form a relationship first with the pet, then with the therapist and later with other people. He advocated the use of pets where cuddling, affection, and unconditional acceptance were indicated. He believed in the importance of providing a non-threatening setting where the child was master of the situation. Specific clinical problems of children believed to be most responsive to pet therapy, were the young nonverbal child, the inhibited, the autistic, the withdrawn, the obsessive-compulsive, and the culturally disadvantaged (Levinson, 1961, 1966, 1969a, 1969b, 1972, 1974).

Since that time a number of studies have been conducted. Mugford and M'Comisky (1975) did studies of elderly British residents who were given budgeriegars, parakeets. The birds were found to stimulate social activities and purposefulness. The residents became involved not only with the general care of the birds but also bought toys and spent time training the birds. Robb, Boyd, and Pritach (1980) conducted a study to determine the effectiveness of certain objects as catalysts for social behavior. A wine bottle, a flowering plant and a caged puppy were introduced one at a time, each for 90 minutes, to chronically ill, predominately aged residents in a long-term care facility. Of the three stimuli, the caged puppy produced the most dramatic increase in social behavior with the greatest increase in the following behaviors: verbalization, smile, look (toward the object), eyes open,

and leans toward the stimulus. Remarks became appropriate and the puppy stimulated conversation by the residents about past pets. This was all observed without the residents ever touching the puppy. Many of the residents asked to touch the animal and were allowed to do so after the group session. Several authors (Arkow, 1982; S. Corson and E. Corson, 1979; Humeston, 1983; & Michaels, 1982) noted that pet animals form a non-threatening, reassuring, nonverbal communication and tactile comfort that helped to break the cycle of loneliness, hopelessness, and social withdrawal.

An Australian study at Cofield Geriatric Hospital found that pets could be of great benefit in helping the elderly cope with changes in their lives. Specifically, pets were found to be of benefit in the following situations: rapid changes in living circumstances, reduction of income, loss of the stimulus provided by work, loneliness from reduced mobility, difficulties in finding new interests and making new friends, reluctance to prepare proper meals, less enthusiasm for regular exercise, danger from physical failings, and threat of bereavement (McQuillen, 1985). Numerous studies (Arkow, 1982; Cusask, 1984; Michaels, 1982; & Rapelje, 1983) indicated that the actual physical petting, stroking, grooming, and playing with animals could provide a variety of sensory stimulation which might provoke seriously withdrawn patients into speaking, occasionally for the first time in many years. An increasing amount

of literature indicated that pets and their unconditionally given love could enhance a therapeutic milieu and provide the continual warmth, companionship, and sense of purpose many institutionalized elderly needed (Arkow, 1982; S. Corson and E. Corson, 1979; Humeston, 1983; Michaels, 1982; & Rapelje, 1983).

Our nation's first formal pet therapy program began in 1975 in a maximum security hospital for the criminally insane at Lima State Hospital, Lima, Ohio. David Lee, a psychiatric social worker became interested in the work of Levinson and Corson, and as a result, he requested the hospital administration to permit parakeets and tropical fish in the hospital. The essence of the animal-assisted therapy at Lima was the incentive system. The patient had to earn the privilege of having his/her own animal through caring for the ward mascots, the aquarium fish and gerbils. Once the patient had demonstrated responsible behavior, a request was made and evaluated by staff. Then, an appropriate animal, such as a cage bird, hamster, gerbil, guinea pig, or fish, was selected. The patient cared for and fed the animal. This generally meant working in the hospital green-house to raise food to sell or exchange for pet food, or this meant sacrificing personal spending allowances. Documentation for each patient was kept on a weekly and monthly basis to determine therapeutic benefits. Monthly reports on the pets were kept with copies being sent each month to eight national humane

organizations for an ongoing review. Preliminary findings indicated positive results, especially in the treatment of patients suffering from depression or suicidal impulses. There were higher incidences of suicide attempts and violent outbursts and higher requirements for medication on the ward without a pet therapy program. As therapists, pets presented benefits that staff lacked. Pets were full-time companions and totally nonthreatening. One severely depressed patient who cared for two newborn guinea pigs explained the importance of a pet was in having something that depended on his care (Lee, 1983). Social benefits also increased cooperation with the caregivers and included the catalyst effect described as social lubricant or widening circle of warmth (Corson, 1975).

Folse, Minder, Aycock, and Santana (1994) investigated the effects of animal-assisted therapy on a college undergraduate population (N=44), who reported measurable levels of depression on The Beck Depression Inventory. Three groups of the college students were then established: (1) AAT in conjunction with psychotherapy (directive group), (2) AAT only (nondirective group), and (3) the control group (no AAT and no psychotherapy). Duncan's Multiple Range Test indicated that standardized regressed BDI post-test scores differed significantly between nondirective (M=5.67) and control groups (M=10.18). The most plausible explanation given for not finding significant differences between control and directive

group means was that the actual group therapy was conducted in the directive group, during which intense and sometimes painful discussion focused on depressing thoughts, and resultant unpleasant memories surfaced. Furthermore, the authors speculated that six weekly sessions of AAT over a total of seven weeks may not have provided adequate time for the psychotherapeutic process to be effective. Suggestions were made to explore the effects of AAT in conjunction with psychotherapeutic intervention over an extended time frame while monitoring the process of therapy.

Research utilization ultimately requires a change for all people involved, and resistance to change is a normal human response. Lewin's force field theory (1951) describes the strategies necessary for achieving change. According to this change theory, behavior in any institutional setting is not static, rather it is a dynamic balance of forces that tend to increase the possibility for change or movement (driving force) and the forces that tend to depress change or movement (resisting forces). Change theory also incorporates the concept of the change agent, which is an individual or group who initiates and facilitates the change process. In attempting to change a situation and move behavior to a new level, change agents need to increase the driving forces by adding new ones or strengthening existing ones, reduce or remove the restraining forces, and translate one or more restraining forces into driving forces. Change theory is applied each time an

animal-assisted therapy program is initiated at a long-term care facility.

Careful plans must be made. The innovation of AAT must be diffused through the institution. By working cooperatively with staff and residents of long-term care facilities attitudes toward change can be modified, if positive attitudes toward AAT do not already exist. Finally, findings can be implemented into the practice pattern of the system with broad implications for solving problems in clinical practice via promotion of research-based innovations (Cole and Gawlinski, 1995).

Cookman (1996) proposed a model of older adult to environment interactions that moves beyond the perspective of environment as safety hazard to environment as supportive resource. The framework of this model encourages health professionals to look for ways to incorporate positive environmental influences into individualized plans of care with older adults. Research indicates that attachments are formed by older adults to things, places, companion animals, ideas, and beliefs, which alongside people-to-people attachments comprise the 'attachment structure.' Research on attachments of older people to environmental objects identifies important sources of security, belonging, and self-identity. Further research is needed to define the nature of environmental connections later in life, their developmental characteristics, and their potential to influence the health of

older people. Attachments to pets, places, things, and ideas may represent emotional supports that can be fostered to enhance health and well-being.

Animal-assisted therapy has been used in an adjunctive capacity with other therapies. It is not intended to replace conventional forms of therapy. Although there is strong sentiment and anecdotal information to suggest that relationships with animals can be beneficial in many ways, the empirical data is sparse. While it is true that many animal-assisted therapy activities appear beneficial, such as having pets in nursing homes, an accurate definition of benefits, how the benefits are mediated, as well as identification of hazards and potential problems has yet to be scientifically defined. In part, this is due to the paucity of information on what constitutes normal relationships between people and animals. There is very little knowledge of the basic psychological effects of pet animals on child development, family interaction, and the aged. We are just beginning to understand the psychological effects of pets on individuals, and vice versa, and to understand the style of verbal communication and touch between people and pets (Katcher, 1977).

To accomplish scientific studies of animal-assisted therapy interdisciplinary work is essential among the medical profession, human and veterinary social scientists, animal control agencies, humane groups, animal trainers, and others, such as health educators/health promoters (Mculloch, 1982).

## **LITERATURE RELATED IN CONTENT**

### **Companion Animals And Anxiety And Depression In The Elderly: The Psychology Of Animal-Assisted Therapy (AAT)**

The elderly comprise the fastest growing segment of the population in our country. It is projected that in the year 2030, thirty percent of the U.S. population will be 65 years of age or older (Lewis, 1990). The majority of the elderly live in the community; however, the number of elderly residing in long-term care facilities is becoming larger because of the increase in life expectancy. A decline in health is often the primary cause for moving to an institution. Entering an institution can have a negative effect on a person's sense of well-being (Fick, 1993). This deterioration in physical or mental health, or in both, added to leaving one's home, personal belongings, family, and pets has contributed to a patient feeling disoriented, isolated, angry or depressed (San Francisco Society for the Prevention of the Cruelty of Animals, 1986). These persons are prime candidates for deprivation in the areas of socialization and sensory stimulation (McQuillen, 1985).

"I like her because she cuddles. I like to cuddle," said a dignified 90 year-old woman who was confined to her wheelchair by arthritis (Erickson, 1985). Many elderly long-term care patients have cognitive and/or physical deficits which limit their ability to interact with others and also limit their response to the environment. Personal visitors may be few and the

opportunities to leave the long-term care facility may be limited. One of the activities that can be used to help stimulate awareness, interaction, and provide pleasure is the use of animal-assisted therapy. An animal is known to be a source of pleasure and under controlled conditions, the patient can enjoy the animal regardless of cognitive or social skills (Kaflon, 1991). One elderly nursing home resident admonished pup-bearing volunteers when she said, "It's just this loving business. You've got to give them lots of loving" (Lewis, 1982).

Animals have been shown to alleviate some of the sense of isolation, withdrawal, and loneliness experienced by some of our nation's elderly. Animal-assisted therapy has been used to provide a source of nonverbal communication, to stimulate awareness, to encourage interaction, and to provide pleasure for nursing home and other long-term care facility residents (Kaflon, 1991).

AAT is a therapeutic approach that brings animals together with persons having physical and/or emotional needs as a way of meeting those particular needs. AAT is frequently occurring in institutional settings such as nursing homes, rehabilitation centers, and correctional institutions. It also has application in both the one-on-one relationships, such as between a child and therapist, and the family therapy settings (Carmack, 1984).

In 1859, Florence Nightingale wrote that pets were excellent companions for patients confined by long-term illness (Nightingale, 1969). Katcher and Friedmann (1980) pointed out that a pet animal might be expected to influence health beneficially because it becomes a companion to decrease loneliness, to care for, to keep one active, to touch and fondle, to watch and play with, to make one feel safe, and to stimulate exercise. A pet can bring a feeling of safety. A dog, for example, has a wider hearing range and keener auditory acuity than humans and helps ensure that an elder is not surprised by visitors.

Today, the human-animal bond has become an exciting subject for interdisciplinary study and has gained popular interest. These studies indicate that pet ownership or access to pets can yield immeasurable benefits for human health and happiness. The relative newness of this research area is reflected by the fact that, as of 1985, only six books contained most of the significant articles or bibliographies on the relationship between people and animals (Erickson, 1985).

The effect of pets in helping to counteract some common difficulties of aging are too promising to be overlooked. The most common reasons people give for owning a pet are companionship, a desire for physical proximity, friendly interaction, and a sense of esteem from another living thing (Mugford, 1980). Loss of companionship is widely acknowledged as one of

the social problems of the aged. Elders who are retired, widowed, separated from their families, or living in cities often have special needs for a close companion. Pet dogs, cats, and birds can serve this function (Katcher and Friedman, 1980). Having a pet can help satisfy the need to be needed. While pets give affection and act as social aids, they are also a responsibility. Animals genuinely depend on human companions and force them to consider such practical matters as food, shelter, grooming, health care, and safety. Caring for a pet fosters a sense of responsibility and can strengthen self-respect. Studies in psychiatric facilities and nursing homes indicated that patients who took care of pet dogs became more independent and began to take much better care of themselves (Corson, 1975; Corson and Corson, 1981).

Pets help fill the empty or unstructured time many elders have available. Evidence is mounting that stable, synchronized, internal biological rhythms are an important component of health and that these rhythms require a degree of regularity and structure in daily activities (Moore-Ede, 1982). Many older retired people, however, lack established obligations to give structure to their day. The regular active attention that a pet requires makes it a 'time clock' providing order and responsibility for people who might otherwise have no obligation or scheduled activity (Katcher and Friedman, 1980).

A companion animal is called a pet. Taken as both a noun and a verb, the word implies that touch is central to the meaning of a dog, cat, or other animal in our lives. Human beings have an important need for tactile stimulation. People often pet or caress their pets almost without thinking. There is good evidence that a friendly animal promotes mutual relaxation and decreases sympathetic nervous system activity. Lynch and McCarthy (1969) showed that petting a horse or dog markedly lowered the animal's heart rate and blood pressure, while human beings had a similar response when they greeted their dogs with petting and words. In contrast, blood pressure rose when these same people read aloud or talked to other humans. Katcher (1981) speculated that talking to an animal may be more relaxing than talking to another person, since animals do not evaluate what we say and may seem empathetic, whether or not they actually are.

Watching pets such as aquarium fish can also be relaxing (Katcher, 1983). Pets provide entertainment and a diversion from daily problems or monotonous routines. McCullough (1981) studied 31 medically ill, depressed outpatients who had pets. Although most had adequate support systems of friends or family, they still believed their pets' presence's were important in coping with illness and depression. Most said that their pets helped them maintain a sense of humor, and many claimed the animals' playfulness boosted their morale.

There is some evidence that social isolation and loneliness are injurious to health. Widowed, divorced, and single persons have more illness and tend to die earlier than those who are married. Similarly, the incidence of illness and death rises the first year or two after the death of a spouse (Lynch, 1977). A companion animal is not a panacea for the difficulties of old age, but it is one of life's variables that affect an elderly person's health and happiness. A friendly pet may enrich the lives of many elderly people (Erickson, 1985).

The most commonly encountered emotional disorders in medical patients are anxiety and depression, which frequently coexist. The depressive disorders precede the anxiety disorders in most patients. Clinical experience with patients with physical illness, however, suggests that it is frequently difficult to distinguish anxiety from depression (Moorey, Greer, Watson, Gorman, Rowden, Tunmore, Robertson, and Bliss, 1991).

Anxiety is defined as the apprehensive anticipation of future danger or misfortune accompanied by a feeling of dysphoria or somatic symptoms of tension. The American Psychiatric Association (1994) states that the focus of anticipated danger may be internal or external. For the purposes of this study anxiety will be measured by long-term care facility residents' self-reported scores obtained on The Beck Anxiety Inventory (BAI) which was developed by Aaron T. Beck and his associates at the Center for Cognitive

Therapy, University of Pennsylvania School of Medicine, Department of Psychiatry (Beck, Epstein, Brown, and Steer, 1988).

Perhaps we have become so alienated from Mother Earth that we feel like orphans. The increasing fears, guilts and anxieties of twentieth century man can be traced directly to the 'unnaturalness' of our mode of living. We can travel to the moon but have lost our capacity to survive in the forest. To a degree, that is also true of the domesticated animals and even more so of pets. However, through the uninhibited and highly sensitized perceptions of animals we can achieve some degree of communion with nature. The need for love and affection is universal. There may be differences in degree, but essentially all human beings need and want love. Love for a pet can keep us from becoming trapped within our own dilemmas. Our pets help to reinforce us emotionally. Fears drop away. Anxieties diminish (Levinson, 1970).

For the aged person who has developed anxieties, feels beaten down by physical handicaps, and has a desire to escape from his/her infirmities, a bird may be helpful. Through identification with the bird, he/she may have the illusion of being able to escape from difficulties through flight, which may alleviate his/her anxiety (Levinson, 1969).

According to Levinson (1972), animals can contribute to psychotherapy by fostering rapport between therapists and patients during initial and later sessions of treatment. His observations indicated that the

introduction of pets as an opener to conversation reduced anxiety in the patients as they focused on the topic of the pet. This established the initial rapport needed as a basis for initiating discussion more relevant to the goals of therapy. Once a patient-therapist relationship had been established, animals were introduced to aid in eliciting responses from patients who were reluctant to communicate. The tactile reassurance provided through petting an animal frequently elicited expressions of deeper emotions.

Haggerty and Juhasz (1984) noticed an ever-present Labrador upon initial visits to a young man who had a colostomy as a result of bladder cancer. While this client was willing to talk about his cancer, he was unable to directly discuss his colostomy. By speaking through his dog - "How does it look boy? Do you think it will be okay?" - the client was able to express how he felt about his stoma. His nurse, Janet Haggerty Davis, MSN, RN, in turn, could address the young man's anxiety by answering his dog: "Yes, this looks very healthy. Your master is doing a good job." Several months later, when the client was ready to deal with his altered body image, these conversational maneuvers were abandoned. Thus, pets can be drawn into nursing practice as a means through which the nurse can communicate with an anxious client (Davis and Juhasz, 1984).

For college students in a laboratory setting, petting a friendly dog lowered not only their blood pressure and heart rate, but also their anxiety

level, as measured by a standard test. Researchers found that patients who watched fish in an aquarium while they waited to have oral surgery did just as well as those who underwent hypnosis to reduce anxiety and discomfort during the surgery. These results help explain why aquariums are so popular in dental and medical waiting rooms (Schellenberg, 1993).

For the most part, therapeutic effects of pet-human contacts have been projected on the basis of anecdotal evidence derived from psychiatric case studies or descriptive surveys that have taken place in clinical settings where control procedures were not utilized. Report benefits to clients include: increased feelings of ego mastery (morale, self-esteem, power, control, personal accomplishment), increased interaction with people, increased physical activity, increased interest in learning, decreased focus on physical symptoms, decreased reminiscence, decreased distress over sensory impairments, and decreased death anxiety (Levinson, 1972).

Depression remains the most commonly diagnosed mental disorder in the United States, with approximately fifteen to thirty percent of the population affected each year (Heitzman and McColgin, 1989). A primary concern regarding the mental health of the elderly is the prevalence of depression in approximately fifty percent of the elderly in the U.S. (Fick, 1993). It is thought that many cases of depression are left untreated or undertreated (Regier, Hirschfield, Goodwin, Burke, Lazar, and Judd, 1988).

Depression is an affective disorder characterized by a profound feeling of sadness. It is usually accompanied by other symptoms such as disorders of sleep, loss of energy, loss of perseverance, and/or loss of enthusiasm, poor self-image, and changes in appetite and weight. Also, this condition must not be transitory, i.e. someone having one 'off day' is not depression in the clinical sense (Stuart-Hamilton, 1995). For the purposes of this investigation, self-reported depression will be measured by The Beck Depression Inventory (BDI) developed in 1979 by Beck, Rush, Shaw, and Emery.

Most epidemiological studies comparing people with and without pets have suggested that those who share their lives with animals have higher morale and lower rates of depression. Such studies do not tell us, however, whether pet owning leads to better psychological health or whether it's the healthier people who acquire pets in the first place (Schellenberg, 1993).

Depressed persons are often reluctant to participate in social activities or to initiate social interaction, and social withdrawal and isolation are common (Zauszniewski, 1995). There have been instances where stroke victims are so depressed by their health problems that they are unwilling to work in therapy sessions to restore motor skills and to relearn speech. When given a pet to play with for an hour or two they may actually speak or smile.

Often this is the first positive step toward successful physical therapy (Wright and Dribben-Gutman, 1981).

Beck and Katcher (1983) noted that most patients who were depressed and withdrawn, helpless, and hopeless had been hurt by words. Animals do not use words, and patients can safely approach them when they cannot approach people. In addition, the animals give these persons a sense of being needed at a time when they feel their usefulness is reduced.

Corson (1975) emphasized that the essence of pet-facilitated psychotherapy is to introduce a nonthreatening pet to serve as a catalytic vehicle forming adaptive and satisfying social interactions. The patient often relates positively to the pet in nonverbal and tactile interactions. Gradually the circle of social interaction widens, to include first the therapist who introduced the pet, and later other patients and medical personnel, with a progressive expansion of positive social interactions outside the hospital. The initial nonverbal forms of interaction are eventually enriched and strengthened with verbal communication and wholesome emotional expressions and warmth.

Among the problems encountered in a nursing home are loneliness, depression, boredom, lack of sensory stimulation, and withdrawal. Corson and le Arnold (1977) cite eight points regarding the social structure of a nursing home that tend to reinforce the cycle of debilitation, social

degradation, and dehumanization. They are: a closed social group, low staff/resident ratio (no individual treatment), highly regimented (little room for individuality), mass oriented (little privacy), no sense of purpose or goal-directed activity, no reinforcement of positive affective status, minimal socially sustaining tactile contacts, and worsening tactile and social isolation because of sensory deficit.

To what extent animals can be used to extend the meaningful independence of the elderly, the physically impaired, and the mentally ill is an important issue for our society to examine (McCulloch, 1982). Much of the recent research pertaining to animal-assisted therapy has been conducted in institutional settings. Dogs, cats, birds, and rabbits were all evaluated as potential agents for increasing social interaction and verbalization while simultaneously decreasing depression in residents of a variety of long-term care facilities. These facilities included a nursing home, a state prison for the criminally insane, and psychiatric hospitals (Doyle, 1975; Corson and Corson, 1977; Fields, 1978; Lee, 1979; & Brickel, 1979).

Certain pets seem particularly effective with the elderly. Pet-Mobile programs often bring young pups or kittens to frolic and play with nursing home residents. Depending on the setting, pets provide companionship in a broad sense to all the residents, patients, or inmates, and as such they are available to everyone, including the treatment staff (Yates, 1973). Animals

can be part of a 'living environment' such as seen on a working farm or residential treatment center. Here people may interact with animals that are considered part of the community of living things - plants, livestock, horses, rabbits, poultry, dogs, cats, etc., as well as birds and animals in the wild. It is also important to note that various types of interactions can be mixed in the same setting. For example, a nursing home may have a dog as a mascot but may also permit residents to own caged birds. There also may be a visiting pet program where dogs, cats, rabbits, etc. are brought in for their entertainment value (McCulloch, 1982).

Some communities have established pet prescription services for persons who might benefit from pet companionship, such as the chronically depressed or the isolated. These services are provided through the cooperative efforts of physicians, animal shelters, and veterinarians (Cass, 1981). Prescription pets should be coordinated with other therapy modalities. Animal-assisted therapy should not displace other therapies. It should be added to those already being utilized, such as physical, occupational, recreational, group or individual therapy, as well as the necessary forms of drugs and medical treatment. Thus, AAT may be a facilitator to patient motivation for other therapies (McCulloch, 1982).

## **LITERATURE RELATED IN METHODOLOGY**

### **The Human/Companion Animal Bond: Benefits And Strategies**

Boris Levinson (1970) was one of the first to describe the potential of nursing home pets. He pointed out the need of the elderly to have someone to love and lord over. Pets can restore a sense of identity to the elderly and can cut down the demands placed by the residents on the nursing home staff. The pets can serve as love objects which the elderly person can hug and kiss. The pets also restore communion with nature, which is increasingly lost in contemporary society. Caring for a pet can offer a sense of peace and completion and can provide an important link with reality.

The use of companion animals, or pets, is gaining popularity as a therapeutic approach for older patients living alone and also in such clinical settings as nursing homes, assisted living facilities, rehabilitation centers, and even in hospitals. For example, residents may meet to design and create leather leashes for the animals, to design cards for the holidays with pictures of pets on them, or to help organize a fund-raising event for a shelter (Wright and Dribben-Gutman, 1981). Some physicians even write prescriptions for pets when they believe their patients will benefit from animal companionship (Minnesota Humane Society, 1971). In Hoffman's article (1992) Mark Twain was quoted as saying, "Where women and

children are not, men of kindly impulses take up with pets, for they must love something."

Many elderly people have discovered that animal companions satisfy some of their greatest needs. Pets restore order to their lives, provide a more secure grasp of reality, and link their owners to a community of caring, concern, sacrifice and intense emotional relationships. Life review is an important aspect of working with the elderly; encouraging reminiscence is an effective tool. Animals can trigger reminiscence. Therapeutic touch is also extremely important. Nonverbal communication can decrease the elderly's sensory deprivation. The sensory loss, immobilization, living alone, and loss of significant others experienced by the elderly may increase the need for touching. Touching animals as well as being touched could be therapeutic (Bustad and Hines, 1983).

Unfortunately, very little data exists on measurable effects of animal companionship on people, including the elderly, even though people have been associated with animals for thousands of years. We need to document even anecdotal accounts of what is happening where pets live with the elderly. Such observations, although of limited usefulness as scientific data, can nonetheless provide insights into areas where more precise studies can be undertaken. The People-Pet Partnership Program has provided us with three particularly noteworthy examples of such observational data. The first

case involved placement of some gerbils in a nursing home. This placement was a disaster. Several residents beat on the cage and tried to let the gerbils out to stomp on them. An investigation indicated that those residents who had farm backgrounds thought that the gerbils were rats, something to be exterminated. This led to questionnaire development to determine resident profiles which enabled more effective animal selection and placement. The second anecdote involved placing Marie, a nursing home resident who had no family or friends, who would not communicate, and who remained curled in the fetal position with no interest in living, in the pet therapy room containing Handsome, the Persian cat. Marie had scratches on her legs from continual scratching. Whenever Marie began to scratch her legs in Handsome's presence, the cat played with her hands and distracted her. Within a month Marie's sores were healed. She began to watch the cat and to talk with the staff about him. Gradually she invited other residents in to visit with him. Now, Marie converses with strangers and the nursing home staff about the cat and other subjects. The third episode was even more dramatic. A frail, elderly gentleman was brought to the nursing home from a local hospital. He had been discovered in a severely malnourished and confused state in a rural farmhouse, living alone in filth. Once his condition stabilized, he was brought to the nursing home in restraints since he refused to eat. Each day he worked to free himself from the restraints and the

feeding tube. The tube was then reinserted since he refused to eat. The cycle was not broken until an aide found the Center's three kittens in bed with the gentleman. When the kittens were removed he became agitated. A reward system was devised whereby the kittens would be returned to him if he ate. He gained 40 pounds and interacted with other residents. The kittens were the bridge that brought him back to reality. The director of nursing stated that otherwise she believes he would have died (Bustad and Hines, 1982).

At the World Dolphin Foundation in Miami dolphins were found to elicit very positive reactions from neurologically impaired persons. Following this observation researchers exposed eight autistic children to three dolphins to see if the dolphins could favorably change the children's inappropriate behavior. After six encounter sessions all of the children showed improved attention spans in the presence of the dolphins, and two children demonstrated increased verbalization. Exactly why the dolphins were successful in altering the children's behavior is still being investigated (Arehart-Treichel, 1982).

Gray (1988) demonstrated the use of a companion animal to reduce the need for medication. A patient was weaned from sleeping medication by having his nurse's dog with him during the night. The man slept one and one-half hours longer per night without sleeping pills over a period of ten

weeks with the dog present at his bedside, as compared to length of sleeping hours per night with pills and without the dog.

As previously stated, empirical support for the therapeutic value of pets is quite limited. Mugford and M'Comisky (1975) conducted a carefully controlled study using budgerigars, small Australian parrots, with old-age pensioners living alone in an urban area of Yorkshire, England. Independent variables included budgerigars versus begonias under conditions of television set ownership versus no television set ownership. The presence of television sets proved irrelevant to the results. The two budgerigar groups scored significantly better in terms of psychosocial parameters than the two begonia groups. On data collection visits the researchers found the budgerigars had become such a powerful topic for conversation that they could even displace the monotonous awareness and discussion of past and pending medical ailments.

A longitudinal case study was made of a sub-unit of a 40-bed nursing home to examine the perceptions and social interactions of patients and staff after introduction of a resident dog. A behavioral mapping procedure was used to determine staff and patient interactions 6 weeks before and 6 and 22 weeks after the dog's arrival. Interviews were also conducted with patients and staff. Six weeks after the dog's arrival, a significant increase in frequency of interactive behaviors was seen for both staff and patients. Staff

particularly commented on the use of the dog to help control depression and aggression in one 87 year old woman who was described as withdrawn, depressed, and occasionally paranoid. Another 83 year old woman who was described as cognitively impaired and isolated from the other patients derived great pleasure from the dog and brightened up after feeding and caring for him. By 22 weeks behaviors for patients had reverted to baseline levels, while remaining high for staff. Suggestions for future research include examining the impact on the social system of the institution as a whole rather than focusing only on the residents (Winkler, Fairnie, Gericevich, and Long, 1989).

Katharine M. Fick, an Occupational Therapist conducted a study to determine the effect of the presence and absence of a dog on the frequency and types of social interactions among nursing home residents during a socialization group. Point sampling was used to evaluate the behaviors of 36 male nursing home residents at a Veterans Administration Medical Center under two conditions: Dog Present and Dog Absent. A significant difference in verbal interactions among residents occurred with the dog present.  $F(1,69) = 4.92, p < .05$ . These findings were consistent with existing literature and, thus, provided further evidence of the value of animal-assisted therapy programs as an effective medium for increasing socialization among residents in long-term care facilities. Because an increase in social

interactions can improve the social climate of an institution and since occupational therapists frequently incorporate group process into their treatment, the therapeutic use of animals can become a valuable adjunct to reaching treatment goals (Fick, 1993).

Pets create an excuse to play. Often the only opportunity adults have to join in uninhibited or silly games is with children or animals. Eighty percent of Swedish dog owners said their pets gave them an outlet for play (Adel-Bath, 1978).

Katcher and Friedman (1980) suggested that pets, by providing companionship, should help to decrease the pathological effects of social isolation. As yet, unfortunately, no large scale studies have compared the health and longevity of individuals who do and do not own pets.

A recent study by Friedmann, Katcher, Lynch, and Thomas (1980) provided the first evidence that companion animals influenced the course of physical illness. The study investigated the effect of social isolation and social support on the survival of 92 patients hospitalized in a coronary care unit for angina or a myocardial infarction. Although the main focus was on the impact of human bonds, one item about pet ownership was included in a large group of questions on social assets. The severity of their physical illness during hospitalization predicted most strongly which patients were alive one year later. However, pet ownership proved to be the best social

predictor of survival, stronger even than human relationships. Of the 39 patients who did not have pets, 11 died during the year. Only 3 of the 53 pet owners died during the same time period. The result was not a statistical artifact caused by differences in health or social status of the pet owners, their age or sex, or the predominance of dogs, pets which might have promoted more physical activity/exercise. Most important, the beneficial effect of pets was not limited to those who had been socially isolated; it was independent of marital status and the extent of social support from human beings (Katcher, 1981; Friedman, Katcher, Lynch, and Thomas, 1980).

Similarly, in a large telephone interview study of Medicare enrollees, Siegel (1980) found that elderly pet owners reported less psychological distress and fewer visits to physicians over a one-year period than respondents who did not own pets. She also noted that fifty-eight percent of the sample did not live alone; thus, pets were not necessarily their only companions. In another study of individuals sixty-five years of age or older, pet ownership was inversely related to depression (Garrity, Stallones, Marx, and Johnson, 1989).

The term 'human-animal bond' has frequently been used to describe attachment. Attachment implies a meaningful, affective bond between person and object. Attachment theory holds promise as one framework for describing the environment in terms that transcend safety and embrace a

more holistic view of environment and aging (Francis, 1991). Attachment can be defined as a component of a relationship with an object where proximity to that object provides a sense of security (Bowlby, 1980). The link between attachment theory and the human-companion animal bond was described by Rynearson (1978): "Human and pet are significant attachment figures for one another...[and] share complimentary attachment because of mutual need and response." Ory and Goldberg's study (1983) of factors related to subjective well-being in the elderly, examined pet ownership as an independent predictor of perceived happiness in elderly women. The sample included 1,073 noninstitutionalized white married women, aged 65 to 75, who lived in rural areas. Upon initial analysis of the data, "No significant relationship was found between presence of pets in the household and reported happiness." However, "When separating pet owners who were very attached to their pets from those who were not very attached, a significant relationship emerged between pet ownership characteristics and happiness." This study found that the unhappiest women were those who were not very attached to their pets.

Harris and Gellin (1992) designed a quasi-experimental pilot study in order to investigate if changes occurred over a period of 8 weeks in blood pressure, pulse, and respirations of homebound older persons when a pet was present during weekly pet visits. The design incorporated multiple pre-

test/post-test data measurements as well as features of a multiple time series design. Participants were classified by use of antihypertensive medication. To maintain continuity, home visitors visited the same participants throughout the study period. Week 1 through week 4 was the pre-pet period. Week 5 through week 8 was the pet period. Pre-testing of general well-being was measured in week one. Post-testing of personal adjustment was measured in weeks 4 and 8. Anecdotal and subjective data were recorded at each visit. Major findings indicated that during the first year of the program, both physiological and psychosocial findings were positive and significant as per measurement instruments. In addition, positive subjective and descriptive data indicated that patients reported increased feelings of personal and societal worth, knowing they were participating in a program that was and will be helping others. Volunteers reported great satisfaction with their involvement in the pet visitation program, and they increased their time commitments to weekly visits with homebound elderly. Implications concluded that the health and well-being of elderly homebound individuals could be improved if the human-companion animal interaction produced a favorable psycho-physiological change. Future studies and programs could be derived from this pilot study.

By the turn of the century, it is predicted that those over 80 will total six million persons (Siegel, 1980). The large increase in this age group will

have important ramifications on health care. Demographic changes mean that an increasingly greater share of the health budget, effort, and resources will go to fulfill the needs of the elderly. Not only will there be a proportionately larger number of elderly, but there will be an upward shift in the age of the elderly. The net result is that the costs of health care will be borne by relatively fewer people. This portends badly unless cost-saving strategies are developed (Bustad and Hines, 1983).

In today's highly specialized and complex society modern man comes into contact with more people in one day than our ancestors did in a lifetime. Therefore, it has become necessary to speed up the process of human attachments, which makes it more difficult to develop meaningful relationships. Thus, a relationship that provides trust cannot be underestimated. Pet owners continually expose their shadows to their pets and are consistently accepted as they are. Dogs permit their owners to be themselves so that they can risk self-disclosure and form attachments (Harris, 1981-82). People are becoming less involved with other individuals and are maintaining rather superficial contact with most people they encounter. In an age when anyone who isn't schizophrenic isn't thinking clearly, a pet provides a safe harbor (McCulloch, 1981). Dogs offer love and support without passing judgment. They are man's best friend because a dog wags his tail and not his tongue (Mugford, 1980).

There are suggestions that companion animals may permit the elderly to live independently in their own homes longer and experience better health or reduce their dependence on drugs (Katcher, 1980; Corson and Corson, 1980). In this regard, studies need to be conducted to determine if animal companions can contribute to reducing the costs of health care (Bustad and Hines, 1983).

Corson (1981) would like to see controlled studies involving several comparable institutions in which pets are introduced into fifty percent of the institutions. He also urges long-term, follow-up studies and suggests an intra-individual method with a longitudinal, process-oriented design using each individual as his or her own control. Many studies must yet be conducted to substantiate, in a scientifically credible way, the benefits of pets to the elderly both in and out of institutions (Bustad and Hines, 1982).

***"What is man without beasts? If the beasts were gone, men would die from great loneliness of spirit, for whatever happens to the beast also happens to man. All things are connected. Whatever befalls the Earth befalls the sons of Earth."***

Chief Sealth, Duwamish Tribe, State Of Washington,

Letter to the U.S. President, 1855.

## **SUMMARY OF CHAPTER II**

Growing old can be a lonely experience. Of our nation's 28 million senior citizens, over 8 million live alone. Elderly persons may lack motivation and a sense of usefulness and purpose especially if they have outlived their significant other spouses, relatives or friends (Robb, 1980). Health care providers, such as social workers, nurses, and physicians, may encounter these people in many settings including the home environment, out-patient clinic, doctor's office, hospital or other institution. The institutionalized elderly are especially at risk for problems associated with aloneness. Reasons for this are the isolating effects of sensory deficits, speech and mobility impairments, and altered thought processes (Hoffman, 1992).

Some of the negative effects of institutionalization are being alleviated by the incorporation of animal-assisted therapy (AAT) programs in long-term care facilities such as assisted living and health care communities. An assisted living community or a retirement center is a special combination of housing, personalized supportive services, and health care designed to respond to the individual needs of those who need help with activities of daily living but do not need the skilled medical care provided in a health care or nursing home.

Persons residing in long-term care facilities frequently feel isolated and rejected by society. Due to loss of a sense of purpose and an absence of goal-directed activities in their daily lives, many residents share traits of loneliness, anxiety, depression, hopelessness, boredom, and low self-esteem (McQuillen, 1985).

The relationships between companion animals and the ill and the elderly have been shown to have positive effects on the elderly's physical health, their mental health, and their social interactions with others. Studies have suggested that benefits of AAT include lowered blood pressure levels, increased sense of purpose, companionship, improved self-esteem, and increased social interactions among staff and other residents (Jenkins, 1986; McQuillen, 1985; Winkler, Fairnie, Gericevich, and Long, 1989). In particular, increased social interactions were valuable in improving the social climate of the institution and providing an enriched environment that was more conducive to other forms of therapy (Fick, 1993).

Because the elderly often withdraw from social activities and place more importance on the nonhuman environment, they have great potential for gaining from the companionship that animals have to offer. According to Bustad (1980) animals provide a boundless measure of acceptance, adoration, attention, forgiveness, and unconditional love.

Distraction has been used as an intervention for anxiety and pain for several years. Animals offer humorous and interesting distractions for self-absorbed individuals exhibiting anxiety or hypertension (Barba, 1995). Thus, animals are diversions from anxiety-provoking situations, and they enable people to concentrate on the nonthreatening (Arkow, 1982). It is worth noting that showing affection for animals is not considered demeaning by our society. Such emotion is supposedly an indicator of one's nobility of character. The elderly persons' concepts of themselves as worthwhile persons may be restored, even enhanced, by the assurance that the pets they care for love them in return (Levinson, 1969).

It is estimated that five percent of the population that is over 65 reside in institutions. As the proportion of the older age group increases the number of the elderly institutionalized will probably increase (Brehm, 1980). One of the main criticisms of institutions is that we sometimes are insensitive to and deprive residents of their previous lifestyles. We may fail to recognize that the people coming into our long-term care facilities are the same people who yesterday lived in the community (Rapelje, 1983).

The appearance, activity, and affection of an animal in an institution makes an interesting topic of conversation. Although it is obvious that our society has a long way to go toward gaining total acceptance of pets in institutions, it is obvious from the abundant literature which addresses

animal-assisted therapy that pets, as catalysts for promoting social interaction, have added a new dimension to the quality and enjoyment of life for the elderly in long-term care facilities. AAT programs can benefit institutions as cost-effective adjunctive therapy and as opportunities for positive public relations by involving volunteers (Barba, 1995). As therapists, pets present benefits that staff sometimes lack. They are full-time companions and totally nonthreatening (Lee, 1983).

Perhaps it is because we are uneasy with the recognition that humankind is part of the animal kingdom, and subject to the cycle of life and death, that we conveniently forget the importance of the human and other animal bond. Health care providers in long-term care facilities can put joy into their care of patients and smiles on their residents' faces by utilizing the profound effect that animals have on human behavior (Hoffman, 1991).

Animal-assisted therapy, although not a cure but instead a facilitator which enhances and supports other forms of therapy, enables senior citizens to express their own feelings of love and affection and to be treated to the unique devotion and unabashed love that pets are able to give. AAT is not a panacea for all ills; it is not universally effective, nor is it appropriate for all individuals. When used as a part of a comprehensive nursing plan with clear goals in mind and with appropriate precautions taken AAT provides many obvious and subtle benefits for many people. It is effective in rehabilitation

as well as in primary and secondary care. Physical and psychological effects of AAT on patients, families, and nursing staff are basic to caring, communication, and comfort associated with practicing nurse professionals (Barba, 1995).

The recent growth in the use of companion animals to enhance the lives of people combines several dimensions of American culture with a number of modern trends. Specifically, it weaves together voluntarism and humanitarian sensibilities with humane education and new developments in psychological and recreational therapy. It draws on people long attentive to the values and rights of animals, and enables them to employ their pets in fostering the well-being of others. Pet animals are a potent resource in our own and other societies because they allow people to project their values, their identities, their histories, their dreams, and their fears in a nonthreatening way (Savishinsky, 1983).

Walt Whitman wrote, "I think I could turn and live with animals, they are so placid and self-contained." T. S. Elliot pointed out, animals are "such agreeable friends-they ask no questions, they pass no criticisms" (Schellenberg, 1993).

Our elderly deserve to love and to be loved, and so does our nation's pet population. It's about time we offered each group the chance to help the

other (Wright and Dribben-Gutman, 1981). As McCulloch (1985) said,  
"When we can no longer cure, our efforts to comfort must always prevail."

# **CHAPTER III**

## **METHODOLOGY**

### **INTRODUCTION**

The purpose of this study was to determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare in a pre-test/post-test manner the experimental group's and the control group's attitudes about human and animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

An extensive review of the literature did not reveal a study using the Beck Anxiety Inventory (BAI) or the Beck Depression Inventory (BDI) to determine differences in the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of long-term care facilities (Appendix B). The BAI and the BDI were administered as pre-tests to the original experimental group (N=41) and to the original control group (N=39) of participants residing in assisted living or health care centers. To

accomplish the second purpose of the study, the BAI and the BDI were administered as a pre-test and a post-test to a group (N=9) of residents from the original experimental group, and to a group (N=13) of residents from the original control group. To accomplish the third purpose of the study, Form A, Form B, and Form C of the instrument Attitudes About Human & Animal Bonds were constructed and employed (Appendix C). Form A and Form B were administered as pre-tests to the original experimental group of residents (N=41), and they were administered in a pre-test/Post-test manner to the experimental group of residents which was composed of nine members. Form C was administered as a pre-test to the original control group of residents (N=39), and Form C was administered in a pre-test/Post-test manner to the control group of residents which was composed of thirteen members. To accomplish the fourth purpose of the study, the questionnaire called Staff Attitudes About Animal-Assisted Therapy, was constructed. It was mailed or hand-delivered as a pre-test to staff working at assisted living and health care sites which were receiving AAT (the experimental group, N=63) and to assisted living and health care sites which were not receiving AAT (the control group, N=33) (Appendix D). Five copies were delivered or mailed per facility.

This chapter describes the methods used to investigate the research questions listed in Chapter I. The sections of this chapter are sample

selection, instrumentation, collection of data, statistical analysis, and summary of the chapter.

## **SAMPLE SELECTION**

By using nQuery Advisor Software, a power analysis on the Beck Anxiety Inventory and on the Beck Depression Inventory was performed prior to data collection. The results of the power analysis on the BAI indicated that a sample size of 33 would have 80 percent power to detect a difference in means of 5.50 (e.g. a First condition mean,  $\mu_1$  of 11.50 and a Second condition mean,  $\mu_2$  of 17.00), assuming a standard deviation of differences of 12.36, using a paired t-test with a 0.05 one-sided significance level. Subsequent results of a separate power analysis on the BDI indicated that a sample size of 41 would have 80 percent power to detect a difference in means of 4.00 (e.g., a First condition mean,  $\mu_1$  of 18.70 and a Second condition mean,  $\mu_2$  of 22.70), assuming a standard deviation of differences of 10.00, using a paired t-test with a 0.05 one-tailed t-test significance level. Therefore, a total sample size of 41 members in the experimental group and a total sample size of 33 members in the control group was determined to be acceptable for establishing significant difference levels at the 0.05 level when the power was at 80 percent (Appendix E).

A list of potential sites from which to solicit volunteering residents was prepared after referring to the South Central Bell Telephone Book's Yellow

Pages, and after consulting with employees of the East Tennessee Area Agency on Aging and with employees of the First Area Agency on Aging. A telephone call was made to each assisted living or health care facility which might potentially participate in the study. The Administrator and/or the Activities Director was the initial contact made at each facility. The telephone call was followed by mailing a packet to each facility contact. Each packet contained a letter of informed consent to be signed and dated by the Administrator, a copy of the resident informed consent form, a copy of the resident permission to make pictures and slides form, a copy of the resident information form, and a copy of all instruments which would be administered to any volunteering residents (Appendix F).

The population selected to participate in this study was selected after contacting the Administrators and/or the Activities Directors at thirty-two long-term care facilities which were classified as either assisted living or health care facilities. Administrators at thirteen out of the thirty-two sites contacted gave permission to ask for volunteering residents to participate in the study. Each of the Administrators assigned an Activities Director, an Assistant Activities Director, or a Resident Aide to assist with the study. The assistants were assigned to facilitate introductions, to help with reading and writing, and to report any injury, illness, or death of participants. At three of

the facilities the Activities Directors placed a letter (or letters) of introduction to the study in the residents' mailboxes (Appendix G).

Residents, who thought that they would be interested in volunteering for the study at twelve of the thirteen facilities, met in a group setting for the purpose of being introduced to the nature of the study and for a chance to ask questions about the study and their role as participants. The sample in the study was composed of volunteering residents at a total of twelve long-term care facilities. The Administrator at the thirteenth facility reported that no resident was interested in participating.

Table 1 presents a profile of the experimental group facilities (N=5), and Table 2 presents a profile of the control group facilities (N=7). The facilities were classified as either assisted living (AL) or health care (HC) facilities as a consequence of the level of care needed by the residents. Figure 2 and Figure 3 present pie charts depicting the percent of assisted living facilities and the percent of health care facilities which composed the facilities participating as the experimental group sites or as the control group sites respectively. The total number of participants in this study was 80, N=41 at the combined experimental group sites and N=39 at the combined control group sites.

**Table 1**

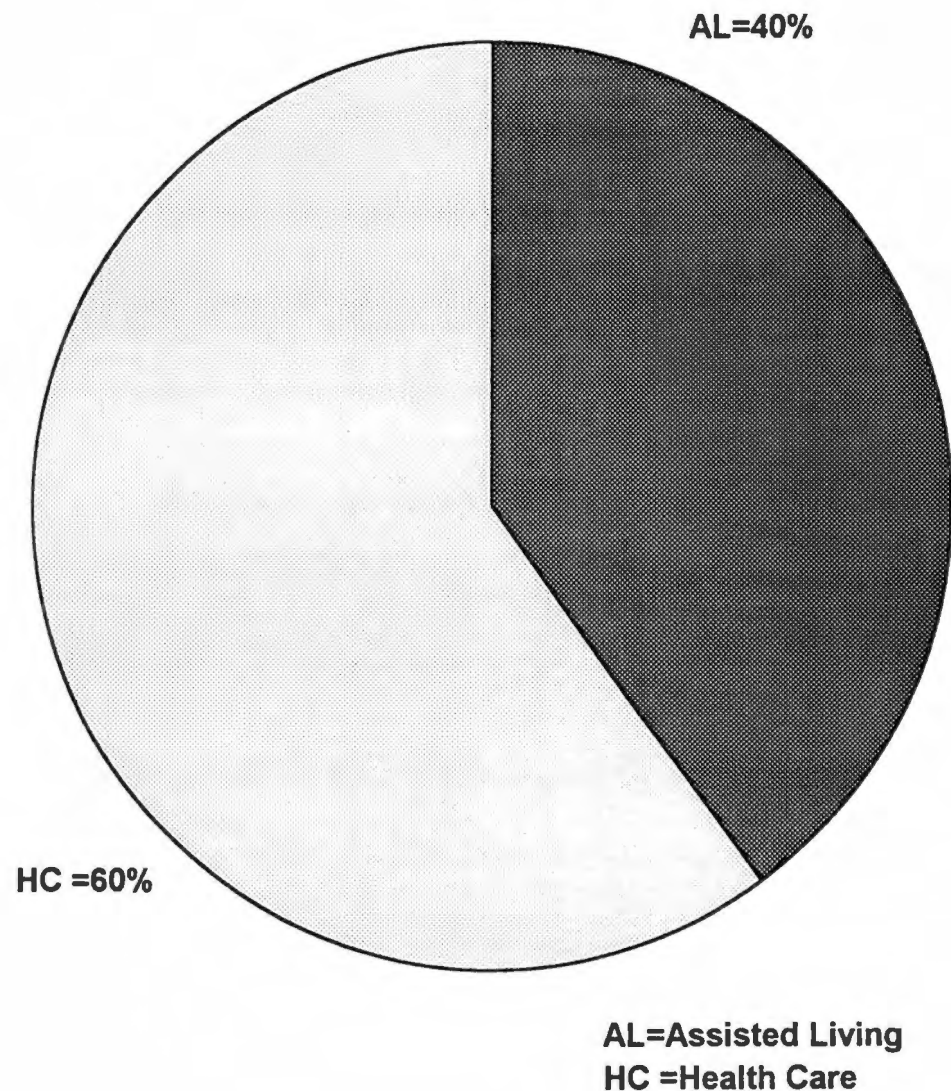
**Profile Of The Experimental Group Facilities, N=5**

| <b>Site</b>                                               | <b>AL/HC</b> | <b># Participants</b> | <b>Percent</b> | <b>City in TN</b> |
|-----------------------------------------------------------|--------------|-----------------------|----------------|-------------------|
| 1E                                                        | AL           | 14                    | 34.15          | Maryville         |
| 2E                                                        | AL           | 11                    | 26.84          | Knoxville         |
| 3E                                                        | HC           | 10                    | 24.39          | Signal Mtn.       |
| 4E                                                        | HC           | 3                     | 7.31           | Knoxville         |
| 5E                                                        | HC           | 3                     | 7.31           | Rockwood          |
| <b>Total</b>                                              |              | 41                    | 100            |                   |
|                                                           |              |                       |                |                   |
| <b>E=Experimental Group (Had Animal-Assisted Therapy)</b> |              |                       |                |                   |
| <b>AL=Assisted Living Facility</b>                        |              |                       |                |                   |
| <b>HC=Health Care Facility</b>                            |              |                       |                |                   |

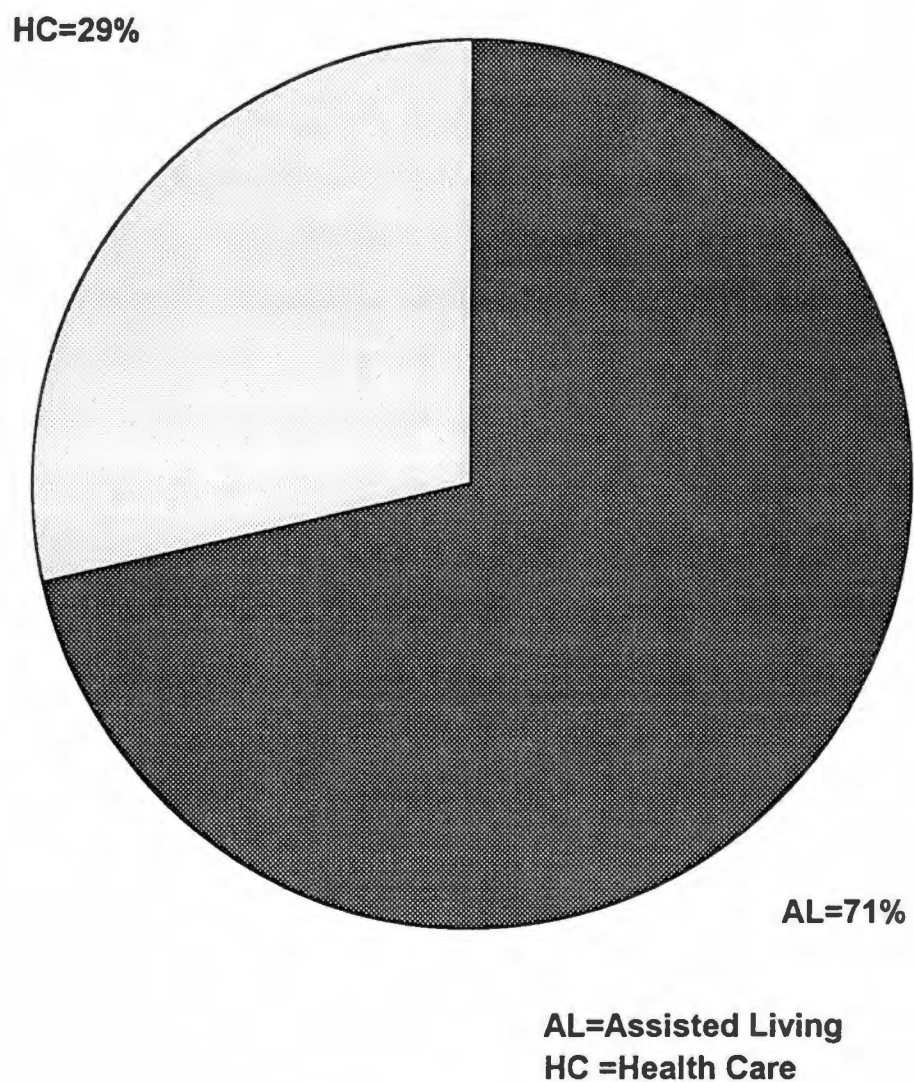
**Table 2**

**Profile Of The Control Group Facilities, N=7**

| Site                                                             | AL/HC | #Participants | Percent | City in TN  |
|------------------------------------------------------------------|-------|---------------|---------|-------------|
| 1C                                                               | AL    | 9             | 23.07   | Chattanooga |
| 2C                                                               | AL    | 7             | 17.95   | Kingsport   |
| 3C                                                               | AL    | 5             | 12.82   | Kingsport   |
| 4C                                                               | AL    | 5             | 12.82   | Loudon      |
| 5C                                                               | HC    | 5             | 12.82   | Norris      |
| 6C                                                               | AL    | 4             | 10.26   | Knoxville   |
| 7C                                                               | HC    | 4             | 10.26   | Knoxville   |
| <b>Total</b>                                                     |       | 39            | 100     |             |
|                                                                  |       |               |         |             |
| <b>C=Control Group (Did Not Receive Animal-Assisted Therapy)</b> |       |               |         |             |
| <b>AL=Assisted Living Facility</b>                               |       |               |         |             |
| <b>HC=Health Care Facility</b>                                   |       |               |         |             |



**Figure 2**  
**Comparison Of Types Of Experimental Group**  
**Facilities (Receiving Animal-Assisted Therapy), N=5**



**Figure 3**  
**Comparison Of Types Of Control Group Facilities**  
**(Not Receiving Animal-Assisted Therapy), N=7**

This study was delimited to residents who were, based on the attending staff's reports, mentally alert and oriented. Thus, the participating residents displayed comprehension of the purpose of the study and of the questionnaires administered. Residents who were not physically mobile, but who displayed mental competence and who wished to participate in this study, were not restricted from participation. Residents who occasionally requested to meet outside of a group setting due to unexpected physical conditions were not restricted from continuing in this study. They were met with on a one-on-one basis as they deemed necessary.

Table 3 displays a profile of the experimental group population (N=41), and Table 4 displays a profile of the control group population (N=39). In order to present the profile of the control group population, demographic data was coded numerically (Table 5 and Table 6).

All participants took part voluntarily in this study. Any participant was able to withdraw without judgment or questioning at any time during the data collection process. No incentives were offered to the participants.

During the course of this study 31.5 percent of the original participants withdrew (N=80). Eight percent out of the 31.5 percent withdrew after introduction to the study and thus, prior to pre-testing. One percent out of the 31.5 percent withdrew during the pre-testing due to the perceived nature of the Beck Depression Inventory.

**Table 3**

**Profile Of The Experimental Group Population Data, N=41**

| Category                                                | Number    | Percent      |
|---------------------------------------------------------|-----------|--------------|
| <b>Gender</b>                                           |           |              |
| Female                                                  | 35        | 85           |
| Male                                                    | 6         | 15           |
| <b>Age</b>                                              |           |              |
| <65                                                     | 1         | 1            |
| 65-74                                                   | 2         | 1            |
| 75-84                                                   | 19        | 49           |
| 85-94                                                   | 18        | 46           |
| 95-99                                                   | 1         | 1            |
| <b>Mean Age</b>                                         | 83.39     |              |
| <b>Race</b>                                             |           |              |
| Caucasian                                               | 40        | 98           |
| Black                                                   | 1         | 1            |
| <b>LORAF</b>                                            |           |              |
| <1 Year                                                 | 6         | 15           |
| 1-5 Years                                               | 18        | 46           |
| 6-10 Years                                              | 13        | 32           |
| 10-15 Years                                             | 4         | 10           |
| <b>Mean LORAF</b>                                       | 3.1       |              |
| <b>Marital Status</b>                                   |           |              |
| S                                                       | 7         | 17           |
| M                                                       | 4         | 10           |
| W                                                       | 29        | 71           |
| D                                                       | 2         | 1            |
| <b>LORAF=Length Of Residence At Facility (In Years)</b> |           |              |
| <b>Marital Status:</b>                                  | S=Single  | W=Widowed    |
|                                                         | M=Married | D=Divorced   |
|                                                         |           | Sp=Separated |

**Table 4**

**Profile Of The Control Group Population Data, N=39**

| Category                                                | Number    | Percent      |
|---------------------------------------------------------|-----------|--------------|
| <b>Gender</b>                                           |           |              |
| Female                                                  | 32        | 82           |
| Male                                                    | 7         | 18           |
| <b>Age</b>                                              |           |              |
| <65                                                     | 6         | 16           |
| 65-74                                                   | 6         | 15           |
| 75-84                                                   | 7         | 18           |
| 85-94                                                   | 20        | 53           |
| <b>Mean Age</b>                                         | 73        |              |
| <b>Race</b>                                             |           |              |
| Caucasian                                               | 36        | 92           |
| Black                                                   | 3         | 1            |
| <b>LORAF</b>                                            |           |              |
| <1 Year                                                 | 15        | 38           |
| 1-5 Years                                               | 20        | 53           |
| 6-10 Years                                              | 3         | 1            |
| 10-15 Years                                             | 1         | 1            |
| <b>Mean LORAF</b>                                       | 2         |              |
| <b>Marital Status</b>                                   |           |              |
| S                                                       | 4         | 11           |
| M                                                       | 3         | 1            |
| W                                                       | 26        | 66           |
| D                                                       | 4         | 11           |
| Sp                                                      | 2         | 1            |
| <b>LORAF=Length Of Residence At Facility (In Years)</b> |           |              |
| <b>Marital Status:</b>                                  | S=Single  | W=Widowed    |
|                                                         | M=Married | D=Divorced   |
|                                                         |           | Sp=Separated |

**Table 5**  
**Numerical Coding Of The Demographic Data From The Experimental Group, N=41**

| Gender     |   | Age     |       |                |       |       | Race                                    |   | LORAF (in years) |     |      |     | Marital Status  |   |    |   |
|------------|---|---------|-------|----------------|-------|-------|-----------------------------------------|---|------------------|-----|------|-----|-----------------|---|----|---|
| F          | M | <65     | 65-74 | 75-84          | 85-94 | 94-99 | C                                       | B | <1               | 1-5 | 5-10 | 10+ | S               | M | W  | D |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     | 1               |   |    |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   | 1                |     |      |     |                 | 2 |    |   |
|            |   |         |       |                | 4     |       |                                         | 0 |                  | 2   |      |     |                 | 2 |    |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   | 1                |     |      |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   | 1       |       |                |       |       | 1                                       |   |                  |     | 3    |     |                 |   |    | 4 |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     |                 | 2 |    |   |
| 1          |   |         |       |                |       | 5     | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     |      | 4   |                 |   | 3  |   |
|            | 0 |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     | 1               |   |    |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   | 1                |     |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     |                 |   |    | 4 |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     | 1               |   |    |   |
|            | 0 |         |       |                | 4     |       | 1                                       |   | 1                |     |      |     |                 |   | 3  |   |
| 1          |   |         |       |                |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         | 2     |                |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     |      | 4   |                 |   | 3  |   |
|            | 0 |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     | 1               |   |    |   |
|            | 0 |         | 2     |                |       |       | 1                                       |   |                  |     | 3    |     | 1               |   |    |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   | 1                |     |      |     | 1               |   |    |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
|            | 0 |         |       |                | 4     |       | 1                                       |   |                  |     |      | 4   |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     |                 |   | 3  |   |
| 1          |   |         |       |                | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   | 1                |     |      |     |                 | 2 |    |   |
|            | 0 |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     |      | 4   |                 |   | 3  |   |
| 1          |   |         |       | 3              |       |       | 1                                       |   |                  |     | 3    |     | 1               |   |    |   |
| 1          |   |         |       | 3              | 4     |       | 1                                       |   |                  | 2   |      |     |                 |   | 3  |   |
| 35         | 6 | 1       | 2     | 20             | 19    | 1     | 40                                      | 0 | 6                | 21  | 13   | 4   | 7               | 4 | 29 | 2 |
| Gender     |   | Age     |       | Race           |       |       | Length of Residence at Facility (LORAF) |   |                  |     |      |     | Marital Status  |   |    |   |
| F=Female=1 |   | <65=1   |       | C=Caucasian =1 |       |       | <1yr.=1                                 |   |                  |     |      |     | S=Single= 1     |   |    |   |
| M=Male=2   |   | 65-74=2 |       | B=Black =2     |       |       | 1-5 yrs=2                               |   |                  |     |      |     | M=Married =2    |   |    |   |
|            |   | 75-84=3 |       |                |       |       | 5-10 yrs=3                              |   |                  |     |      |     | W=Widowed =3    |   |    |   |
|            |   | 85-94=4 |       |                |       |       | 10+=4                                   |   |                  |     |      |     | D=Divorced =4   |   |    |   |
|            |   | 94-99=5 |       |                |       |       |                                         |   |                  |     |      |     | SP=Separated =5 |   |    |   |

Table 6

Numerical Coding Of The Demographic Data From The Control Group, N=39

| Gender     |   | Age     |       |                |       | Race                                    |   | LORAF (In Years) |     |      |                 | Marital Status |   |    |   |    |
|------------|---|---------|-------|----------------|-------|-----------------------------------------|---|------------------|-----|------|-----------------|----------------|---|----|---|----|
| F          | M | <65     | 65-74 | 75-84          | 85-94 | C                                       | B | <1               | 1-5 | 5-10 | 10+             | S              | M | W  | D | SP |
|            | 0 | 1       |       |                |       | 1                                       |   | 1                |     |      |                 | 1              |   |    |   |    |
|            | 0 |         |       |                | 4     | 1                                       |   |                  |     | 3    |                 |                |   | 3  |   |    |
|            | 0 |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   | 1                |     |      |                 |                |   |    | 4 |    |
| 1          |   |         |       |                | 4     | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 3              |       | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 3              |       | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  |     | 3    |                 |                |   | 3  |   |    |
|            | 0 |         |       |                | 4     | 1                                       |   |                  |     | 3    |                 | 1              |   |    |   |    |
| 1          |   | 1       |       |                |       | 1                                       |   |                  | 2   |      |                 |                |   |    | 1 |    |
|            | 0 | 1       |       |                |       | 1                                       |   |                  |     |      | 4               | 1              |   |    |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   | 1                |     |      |                 |                |   |    |   | 5  |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 3              |       | 1                                       |   | 1                |     |      |                 |                | 2 |    |   |    |
|            | 0 |         |       | 3              |       | 1                                       |   | 1                |     |      |                 |                |   |    | 4 |    |
| 1          |   |         |       | 3              |       | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   | 1                |     |      |                 |                |   |    | 4 |    |
|            | 0 | 1       |       |                |       | 1                                       |   |                  | 2   |      |                 |                |   |    |   | 5  |
| 1          |   |         |       |                | 4     | 1                                       |   |                  | 2   |      |                 | 1              |   |    |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 4              |       | 1                                       |   |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 3              |       | 1                                       |   | 1                |     |      |                 |                | 2 |    |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   | 1       |       |                |       |                                         | 2 |                  | 2   |      |                 |                |   | 3  |   |    |
| 1          |   |         | 2     |                |       | 1                                       |   | 1                |     |      |                 |                |   | 3  |   |    |
| 1          |   |         |       | 3              |       |                                         | 2 |                  | 2   |      |                 |                | 2 |    |   |    |
| 1          |   | 1       |       |                |       |                                         | 2 |                  | 2   |      |                 |                |   | 3  |   |    |
| 32         | 7 | 6       | 6     | 7              | 20    | 36                                      | 3 | 15               | 20  | 3    | 1               | 4              | 3 | 26 | 4 | 2  |
| Gender     |   | Age     |       | Race           |       | Length of Residence at Facility (LORAF) |   |                  |     |      | Marital Status  |                |   |    |   |    |
| F=Female=1 |   | <65=1   |       | C=Caucasian =1 |       | <1yr.=1                                 |   |                  |     |      | S=Single= 1     |                |   |    |   |    |
| M=Male=2   |   | 65-74=2 |       | B=Black =2     |       | 1-5 yrs=2                               |   |                  |     |      | M=Married =2    |                |   |    |   |    |
|            |   | 75-84=3 |       |                |       | 5-10 yrs=3                              |   |                  |     |      | W=Widowed =3    |                |   |    |   |    |
|            |   | 85-94=4 |       |                |       | 10+=4                                   |   |                  |     |      | D=Divorced =4   |                |   |    |   |    |
|            |   | 94-99=5 |       |                |       |                                         |   |                  |     |      | SP=Separated =5 |                |   |    |   |    |

The high withdrawal rate was attributed to development of physical and/or psychological illnesses, to hospitalization, to impending death, and to the perceived nature of the BAI and the BDI.

Table 7 lists the years of animal-assisted therapy and the number of times per month that at least one animal visited each respective experimental group site. When calculated, the mean years of AAT at the experimental group sites was equal to 8.4 years. Thus, upon pre-testing, the experimental group sites had been receiving AAT for an average of 8.4 years, while the control group sites had not been receiving AAT. Animal-assisted therapy was defined for the purposes of this study as receiving visits no less than three times per month from at least one animal, either a dog or a cat. Animal-assisted therapy volunteers were members of either a local nonprofit AAT program or members of a regional humane society AAT program. Table 8 presents a profile of the animal-assisted therapy volunteer population, N=13. As previously indicated, an example of the animal-assisted volunteer information sheet for volunteers who visited assisted living facilities or health care centers/nursing homes is contained in Appendix A.

The population which completed the form called Staff Attitudes About Animal-Assisted Therapy was obtained by two separate methods. Five forms were left with the Activities Director at the facilities which participated in the

**Table 7**

**Years Of Animal-Assisted Therapy At Experimental Sites**

| <b>Site</b>                             | <b>Years Of AAT</b> | <b>Times Per Month For AAT</b> |
|-----------------------------------------|---------------------|--------------------------------|
| <b>1E</b>                               | <b>7</b>            | <b>12-15</b>                   |
| <b>2E</b>                               | <b>5</b>            | <b>4-5</b>                     |
| <b>3E</b>                               | <b>11</b>           | <b>4-5</b>                     |
| <b>4E</b>                               | <b>11</b>           | <b>4-5</b>                     |
| <b>5E</b>                               | <b>8</b>            | <b>3</b>                       |
| <b>Mean Years Of AAT Per Site = 8.4</b> |                     |                                |
| <b>E=Experiment Group Site</b>          |                     |                                |

**Table 8**

**Profile Of The Animal-Assisted Therapy Volunteer Population, N=13**

| <b>Category</b>                                              | <b>Number</b> | <b>Percent</b> |
|--------------------------------------------------------------|---------------|----------------|
| <b>Gender</b>                                                |               |                |
| Female                                                       | <b>11</b>     | <b>85</b>      |
| Male                                                         | <b>2</b>      | <b>15</b>      |
| <b>Age</b>                                                   |               |                |
| 20-29                                                        | <b>1</b>      | <b>.08</b>     |
| 30-39                                                        | <b>1</b>      | <b>.08</b>     |
| 40-49                                                        | <b>4</b>      | <b>31</b>      |
| 50-60                                                        | <b>5</b>      | <b>38</b>      |
| <b>Mean Age</b>                                              | <b>48.08</b>  |                |
| <b>Race</b>                                                  |               |                |
| Caucasian                                                    | <b>13</b>     | <b>100</b>     |
| <b>Length Of Service At Facility</b>                         |               |                |
| <1 Year                                                      | <b>2</b>      | <b>15</b>      |
| 1-5 Years                                                    | <b>7</b>      | <b>53</b>      |
| 6-10 Years                                                   | <b>4</b>      | <b>31</b>      |
| <b>Mean LOSAF</b>                                            | <b>3.64</b>   |                |
| <b>Mean Number Of Residents Visited Per Animal Per Month</b> | <b>19.2</b>   |                |
| <b>Percent Owning Animals</b>                                |               | <b>92</b>      |
| <b>LOSAF = Length Of Service At Facility</b>                 |               |                |

previously described data collection processes, or five forms were mailed to Activities Directors at similar assisted living and health care facilities which were not participating in this study. In either case, it was stressed that completion of the form was a voluntary activity which would be greatly appreciated. A self-addressed, stamped envelope was enclosed to facilitate return of the completed forms. Appendix D contains a copy of the form and a copy of the cover letter which accompanied the mailed forms.

All exposure to AAT and all pre-testing and post-testing was completed at each individual assisted living or health care facility. There was no transport of residents to or from either facility. Therefore, each setting, whether for an experimental group or for a control group, remained constant. The use of 12 separate facilities naturally resulted in some inconsistency of environmental settings for group meetings; therefore, this study was not generalizable to group AAT sessions only, nor was it generalizable to studies involving only individual exposures to AAT. The sample was, as a result of the above-mentioned criteria, considered as representative a sample as possible of adult residents of assisted living and health care communities in East Tennessee.

Residents were excluded from this study if they had been previously diagnosed with any stage of dementia which would have prevented them from completing the self-report inventories. The residents were excluded

based on decisions made by the administrators of each respective facility since these administrators were familiar with each patient's psychological history and current psychological status.

The specific population was chosen based on the fact that residents in long-term care communities are at a higher risk for anxiety and depression than are members of the population at large. Health education, a multidisciplinary science, takes the view that empowering the residents institutionalized in long-term care facilities may serve to improve the residents' quality of life. For research purposes the reduction of anxiety and/or depression of adult elderly residents of assisted living and health care communities, if positively related with receiving AAT, may serve as an indicator of improved quality of life for elderly people with social, economic, and/or health losses. While AAT is not yet defined as a primary therapy modality, it is a naturalistic approach to satisfying vital emotional needs of the elderly who benefit from the unqualified and unconditional love and approval which an animal can extend.

This study was designed to result in a high response return rate since requests for completion of the resident informed consent form, for completion of the resident demographics form, as well as for completion of the BAI, the BDI, and the "Attitudes About Human and Animal Bonds" inventories were always conducted on-site at the respective participating assisted living and

health care communities. This protocol was established with the goal of maintaining a high response return rate since it was assumed that residing at the testing site would increase the chances of maintaining a resident's status as a research subject for the duration of the testing.

The response return rate for the Staff Attitudes About Animal-Assisted Therapy surveys was determined separately for experimental sites and for control sites. The response rate at each respective type of facility was determined by adding the number of surveys mailed to the number of surveys left at the facilities, then adding the total number returned, and dividing the total number returned by the total number given out by mail and by hand-delivery. The return rate for this survey from experimental group sites, those assisted living and health care facilities which were receiving AAT, was 73.81percent. The return rate for this survey from control group sites, those assisted living and health care facilities which were not receiving AAT, was 27.83 percent.

The design for this study outlined a protocol for measuring levels of anxiety and depression in experimental groups and in control groups which were not institutionalized at the same sites. This delimitation of the experimental groups and the control groups to different assisted living and health care communities was arrived at after considering the need to have a sufficient sample size for data collection and for subsequent data analysis.

The minimum sample size was arrived at by performing a computer generated power analysis on the BAI and on the BDI (Appendix E). As stated in Chapter I, this presented some limitations on the extrapolation of data obtained since variables such as environmental factors, facility atmosphere, and staff policies and philosophies may have varied somewhat from one to another assisted living or health care community. Consequently, after completion of data analysis, the obtained results and the stated recommendations were not considered to be universally applicable to all assisted living or health care facility residents in all existing assisted living or health care facilities. Thus, generalizing to all anxious and depressed patients receiving AAT at assisted living and health care facilities was not possible. This permits a suggestion for future research studies to be conducted in order to determine if these variables are relevant outside the boundaries of this particular study.

## **INSTRUMENTATION**

This study included an informed consent form for each participating facility's Administrator and an informed consent form for each participant at the respective assisted living or health care/nursing home centers. A permission to make and use pictures and slides form was given to each participant. Two forms to obtain demographic information were prepared, one form for participating residents (Appendix F) and one form for the

volunteers who served as animal-assisted therapy volunteers in assisted living and health care centers (Appendix A). Short forms of each of the self-report instruments, the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI), were used to accomplish the primary purpose of this study, which was to determine if AAT reduced levels of measured anxiety or depression in the resident populations (Appendix B). "Attitudes About Human & Animal Bonds" forms were also included as Form A and Form B, both of which were administered to the experimental group, and Form C, which was administered to the control group (Appendix C). A form entitled Staff Attitudes About Animal Assisted Therapy was constructed to address an additional purpose of this study (Appendix D). These forms and instruments are discussed in this section.

### **Resident Demographic Form**

A resident demographic information form is presented in Appendix F. All participating residents were requested to give brief demographic information in regard to the following information:

Gender

Age

Race

Length of residence at the assisted living or health care center

Marital status

## **AAT Volunteer Demographic Form**

AAT volunteer demographic forms were hand-delivered to the Activities Directors or to the Assistant Activities Directors, who had contact with the human animal-assisted volunteers, at each of the experimental group sites (Appendix A). The forms were also mailed to a list of experienced AAT volunteers, which was provided by the local nonprofit community-based AAT volunteer program. The following information was requested on the form:

Gender

Age

Race

Length of time served as an AAT volunteer

Type of animal which accompanied the volunteer

Age of the animal

Length of time the specific animal had been visiting the facility

Number of residents the animal visited per trip to a facility

If the animal was owned by the volunteer or by someone else

Why the volunteer participated in AAT

### **The Beck Anxiety Inventory (BAI)**

The *Beck Anxiety Inventory* is a twenty-one item scale that measures the severity of anxiety in adults and adolescents. Beck and his associates at

the Center for Cognitive Therapy, University of Pennsylvania School of Medicine, Department of Psychiatry, developed the BAI to assess symptoms of anxiety. This instrument was constructed to measure symptoms of anxiety which are minimally shared with those of depression, such as those symptoms measured by the revised *Beck Depression Inventory*, BDI (Beck and Steer, 1987).

The BAI was developed by drawing items from three earlier self-report instruments that measured various aspects of anxiety. Used for a number of years at the Center for Cognitive Therapy, these instruments are the *Anxiety Check List*, ACL, (Beck, Steer, and Brown, 1985), the *Physician's Desk Reference Check List*, PDR, (Beck, 1978), and the *Situational Anxiety Check List*, SAC, (Beck, 1982). The ACL evaluates the severity of anxiety in depressed patients; the PDR measures the common side effects of antianxiety and antidepressant medications described in the PDR (Medical Economics, 1977); and the SAC appraises the severity of somatic and cognitive symptoms of anxiety in general and in the context of two specific situations - (1) The BAI consists of twenty-one descriptive statements of anxiety symptoms which are rated on a 4-point scale with the following correspondence: "Not at all" (0 points); "mildly; it did not bother me much" (1

point); "moderately; it was very unpleasant, but I could stand it" (2 points); and "severely; I could barely stand it" (3 points). The 21 items are "numbness or tingling," "feeling hot," "wobbliness in legs," "unable to relax," "fear of the worst happening," "dizzy or lightheaded," "heart pounding or racing," "unsteady," "terrified," "nervous," "feelings of choking," "hands trembling," "shaky," "fear of losing control," "difficulty breathing," "fear of dying," "scared," "indigestion or discomfort in abdomen," "faint," "face flushed," and "sweating (not due to heat)" (Beck and Steer, 1993).

The BAI measures the severity of self-reported anxiety. Because the BAI was developed with adult psychiatric outpatients, it should be used cautiously with other clinical populations. A few adolescents were included in the samples assessed by Beck, Epstein, Brown and Steer, 1988, but the reliability and validity of the BAI for adolescents have not been directly tested. The BAI's potential for detecting clinical anxiety in normal adults requires further study since only one British study has provided data about the BAI with normal adults (Dent and Salkovskis, 1986). Therefore, the most appropriate use for the BAI is that with adult psychiatric outpatients over the age of 17 years (Beck and Steer, 1993).

The BAI may be administered and scored by paraprofessionals, but it should be used and interpreted only by professionals with appropriate clinical training and experience according to the guidelines established by

the American Psychological Association's Standards for Educational and Psychological Tests, 1985. Patients with anxiety disorders frequently have co-morbid mood disorders, and some patients with mood disorders, in turn, may report suicidal ideation. Therefore, the clinician reviewing the BAI data must be able to respond with a full range of appropriate therapeutic interventions, to a patient's anxiety disorder, as well as to the patient's depressive or suicidal ideation (Beck and Steer, 1993).

The BAI presents few difficulties in administration. The testing environment in which the BAI is given must provide the patient with sufficient illumination for reading and be quiet enough to afford concentration. Obviously, the test administrator must determine beforehand whether or not a patient can comprehend the item content of the test. When it is self-administered, the BAI requires between five and ten minutes to complete. When it is orally administered, the BAI generally takes ten minutes to complete (Beck and Steer, 1993).

When scoring the BAI, the total score is the sum of the ratings given by the examinee for the twenty-one symptoms. Since each symptom is rated on a 4-point scale ranging from 0 to 3, the maximum score is 63 points. The BAI total score ranges are recommended for interpreting the intensity of self-reported anxiety. Total scores from 0-7 points are considered to reflect a minimal level of anxiety; scores of 8-15 indicate mild anxiety; scores of 16-25

reflect moderate anxiety; and scores of 26-63 indicate severe anxiety. Research addressing the sensitivity and specificity of these score ranges has not yet been conducted. Furthermore, some data suggests that the BAI total scores for women with anxiety disorders may be an average of 4 points higher than those for men with anxiety disorders. Such a gender difference in self-descriptions of anxiety symptoms should be taken into consideration when men's and women's levels of anxiety are compared and especially when the scores are near the upper end of the ranges. BAI scores have also been reported to be inversely related to age since younger patients report more anxiety than do older patients (Beck and Steer, 1993).

In addressing the psychometric characteristics of the BAI, it is important to note that patients in semi-structured interviews based on the Structured Clinical Interview for DSM-III (Spitzer and Williams, 1985) or the DSM-III-R (Spitzer, Williams, and Gibbon, 1987) were diagnosed according to either the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM III; 1980) or Diagnostic and Statistical Manual of Mental Disorders, Third Edition-Revised (DSM-III-R; 1987). Therefore, BAI findings should be applicable to inpatients diagnosed as having DSM-III-R disorders (Beck and Steer, 1993).

Reliability of the BAI was determined by measurements and subsequent reports on internal consistency, item analyses, and test-retest

reliability. Beck et al. (1988) conducted a study using a diagnostically mixed sub-sample of 160 adult psychiatric outpatients who were diagnosed as having predominantly mood and anxiety disorders. Their report indicated that the BAI had high internal consistency reliability (Cronbach coefficient  $\alpha = .92$ ) Fydrich, Dowdall, and Chambless (1990), found a slightly higher level of internal consistency (coefficient  $\alpha = .94$ ) in 40 patients diagnosed as having DSM-III-R anxiety disorders. Beck and Steer (1993), in their Beck Anxiety Inventory Manual, also reported quite high coefficient alphas for the DSM-III-R anxiety disorder groups which they studied (panic disorder with agoraphobia, panic disorder without agoraphobia, social phobia, obsessive-compulsive disorder, or generalized anxiety disorder). The reported range of Cronbach's  $\alpha$  was from .85 to .93 depending on the specific anxiety disorder (Beck and Steer, 1993).

Studies using the same 160 outpatients revealed means, standard deviations, and corrected item-total correlations and reliability for the twenty-one BAI symptoms. The corrected item-total correlations ranged from .30 to .71 (Cronbach's coefficient  $\alpha$ ). The magnitudes of the corrected item-total correlations for the five sub-samples described in the previous paragraph were significant beyond the .05 level, one-tailed test, even after Bonferroni adjustments were applied (Beck and Steer, 1993).

Beck et al. (1988) studied a sub-sample of 83 outpatients who completed the BAI one week after their intake evaluation and before they started cognitive therapy (Beck, Rush, Shaw, and Emery, 1979). The correlation between intake and one-week BAI scores was .75 ( $p < .001$ ) (Beck and Steer, 1993).

Five types of validity have been reported for the BAI: content, concurrent, construct, discriminant, and factorial validity. The BAI's content corresponds to the symptom criteria presented in the DSM-III-R as guidelines for diagnosing patients with anxiety disorders, most notably those symptoms listed for the panic and generalized anxiety disorders. The correlations of the BAI with other self-report and clinical rating scales used to measure the severity of anxiety indicated that the correlation of the BAI with the *Hamilton Anxiety Rating Scale-Revised*, (Hamilton, 1959), as reconstructed by Riskind, Beck, Brown, and Steer (1987), was .51 ( $p < .001$ ). The correlation of the BAI with the anxiety subscale of the *Cognition Check List* (CCL-A; Beck, Brown, Steer, Eidelson, and Riskind, 1987), which measures the frequency of dysfunctional cognitions related to anxiety, was also .51 ( $p < .001$ ) (Beck and Steer, 1993).

Fydrich et al. (1990) reported that the BAI was significantly correlated with the Trait ( $r = .58$ ,  $p < .001$ ) and State ( $r = .47$ ,  $p < .01$ ) subscales of the *State-Trait Anxiety Inventory*, STAI, (Form Y) (Spielberger, 1983) and with

the mean 7-day anxiety rating ( $r = .54, p < .001$ ) of the Weekly Record of Anxiety and Depression, WRAD, (Barlow and Cerny, 1988). The magnitudes of these correlation coefficients demonstrate that the BAI is not only significantly but also substantially related to other accepted measures of both self-reported and clinically rated anxiety (Beck and Steer, 1993).

In reference to construct validity, since other measures of anxiety have repeatedly been reported to be highly related to measures of depression, one would anticipate that the BAI would also be significantly related to measures of depression, even though the BAI was constructed to minimize such relationships (Gotlib and Cane, 1989). When correlations of the BAI with both self-report and clinical ratings of depression were presented construct validity of this instrument was evident. For example, the correlation between the BAI and the *Hamilton Psychiatric Rating Scale for Depression-Revised* (HRSD-R; Hamilton, 1960), as reconstructed by Riskind, Beck, Brown, and Steer (1987), was significant ( $r = .25, p < .05$ ), whereas the correlation between the BAI and BDI (Beck and Steer, 1987) was significantly higher ( $r = .48, p < .001$ ). Additionally, in the Fydrich et al. (1990) study, the BAI was significantly correlated with the BDI ( $r = .50, p < .001$ ) and with the mean 7-day depression rating ( $r = .39, p < .001$ ) for the WRAD. Also, in their 1986 study of a nonclinical sample Dent and Salkovskis reported significant correlations of the BAI with the BDI ( $r = .61,$

$p < .001$ ) and with the *Maudsley Obsessional-Compulsive Inventory* (MOC; Hodgson and Rachman, 1977) ( $r = .41$ ,  $p < .001$ ). Since obsessiveness-compulsiveness is another psychopathological construct related to anxiety, measures of this construct would be expected to correlate highly with the BAI. In contrast, and as would be expected, the BAI was not significantly related to hopelessness as measured by the *Beck Hopelessness Scale* (BHS; Beck and Steer, 1988). The BHS measures negative attitudes about the future, which are consistent with depression but not with anxiety (Beck, 1967, 1976; Beck and Emery, 1985).

Beck et al. (1988) tested the BAI's ability to discriminate different combinations of primary and secondary mental disorders, although the instrument was not designed to discriminate different psychiatric diagnoses. They reported only moderate overlap between the BAI scores of a group with a primary anxiety disorder (and no secondary depression disorder) and another group with a primary depression disorder (and no anxiety disorder). The scores of the anxiety group ( $N=82$ ) ranged from 2-58 (median =24), whereas the scores of the depression group ( $N = 30$ ) ranged from 1-31 (median=13). Approximately twenty-five percent of the anxiety group had scores higher than the highest score in the depression group (Beck and Steer, 1993).

Using a principal-factor analysis with a promax rotation, Beck et al. (1988) found that the BAI yielded two highly correlated ( $r = .56, p < .001$ ) dimensions in their diagnostically mixed sample of 160 outpatients. The first factor contained symptoms such as "numbness," "feeling hot," "shaky," and "sweating," and represented predominantly somatic aspects of anxiety, whereas the second factor consisted of symptoms such as "fear of the worst happening," "terrified," and "fear of losing control," and represented both subjective and panic-related aspects of anxiety. Corrected item-total correlations for BAI symptom subscales (neurophysiological, subjective, panic, and autonomic) derived from cluster analysis appeared promising upon profile analysis, but further research is needed to establish the stability and reliability of clusters for diverse clinical populations (Beck and Steer, 1993).

### **The Beck Depression Inventory (BDI)**

Beck, Rush, Shaw, and Emery (1979) described the revised *Beck Depression Inventory* (BDI) as a twenty-one item instrument designed to assess the severity of trait depression in adolescents and adults. Trait depression is more persistent and is a description of how the patient rates him/herself for the past week, including the test day in contrast to state depression which is a measure of present depression for the day on which the test is administered. Introduced at the Center for Cognitive Therapy

(CCT) of the University of Pennsylvania Medical School in 1971, the revised BDI replaced the original BDI, which was developed by Beck, Ward, Mendelson, Mock, and Erbaugh in 1961. The revised instrument has been distributed by CCT since 1972 (Beck and Steer, 1993).

The BDI has become one of the most widely accepted instruments in clinical psychology and psychiatry for assessing the intensity of depression in psychiatric patients and for detecting possible depression in normal patients (Piotrowski, Sherry, and Keller, 1985; Steer, Beck, and Garrison, 1985). Beck and Steer (1993) revised scoring guidelines for the BDI's diagnostic ranges and associated labels based on Beck's extensive experience with depressed outpatients at CCT in Philadelphia. Now, scores on the BDI of 0-9 are described as "minimal"; scores of 10-16 are referred to as "mild"; scores of 17-29 are classified as "moderate"; and scores of 30-63 are described as "severe".

The original BDI was based upon clinical observations and descriptions of symptoms frequently given by depressed psychiatric patients as contrasted with those infrequently given by non-depressed psychiatric patients (Beck, Ward, Mendelson, Mock, and Erbaugh, 1961). The clinical observations and patient descriptions were systematically consolidated into twenty-one symptoms and attitudes which could be rated on a 4-point scale ranging from 0-3 in terms of severity. The items were chosen to assess only

the severity of depression, and were not selected to reflect any particular theory of depression (Beck and Steer, 1993).

In 1971, Beck and his associates at the CCT began employing a modified version of the BDI which eliminated alternative wording for the same symptoms and avoided double negatives (Steer, Beck, Riskind, and Brown, 1986). The number of responses per item was reduced to three alternatives per symptom, and the actual wording was changed for fifteen items. Six items (irritability, crying, fatigability, weight loss, appetite, and loss of libido) remained the same. Several pilot versions were tested, and the final revision was copyrighted in 1978 (Beck, Rush, Shaw, and Emery, 1979).

Although the revised BDI may be administered and scored by paraprofessionals, it should be used and interpreted only by professionals with appropriate clinical training and experience. Users should be familiar with the guidelines for test usage established by the American Psychological Association's 1985 Standards for Educational and Psychological Tests. Because depression may be associated with suicidal risk in psychiatric patients, it is important that the clinician reviewing the BDI data be able to respond to a patient's depression by having available appropriate psychotherapeutic intervention or referral mechanisms (Beck and Steer, 1993).

The testing environment must provide the examinee with sufficient light for reading and be quiet enough to afford concentration. The test administrator must determine beforehand whether a patient can read and comprehend the BDI's item content which represents a fifth-grade reading level (Teri, 1982). The revised BDI requires approximately 5-10 minutes to complete when self-administered. Oral administration may take 15 minutes, and some extremely obsessive patients take a half hour (Beck and Steer, 1993).

The BDI is scored by summing the ratings given by the examinee for each of the twenty-one items. Each item consists of a group of 4 statements rated from 0-3. The maximum total score is 63. If an examinee has chosen more than one statement in a group, the statement with the highest rating is used to calculate the score. Special attention must be given to the appropriateness of scoring the weight loss item (item 19). If the examinee has indicated that he/she is consciously trying to lose weight, then the rating is not added to the total score. The BDI reflects not only cognitive and affective symptoms, but also somatic and vegetative symptoms. For example, some suicidal patients will not express suicide ideation, but have actually stopped eating and sleeping. Each patient displays his or her own distinctive depressive syndrome which must be addressed individually. For research in which it is important to obtain as representative a group of

depressed persons as possible, the cut-off score should be raised to reduce the number of false positives (Beck and Steer, 1993).

A number of studies have reviewed the psychometric characteristics of the BDI with diverse samples of both psychiatrically diagnosed and normal populations (Beck and Beamesderfer, 1974; Beck Steer, and Garbin, 1988; Boyle, 1985; Edwards, Lambert, Moran, McCully, Smith, and Ellington, 1984; Lips and Ng, 1985; and Steer, Beck, Riskind, and Brown, 1986). This review of psychometric characteristics will restrict itself to data from six normative samples (mixed diagnostic, major depression-single episode, major depression-recurrent episode, dysthymic disorder, alcoholic, or heroin) employed by the CCT to investigate the reliability and validity of the revised BDI. The means, standard deviations, percentages of item endorsement, and corrected item-total correlations of the revised BDI items for each of the six normative samples were calculated. Reliability estimates based on Cronbach's coefficient alpha for the six samples were .86, .80, .86, .79, .90, and .88, respectively (Beck and Steer, 1993). These estimates were consistent with mean coefficient alphas reported by Beck et al. (1988) of .86 for the BDI in a meta-analysis with nine psychiatric samples, and .81 for 15 nonpsychiatric samples. Therefore, the revised BDI has high internal consistency in both clinical and nonclinical populations.

Literature reports of test-retest stability vary. Such reports may not be very useful since patients are expected to show reductions in depression from both the effect of therapeutic intervention and the passage of time. Beck et al. (1988) reported that the range of Pearson product-moment correlations between pre-test and post-test administrations of the BDI indicated less stable scores for the psychiatric patients in their study when compared to nonpsychiatric patients.

In discussing the validity of the BDI, the following five types will be considered: content, discriminant, construct, concurrent, and factorial. The absence of items in the BDI regarding increased appetite, increased sleep, and agitation was intentional. Beck (1967) found that 72 percent of severely depressed patients complained of loss of appetite, and 87 percent reported sleep impairment. Because increased appetite and increased sleep occur so frequently in normal adults, it was decided that inclusion of these symptoms would produce a high rate of false positives (Steer and Beck, 1985). Agitation, a clinically diagnosed symptom, was excluded because it was not considered appropriate for a self-report instrument (Beck and Steer, 1993).

Although the BDI was not designed to discriminate among patients with different psychiatric diagnoses or to differentiate psychiatric patients from normal patients, it has been reported that different sets of the revised twenty-one items of the BDI are able to differentiate among psychiatric,

medical, and normal samples (Cavanaugh, Clark, and Gibbons, 1983). Two subscales can be calculated by adding the ratings for appropriate items. The sum of the first thirteen items creates a cognitive-affective subscale for estimating depression in persons whose vegetative and somatic symptoms might over-estimate the severity of their depressions. The sum of the last eight items creates a subscale which measures somatic-performance complaints. For example, the BDI has been described by Rounsaville, Weissman, Rosenberger, Wilberg, and Kleber (1979) as extremely effective for detecting depression in heroin addicts. Shaw, Steer, Beck, and Schut (1979) observed, however, that some of the symptoms of heroin addiction are also shared (transdiagnostic) with depression. Nevertheless, by comparing heroin addicts' cognitive-affective subscale scores against those reported by psychiatric patients, one can judge the severity of depression in heroin addicts without shared somatic and performance symptoms. Likewise, the cognitive-affective subscale can also be employed with medical patients whose symptoms, such as fatigue, might also be mistaken for those of depression (Beck and Steer, 1993).

When examining construct validity of the revised BDI, Pearson product-moment correlations between the BDI and the construct hopelessness, which is hypothesized to be associated with depression, were calculated. Scores on the Beck Hopelessness Scale (BHS; Beck and Steer,

1988) were positively related to the BDI scores in all of the categories for the six normative sample which were previously defined (Beck, Weissman, Lester, and Trexler, 1974).

When concurrent validity of the BDI was examined, all of the correlation coefficients between the *Hamilton Psychiatric Rating Scale for Depression* (HRSD; Hamilton, 1960) and the BDI were significant beyond the .001 level, two-tailed test, for the same six normative samples. The relationship between the HRSD and the BDI is particularly important because these two instruments are often used together by researchers for evaluating self-reported and clinically observed changes in depression (Beck and Steer, 1993). The revised BDI is less over-reactive to changes in depression than the HRSD (Hedlung and Vieweg, 1979; Edwards, Lambert, Moran, McCully, Smith, And Ellington, 1984; Lambert, Hatch, Kingston, and Edwards, 1986). Thus, the BDI is less likely to overestimate improvements in patients receiving drug therapy or psychotherapy than is the HRSD.

Additional studies using a mixed diagnostic sample of 248 outpatients treated at the CCT indicated that the BDI was significantly related to the SCL-90-R's Depression-Dejection scale (Derogatis, 1977) and to the Minnesota Multiphasic Personality Inventory's (MMPI) Depression Scale beyond the .001 level (Beck and Steer, 1993).

The revised BDI has been factor analyzed with both clinical and nonclinical populations (Beck et al., 1988). The number of factors extracted is dependent upon the characteristics of the clinical and the nonclinical samples being studied. Also, the method of extraction is crucial for defining the factor structure. For example, principal component solutions are likely to yield more components than iterated principal-factor techniques. However, Tanaka and Huba (1984) and Clark, Cavanaugh, and Gibbons (1983) used latent structure analyses and reported that the BDI represented one underlying syndrome of depression which can be decomposed into three highly intercorrelated factors. Although the explicit item composition of the factors shifts from one diagnostic group to another, the three factors reflect cognitive-affective, performance, and somatic complaints (Beck and Steer, 1993).

The BDI correlates highly with the Illness Distress Scale (IDS) which is a brief measure of the physical and emotional distress related to serious illness. Therefore, the BDI is considered a valid measure of the physical and emotional distress related to the disease of cancer (Noyes, Kathol, Develius-Enemare, Williams, Mutgi, Suelzer, and Clamon, 1990).

Beck and Steer (1993) made suggestions for gender and age effects on the BDI when they suggested that researchers should calculate the magnitude of the relationships of their samples' demographic characteristics

with the revised BDI before conducting extensive analyses. If the relationship between a psychosocial characteristic and the revised BDI is greater than .30, they recommended that the researcher weigh whether or not the psychosocial characteristic should be controlled before conducting further analyses with the BDI and other dependent variables.

### **Form A, Form B, And Form C Of Attitudes About Human & Animal Bonds**

Three separate Attitudes About Human & Animal Bonds questionnaires, which were labeled Form A, Form B, and Form C, were constructed and administered in a pre-test/post-test manner in order to determine if there was a positive or negative attitude toward animals among the experimental group participants and among the control group participants in this study. The results were then compared to determine if there was a difference in attitudes toward animals between the experimental (N=41) and the control group (N=39). After exposure of the experimental group to thirty minutes of AAT for two weeks, the pre-test and the post-test scores obtained from the groups which completed this phase of the study (N=9 for the experimental group, and N=13 for the control group) were compared.

Form A was constructed in a Likert format. After computer analysis, descriptive statistics were used to compare individual's pre-test scores on Form A with their post-test scores on Form A. The mean on the group's pre-

test scores was compared with the mean on the group's post-test scores to determine if the group's attitude toward human and animal bonds was positive or negative upon pre-testing, and to determine if the group's attitude had changed by the time of post-testing.

Form B and Form C were essentially the same instruments. They were constructed in a semantic differential format. Paired samples statistics were used to compare the experimental group's pre-test scores on Form B with the control group's pre-test scores on Form C. Post-test scores on Form B were compared with post-test scores on Form C. Thus, the experimental group's (N=13) attitude was compared with the control group's (N=14) attitude to determine if the respective groups' attitudes about human and animal bonds at the time of pre-testing and at the time of post-testing were positive or negative. A computer-generated profile plot of estimated marginal means of measure was prepared. The plot allowed for an examination of any changes in the experimental group's and in the control group's attitudes about human and animal bonds from the time of pre-testing to the time of post-testing.

The construction of all forms of this questionnaire was an amalgam of information gained from reviewing the extant literature on the topic of pet or animal-assisted therapy. Form A was constructed by using nine forced choice summated rating scale items arranged in a Likert format. Each

statement began with, "The animal(s) which visit(s) me...". Each participants was directed to indicate his/her opinion to the remaining nine statements by checking either strongly agree, agree, disagree, or strongly disagree.

Form B and Form C were constructed by arranging fourteen adjective pairs to produce semantic differential attitude scales which were identical in regard to the adjective pairs and their arrangement. The difference in Form B and Form C depended upon their purpose. Since Form B was to be administered to the experimental group it began with the statement, "After the animal visits I feel ...". Since Form C was to be administered to the control group it began with the statement, "Animals make me feel...". A participant was instructed to indicate his/her opinion by checking a blank located near the adjective which best completed his/her opinion. The blank closest to the adjective indicated the strongest feeling and the blank farthest from the adjective indicated the weakest feeling when checked by the participant. Therefore, when three blanks appeared near the word "loved", the blank nearest the word "loved" indicated a strong feeling of love, while the second or the third blank away from the word "loved" indicated progressively weaker, although present, feelings of being "loved" after the animal visited in the case of Form B, or as an indicator of how animals made the participant feel in the case of Form C.

## **Staff Attitudes About Animal-Assisted Therapy**

The questionnaire, Staff Attitudes About Animal-Assisted Therapy, was constructed for obtaining information from staff members at the participating facilities and from staff at additional assisted living and health care communities. The five essential types of information that this survey had to reveal were the following: (1) demographic data pertaining to the staff member's title, his/her length of time in the position in months or years, the type of facility, and his/her race, sex, and age, (2) whether the staff member thought that animal visits helped residents cope with anxiety, depression, and/or loneliness, (3) whether the staff member thought that animal visits provided residents with friendship, relaxation, emotional support, comfort, someone to converse with, companionship, a topic of conversation, love, entertainment, attention, acceptance, a better quality of life, a sense of well-being, and/or touch/sensory stimulation, (4) the rank order of importance (from most to least important) of the top five items that the staff member considered the items which he/she checked in the previous category, and (5) whether the staff member had any concerns about the animal being with the residents in regard to hygiene, safety, and/or having to cope with loss of the animal due to its death or due to the lack of a human source to provide the animal visitations. Five copies of the questionnaire were left at each of the participating facilities and five copies were mailed per facility to a group of

assisted living and health care centers which were chosen at random from a Senior Housing Directory produced by the First Tennessee Area Agency on Aging and from a list of facilities served by the local animal-assisted therapy organization which participated in this study.

Anonymity was felt to be essential for valid results to be obtained and also for the cooperation of the staff who completed the survey. To protect the privacy of the participating staff in terms of identification, no names or other identifiers were solicited.

Data obtained on the form, Staff Attitudes About Animal-Assisted Therapy, were numerically coded. Separate profiles for each employee title and job category were prepared. Profiles of staff demographics at facilities receiving AAT and profiles of staff demographics at facilities not receiving AAT are presented in Appendix D.

## **COLLECTION OF DATA**

### **The Pilot Study**

In January 1997 a pilot study was undertaken at an assisted living facility in Lenoir City, Tennessee. The nature of this pilot study was introduced by making telephone contact with the Administrator. Subsequently, a packet containing a copy of the following forms and instruments was mailed to the Administrator: (1) an Administrator's informed consent form, (2) a resident informed consent form, (3) a resident

information form, (4) a permission to make and use pictures and slides form, (5) a copy of Form C of Attitudes About Human & Animal Bonds, which was appropriate for this population since no animal-assisted therapy was being provided at this site, (6) a sample of the Beck Anxiety Inventory, and (7) a sample of the Beck Depression Inventory (Appendix H)

The Administrator expressed a positive attitude toward the pilot study. She volunteered to inform the Resident Aide of the nature of the proposed pilot study. The Resident Aide was asked to approach the residents who might be interested in the study and to briefly explain the nature of the study.

One week after the packet was mailed, the Administrator was again contacted by telephone in order to determine if she would approve the pilot study, and to determine if residents had volunteered to participate in the pilot study. Since ten residents had volunteered to attend a meeting during which they would learn more about the pilot study and decide if they wanted to participate in the pilot study, a time was decided upon for a meeting of the Administrator, the Resident Aide, and the volunteering residents. Approximately a two-week period lapsed between the initial contact with the Administrator and this meeting.

A group meeting was arranged with all interested residents. After initial introductions, the purpose of the pilot study was explained in more

detail. All interested residents were encouraged to ask any questions regarding the study.

Although a pen for writing was provided for each resident and for the Resident Aide who assisted, it was determined that clipboards would be purchased since residents who participated in the pilot study were not provided with a surface upon which to write. Many used the arm of their seat or a magazine for a supportive surface when completing the forms and inventories. As a result, pens and clipboards were provided for each participating resident in the study, unless the administration at a participating facility made it known that tables would be provided for a supportive writing surface during all data collection procedures. If any residents requested help during completion of the forms or inventories with reading, writing, vocabulary definitions, and/or proper placement of answers, help was offered.

It should be noted that upon examination the data of two participants was found to be incomplete on Form C. The data of two participants was found to be incomplete on the BAI, and the data of two participants was found to be incomplete on the BDI. Two participants chose not to complete the BDI. This was interpreted to mean that clear and concise directions regarding the completion of each and all questions on all forms and inventories would be critically important in the study. This also resulted in a

critical need to review each administered form for its completion while still on site during the study. Participants who neglected to complete one or more questions on any form were asked to complete those unanswered questions in order to assure accurate scores for the purposes of the study. All participants who were approached in this manner comprehended the reasoning behind the requests and completed any unanswered questions. This led to the assumption that the majority of unanswered questions resulted from visual perception difficulties.

### **The Study**

Data was collected from volunteering alert, oriented residents at 12 assisted living and health care centers in East Tennessee. The 12 facilities were located in East Tennessee in the cities of Knoxville, Maryville, Norris, Loudon, Rockwood, Chattanooga, Signal Mountain, and Kingsport.

With three exceptions, the procedure for contacting each facility and scheduling an initial meeting with interested residents was identical to that followed for the purposes of the pilot study. In the case of those three exceptions the Activities Directors requested that a brief letter of introduction to the study be prepared. A copy of this letter would be placed in all alert, oriented residents' mailboxes. An example of this letter and an example of the Activities Director's letter which accompanied it at one of the three facilities may be found in Appendix G. A decision was made by each of the

three Activities Directors to exclude residents based on the Activities Directors' knowledge of the residents' physical and psychological conditions as charted by the facility.

Similar exclusions were made at other participating facilities prior to the initial group meeting. The most exclusions were based on a diagnosis of advanced stages of dementia. The excluded residents were not alert or oriented enough to comprehend the purpose of the study, nor were they able to comprehend or complete the forms and questionnaires.

An introductory meeting of the Administrator, the Activities Director and/or the Assistant Activities Director, and the interested residents was held. The study was explained in greater detail, and any questions posed by the administration or by the residents were answered. During this meeting the following were obtained: the Administrator's signed informed consent form, the signed participating residents' informed consent forms, the signed permission to make and use pictures and slides forms, and the completed resident information forms.

A second meeting was held with 69 out of the total 80 participants at the respective sites where they resided. During this meeting Form A and Form B of Attitudes About Human & Animal Bonds, the Beck Anxiety Inventory, and the Beck Depression Inventory were administered to the experimental group (N=41), which had been receiving animal-assisted

therapy. Form C of Attitudes About Human & Animal Bonds, the BAI, and the BDI were administered to the control group (N=39), which had not been receiving AAT. The scores obtained on all forms were considered to be pre-test scores.

The 11 participants who were unable to attend two meetings, as did the above-mentioned 69 residents, met for only one session during which introductions were made, questions were answered, and all forms and inventories were completed. These 11 participants resided at two separate facilities where previously scheduled events did not allow time for two separate meetings. Due to a thorough introduction of the study to the interested participants by the Activities Directors at these two facilities, all data collection procedures were executed smoothly.

Fourteen members of the original experimental group (N=41) and fourteen members of the original control group (N=39) volunteered to continue the study in a time series design manner which would involve repeated completions of the BAI and the BDI . This also allowed for comparisons of pre-test/post-test scores on Form A and Form B, in the case of the group composed of 14 experimental group members, and for comparisons of pre-test and post-test scores on Form C, in the case of the group composed of 14 control group members. Additionally, the 14 members of the experimental group agreed to meet in a group setting with an AAT

volunteer and her dog for thirty minutes per week for two weeks. Previous visits with this dog had been conducted on an individual basis with the residents and had lasted for several minutes, depending upon the residents' interest, the volunteer's time, and requests to meet with individual residents in their rooms. Although the 14 members of the control group were informed that they would not be receiving visitations from any animals during the course of the time series design, they were informed that the members of the experimental group would be receiving AAT for thirty minutes for two weeks.

Members of the experimental group (N=14) received a pre-test composed of Form A, Form B, the BAI, and the BDI. After six weeks, during which the AAT volunteer's dog spent thirty minutes per week for at least two weeks out of the six weeks with the 14 participants, the BAI and the BDI were administered as post-test<sub>1</sub>. Twenty-four hours later, the experimental group participants completed the BAI and the BDI as post-test<sub>2</sub>. After two more weeks passed the BAI and the BDI were administered to the participants as post-test<sub>3</sub>. Form A and Form B were also administered as post-tests at the time of post-test<sub>3</sub>.

The control group of 14 participants followed the same protocol, with the exception that post-test<sub>1</sub> was administered two to two and one-half weeks after the pre-test, and post-test<sub>3</sub> was administered two to four weeks after post-test<sub>2</sub>. These exceptions were a reflection of the need to travel to three

separate locations to collect data from the control group members. No animal-assisted therapy was offered, and no activity was offered as a substitute for the AAT.

All members of the experimental group resided at the same assisted living facility, which facilitated data collection. An outlined schedule of the time series design was given to each of the 14 participants and a copy was maintained by the Activities Director at the assisted living facility.

As previously mentioned, the 14 members which composed the control group resided at three separate assisted living facilities in three separate cities in East Tennessee. In order to collect data from those control group participants, it was necessary to travel to each facility on separate days. An outlined schedule of the time series design was maintained by the Activities Director at each of the three separate facilities. A copy of the schedule was made available upon a resident's request. The control group was composed of nine participants from one assisted living facility in Chattanooga, one participant from one assisted living facility in Loudon, and four participants from one assisted living facility in Knoxville.

## **STATISTICAL ANALYSIS**

All answer sheets of Form A, Form B, Form C, the BAI, and the BDI were hand scored to arrive at total scores for each individual pre-test and post-test. All data were then transferred to code sheets and saved on 3.5

inch floppy diskettes. The diskettes were employed during analysis by SPSS (Statistical Package for the Social Sciences) which was utilized by The University of Tennessee Knoxville's Statistical Consulting Center. For all data analysis and comparisons' analyses a Normal Quantile Plot, or Normal Q-Q Plot, was used to examine residuals for normality. The item analyses for all forms and inventories produced means, standard deviations, and corrected item-total correlations. All t-test analyses were computed using  $\alpha = .05$ .

Total scores on Form A, which was completed by the experimental group (N = 41), were compared by using descriptive statistics in order to describe the attitude of this group, based on the mean score calculated, toward human and animal bonds as either positive or negative. The maximum total score possible on Form A was a positive 18 or a negative 18.

When comparing scores on Form B, which was completed by the experimental group (N=41), with scores on Form C, which was completed by the control group (N=39), and when comparing the BAI scores obtained from the experimental group (N=41) with the BAI scores obtained from the control group (N=39), as well as when comparing the BDI scores obtained from the experimental group (N=41) with the BDI scores obtained from the control group (N=39) the Wilcoxon Rank Sum Test, a nonparametric test for two independent samples, which did not involve the normality assumption, was

used. The asymptotic significance for a two-tailed test on ranks was computer generated in each case. Each score obtained was divided by two in order to determine the level of significance when comparing the aforementioned forms and inventories.

In the case of the experimental group (N =13), pre-test and post-test scores were compared on Form A. The group's mean score at the time of pre-testing and the group's mean score at the time of post-testing reflected a positive or a negative attitude.

Pre-test and post-test scores obtained on Form B from the experimental group (N=13) were compared with pre-test and post-test scores obtained on Form C from the control group (N =14). The total possible score obtainable on Form B and on Form C was positive 42 or negative 42. Thus, based on the individuals' total scores, a group's attitude toward human and animal bonds was described as either positive or negative. A narrative report integrated and summarized the findings of attitude comparisons at pre-testing and at post-testing.

Pre-test, post-test<sub>1</sub>, post-test<sub>2</sub>, and post-test<sub>3</sub> scores on the BAI and the BDI obtained from the experimental group (N=9), which had been exposed to thirty minutes of AAT, were compared with pre-test, post-test<sub>1</sub>, post-test<sub>2</sub>, and post-test<sub>3</sub> scores obtained from the control group (N=13), which had received no AAT. Normal Q-Q plot analyses revealed that

residuals, which were examined for normality, were normally distributed. Therefore, SPSS was used to generate a repeated measures variance of analysis, one within-subject factor equaling time and one between-subject factor equaling group. This ANOVA was used to test the effect of the treatment, animal-assisted therapy. The significance of the differences between the means of the two different populations, the experimental group, which was receiving the AAT as the specified treatment, and the control group, which was not receiving AAT, was determined.

Information pertaining to Staff Attitudes About Animal-Assisted Therapy and demographic information pertaining to either resident demographics or to AAT volunteer demographics were analyzed separately by transferring the data in numerical code form to spreadsheets. Tables, prepared from the coded data, listed means and categorized numbers and corresponding percents and responses of participant information.

### **SUMMARY OF CHAPTER III**

In this chapter the methodology for conducting this study was outlined. The sections of this chapter included an introduction to the study, sample selection, instrumentation (the resident demographic information form, the AAT volunteer demographic information form, the BAI, the BDI, Forms A, B, and C of the constructed form called Attitudes About Human & Animal Bonds, and the constructed form, Staff Attitudes About Animal-

Assisted Therapy), collection of data (the pilot study and the study), and statistical analysis.

The sample was identified and methods for obtaining the experimental group and the control group were described. The data in this research study were collected from mentally alert, oriented residents of assisted living and health care/nursing home communities in East Tennessee during Spring 1997. All participants agreed to participate in this study voluntarily.

Different statistical analyses used to investigate the data collected from all forms and instruments used in this research were reviewed. Tables and figures were presented where appropriate.

Administration of instruments was discussed and the ordering of instrument administration was given. Form A and Form B, in the case of the experimental group, and Form C, in the case of the control group, were administered first during the pre-testing and the post-testing. The BAI was administered next, and the BDI was the last instrument to be administered in all cases. Short forms of the BAI and the BDI were chosen after reviewing their validity, reliability, and usability, and as a means of providing consideration for the potential of exhaustion in the elderly adult population.

## **CHAPTER IV**

### **ANALYSIS AND INTERPRETATION OF THE DATA**

#### **INTRODUCTION**

The primary purpose of this study was to determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare the experimental groups' and the control groups' attitudes about human and animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

The information provided in this chapter is an analysis of the data collected during the course of this investigation. This chapter presents findings based on the analyses of the data. Thus, this chapter contains the following sections: (1) data analyses, including a description of the samples, the results of data analyses which address the research questions presented in Chapter I, and a discussion of the results which clarifies support or non-support for each of the research questions, and (2) a

summary, or review of the sample, the demographic data, and the findings, as indicated after statistical analyses were completed.

## **DATA ANALYSES**

### **Pilot Test Population Demographic Information And Instrumentation Analyses**

Each resident information sheet that was returned was examined to determine the number of pilot test participants who completed each item. Each sheet was numerically coded in order to maintain absolute confidentiality. The response sheets were optically scanned and data were entered into computer by hand. The number of participants was determined (N=10). A computer generated list displayed the number of female and the number of male participants, the age of each participant, the race of each participant, the length of residence at the pilot site, an assisted living facility, and the marital status of each participant. Percentage computations were made by gender, age, race, length of residence at the facility (LORAF), and marital status. Mean computations were made by age and LORAF. Appendix H presents a sample of the resident information sheet used during the pilot study. Table 9 provides a profile of the pilot study population (N=10).

Since this pilot site fell into the category of the control group, meaning that the residents did not receive any form of AAT, Form C of Attitudes About Human & Animal Bonds was administered to each volunteering participant.

**Table 9**  
**Profile Of The Pilot Study Population**

| Participant                                                       | Gender | Age     | Race | LORAF In Mos. | Marital Status |
|-------------------------------------------------------------------|--------|---------|------|---------------|----------------|
| 1                                                                 | F      | 84      | C    | 5             | W              |
| 2                                                                 | F      | 80      | C    | 9             | W              |
| 3                                                                 | F      | 89      | C    | 3             | W              |
| 4                                                                 | F      | 80      | C    | 14            | W              |
| 5                                                                 | F      | 86      | C    | 8             | W              |
| 6                                                                 | F      | 86      | C    | 2             | W              |
| 7                                                                 | F      | 79      | C    | 14            | W              |
| 8                                                                 | F      | 70      | C    | 2             | S              |
| 9                                                                 | F      | 70      | C    | Omitted       | W              |
| 10                                                                | F      | Omitted | C    | Omitted       | W              |
| <b>Females = 100 Percent</b>                                      |        |         |      |               |                |
| <b>Mean Age = 80.44 years</b>                                     |        |         |      |               |                |
| <b>Caucasian=100 Percent</b>                                      |        |         |      |               |                |
| <b>Mean LORAF (Length Of Residence At Facility) = 7.12 Months</b> |        |         |      |               |                |
| <b>Widows=90 Percent</b>                                          |        |         |      |               |                |
| <b>Single=10 Percent</b>                                          |        |         |      |               |                |

Subsequently, the Beck Anxiety Inventory (BAI) and the Beck Depression Inventory (BDI) were then administered in that order to each participant. As in the case of the resident information sheets, each BAI and BDI was then numerically coded by hand in order to maintain absolute confidentiality. Each Form C, each BAI, and each BDI were then scored by hand to arrive at a total score for each individual form which was completed.

The maximum possible score that could be obtained on Form C was either a positive 42 or a negative 42. Thus, a person who scored a negative value had a negative attitude toward animal-assisted therapy, while a person who scored a positive value had a positive attitude toward AAT. The more negative the individual score, as it approached negative 42, the more negative the attitude, and the more positive the individual score, as it approached positive 42, the more positive the attitude toward AAT. A score of zero on Form C would have indicated an ambiguous attitude toward AAT.

The BAI total score, in the case of each individual form completed, was the sum of the ratings given by the examinee for the 21 symptoms. Each symptom of anxiety was rated on a 4-point scale ranging from 0 to 3. The maximum score was 63 points. Total scores on the BAI from 0-7 points were considered to reflect a minimal level of anxiety; total scores of 8-15 indicated mild anxiety; total scores of 16-25 reflected moderate anxiety; and total scores of 26-63 indicated severe anxiety.

The BDI was scored by summing the ratings given by the examinee for each of the 21 items. Each item consisted of a group of four statements rated from 0-3. Thus, the maximum total score on the BDI was also 63. If an examinee had chosen more than one statement within a group, then the statement with the highest rating was used to calculate the score. Special attention had to be given to item 19 on the BDI. If the respondent indicated that he/she was consciously trying to lose weight, then the rating was not added to the total score. The following cut-off scores were observed. Total scores from 0-9 were considered within the minimal range of depression; total scores of 10-16 indicated mild depression; total scores of 17-29 indicated moderate depression; and total scores of 30-63 indicated severe depression.

In the case of all instruments administered the following methods of administration were employed. (1) Self-administration: The examinee was given each questionnaire at a separate time, and the instructions which appeared at the top of each specific questionnaire were read aloud to the group of participants. All examinees were given sufficient time to complete one questionnaire before a subsequent questionnaire was passed out to the group. Those participants who were able to complete the questionnaires themselves did so by indicating their chosen answers to the questions by either checking or circling the answer, as indicated per each form. (2) Oral

administration: In cases where decreased visual acuity or decreased motor coordination prevented a participant from seeing or writing, and thus from completing a form on his/her own, the instructions were read aloud to the participant. In cases where visual acuity permitted some perception of the written word, the forms were shown to the participants and each individual was assisted with writing to the degree necessary. In cases where participants expressed that they were blind, the forms were read aloud and the respondent's answers were written or marked as chosen by the respondent.

In the case of Form C the participant was instructed to select one member of an adjective pair which best described how animals made him/her feel. The participant was asked to choose and check a blank which was closest to the attitude that he/she had pertaining to that specific pair of adjectives. During oral administration of the BAI the respondent was instructed to pick-out one descriptor which described how he/she had been feeling during the past week, including that day, for each of the 21 statements. Those descriptors were "not at all, mildly, moderately, or severely". In the case of the BDI the participant was instructed to pick out the one statement from each group of four statements per item which best described the way he/she had been feeling during the past week, including that day. If participants wished, they were allowed to select two answers per

item on the BDI. Table 10 presents the results of analysis of data completed during the pilot study.

The following information was obtained after analysis of the resident information forms. One resident neglected to list her age and two residents neglected to list their length of residence at the facility. Two residents withdrew from the pilot study during the completion phase of the BAI. Thus, they did not complete the BAI, nor did they complete the BDI. One hundred percent of the participants in the pilot study were Caucasian females. The mean age of the responding participants was 80.44 years, and the mean LORAF of the responding participants was 7.12 months. Ninety percent were widowed, which left one single respondent. An inference drawn from the discovery of incomplete or missing data was that it would be critically important during the study to scan all forms for incomplete and/or missing information, and, as a consequence, to ask those residents who omitted the information to complete the form(s).

Results of analysis of data completed during the pilot study indicated that 25 percent of those who completed the BAI reported minimal anxiety and 75 percent reported mild anxiety. Fifty percent of those who completed the BDI reported minimal depression and 50 percent reported mild depression. No one was purposely trying to lose weight by eating less. Total

**Table 10**

**Results Of Analysis Of Data Completed During The Pilot Study, N=10**

| <b>Participant</b> | <b>Score On The BAI</b> | <b>Score On The BDI</b> | <b>Score On Form C</b> |
|--------------------|-------------------------|-------------------------|------------------------|
| 1                  | 8 = Mild Anxiety        | 8 = Minimal Depression  | 14                     |
| 2                  | 8 = Mild Anxiety        | 4 = Minimal Depression  | 42                     |
| 3                  | 8 = Mild Anxiety        | 14 = Mild Depression    | 42                     |
| 4                  | 7 = Minimal Anxiety     | 16 = Mild Depression    | 39                     |
| 5                  | 3 = Minimal Anxiety     | Omitted                 | 42                     |
| 6                  | 9 = Mild Anxiety        | Omitted                 | 39                     |
| 7                  | 9 = Mild Anxiety        | Omitted                 | 34                     |
| 8                  | 8 = Mild Anxiety        | 13 = Mild Depression    | -15                    |
| 9                  | Omitted                 | 5 = Minimal Depression  | Omitted                |
| 10                 | Omitted                 | Omitted                 | Omitted                |

scores, which were obtained from all participants who completed Form C, indicated a mean score of + 30 on Form C. The maximum score on Form C was a positive 42 or a negative 42, therefore, a score of positive 30 on Form C of Attitudes About Human & Animal Bonds indicated a positive attitude toward animals, although the participants resided at a facility which did not receive AAT.

**Analysis Of Pre-test Scores: The Beck Anxiety Inventory And The Beck Depression Inventory - Scores Obtained From The Original Groups**

Table 11 lists the pre-test scores on the Beck Anxiety Inventory (BAI) and the pre-test scores on the Beck Depression Inventory (BDI) obtained

**Table 11**

**Pre-test Scores From The Original Experimental Group, N=41**

| Gender                                                     | Form A | Form B | BAI | BDI |
|------------------------------------------------------------|--------|--------|-----|-----|
| F                                                          | +12    | +29    | 1   | 1   |
| F                                                          | +5     | +37    | 5   | 13  |
| F                                                          | +16    | +23    | 16  | 13  |
| F                                                          | +11    | +11    | 5   | 19  |
| F                                                          | +9     | +3     | 28  | 8   |
| F                                                          | +8     | +20    | 10  | 9   |
| M                                                          | +12    | +23    | 9   | 6   |
| F                                                          | +18    | +42    | 12  | 8   |
| F                                                          | +18    | +32    | 5   | 4   |
| F                                                          | +15    | +15    | 0   | 9   |
| F                                                          | +9     | +36    | 0   | 0   |
| F                                                          | +18    | +38    | 3   | 13  |
| F                                                          | +11    | +33    | 19  | 5   |
| F                                                          | +14    | +23    | 7   | 18  |
| F                                                          | +18    | +42    | 0   | 0   |
| F                                                          | +13    | +24    | 1   | 4   |
| F                                                          | +18    | +26    | 2   | 19  |
| F                                                          | +13    | +24    | 17  | 6   |
| F                                                          | +17    | +36    | 10  | 4   |
| F                                                          | +18    | +27    | 2   | 6   |
| M                                                          | +18    | +39    | 7   | 10  |
| F                                                          | +14    | +42    | 2   | 0   |
| F                                                          | +11    | +32    | 0   | 4   |
| F                                                          | +15    | +27    | 3   | 10  |
| M                                                          | +11    | +34    | 3   | 5   |
| F                                                          | +10    | +32    | 5   | 6   |
| M                                                          | +13    | +40    | 0   | 0   |
| F                                                          | +11    | +40    | 41  | 8   |
| F                                                          | +13    | +34    | 13  | 9   |
| M                                                          | +13    | +19    | 18  | 9   |
| M                                                          | +11    | +21    | 17  | 8   |
| F                                                          | +10    | +14    | 16  | 12  |
| F                                                          | +1     | +34    | 18  | 6   |
| F                                                          | +9     | +24    | 9   | 17  |
| F                                                          | +15    | +3     | 2   | 9   |
| F                                                          | +14    | +37    | 4   | 7   |
| F                                                          | -3     | +22    | 20  | 13  |
| F                                                          | +9     | +31    | 3   | 2   |
| F                                                          | +18    | +42    | 2   | 7   |
| F                                                          | +3     | +36    | 11  | 10  |
| F                                                          | -1     | +13    | 10  | 2   |
| Maximum Possible Score                                     |        |        |     |     |
| Form A (Attitudes About Human And Animal Bonds) = - Or +42 |        |        |     |     |
| Form B (Attitudes About Human And Animal Bonds) = - Or +42 |        |        |     |     |
| Beck Anxiety Inventory (BAI) = 63                          |        |        |     |     |
| Beck Depression Inventory (BDI) = 63                       |        |        |     |     |

from the experimental group, which had received AAT for an average of 8.4 years per facility, and Table 12 lists the pre-test scores on the BAI and on the BDI obtained from the control group, which had received no AAT. The Wilcoxon Rank Sum Test, an excellent alternative to the t-test, was used to compare the scores obtained on the BAI from the experimental group (N=41) with the scores obtained on the BAI from the control group (N=39). Subsequently, the Wilcoxon Rank Sum Test was used to compare the scores obtained on the BDI from the experimental group (N=41) with the scores obtained on the BDI from the control group (N=39).

As shown on Table 13, the two-tailed significance level calculated in the case of the experimental and the control groups' comparisons on the BAI was .135. When .135 was divided by 2, the one-tailed significance level was equal to .067, which indicated that there was no significant difference in the reported levels of anxiety being experienced by the experimental group and the control group at the time of pre-testing. As indicated on Table 13, the two-tailed significance level calculated in the case of the experimental and the control groups' comparisons on the BDI was equal to .099. When .099 was divided by 2, the one-tailed significance level was found to be equal to .0495. The calculated value of .0495 did indicate a significant difference in the level of depression reported by the 41 members of the experimental

**Table 12**

**Pre-test Scores From The Original Control Group, N=39**

| <b>Gender</b>                                                    | <b>Form C</b> | <b>BAI</b> | <b>BDI</b> |
|------------------------------------------------------------------|---------------|------------|------------|
| F                                                                | +17           | 7          | 20         |
| F                                                                | +23           | 29         | 10         |
| F                                                                | +8            | 21         | 22         |
| F                                                                | +30           | 10         | 9          |
| F                                                                | +36           | 3          | 8          |
| F                                                                | +30           | 4          | 11         |
| M                                                                | +37           | 5          | 1          |
| M                                                                | +38           | 10         | 2          |
| F                                                                | +7            | 11         | 7          |
| F                                                                | +31           | 8          | 14         |
| F                                                                | +1            | 21         | 7          |
| F                                                                | +35           | 23         | 16         |
| F                                                                | +40           | 0          | 6          |
| M                                                                | +42           | 8          | 3          |
| F                                                                | +22           | 29         | 15         |
| F                                                                | +42           | 3          | 8          |
| F                                                                | +42           | 3          | 2          |
| F                                                                | +32           | 21         | 21         |
| F                                                                | +24           | 3          | 8          |
| F                                                                | 0             | 21         | 26         |
| M                                                                | -2            | 14         | 31         |
| M                                                                | -28           | 10         | 26         |
| F                                                                | +17           | 6          | 0          |
| F                                                                | +20           | 4          | 6          |
| M                                                                | +42           | 13         | 0          |
| F                                                                | +18           | 18         | 19         |
| F                                                                | +28           | 0          | 6          |
| F                                                                | +39           | 12         | 7          |
| M                                                                | +42           | 0          | 2          |
| F                                                                | +12           | 11         | 1          |
| F                                                                | +38           | 0          | 1          |
| F                                                                | +33           | 22         | 14         |
| F                                                                | +41           | 15         | 7          |
| F                                                                | +32           | 8          | 9          |
| F                                                                | +29           | 16         | 15         |
| <b>Gender</b>                                                    |               |            |            |
| F=Female                                                         | F=1           |            |            |
| M=Male                                                           | M=0           |            |            |
| <b>Maximum Possible Score:</b>                                   |               |            |            |
| <b>Form C(Attitudes About Human And Animal Bonds) = - Or +42</b> |               |            |            |
| <b>Beck Anxiety Inventory (BAI) = 63</b>                         |               |            |            |
| <b>Beck Depression Inventory (BDI) = 63</b>                      |               |            |            |

**Table 13**

**Wilcoxon Rank Sum Test: Comparisons Of (1) Pre-test Scores On Form B With Pre-test Scores On Form C And (2) Pre-test Scores Between-Groups On The Beck Anxiety Inventory And On The Beck Depression Inventory**

| Experimental Group<br>Form B, N=41<br>BAI = 41<br>BDI = 41  |  |                         | Control Group<br>Form C, N=39<br>BAI = 39<br>BDI = 39 |          |          |
|-------------------------------------------------------------|--|-------------------------|-------------------------------------------------------|----------|----------|
|                                                             |  |                         | FORMB                                                 | BAI      | BDI      |
| Mann-Whitney U                                              |  |                         | 772.500                                               | 644.500  | 628.500  |
| Wilcoxon W                                                  |  |                         | 1552.500                                              | 1505.500 | 1489.500 |
| Z                                                           |  |                         | -.260                                                 | -1.495   | -1.650   |
| Asymp. Sig. (2-tailed)                                      |  |                         | .795                                                  | .135     | .099     |
| Monte Carlo Sig. (2-tailed)                                 |  | Sig.                    | .800                                                  | .141     | .096     |
|                                                             |  | 99% Confidence Interval |                                                       |          |          |
|                                                             |  | Lower Bound             | .789                                                  | .132     | .088     |
|                                                             |  | Upper Bound             | .810                                                  | .150     | .103     |
| Monte Carlo Sig. (1-tailed)                                 |  | Sig.                    | .397                                                  | .073     | .049     |
|                                                             |  | 99% Confidence Interval |                                                       |          |          |
|                                                             |  | Lower Bound             | .384                                                  | .066     | .043     |
|                                                             |  | Upper Bound             | .410                                                  | .080     | .055     |
| a Based on 10000 sampled tables with starting seed 2000000. |  |                         |                                                       |          |          |
| b Grouping Variable: GROUP                                  |  |                         |                                                       |          |          |

group, which had been receiving AAT, when compared with the level of depression reported by the 39 members of the control group, which had not been receiving AAT during the previous 8.4 years.

The mean time that AAT had been extended to the total of five sites, which were classified as either assisted living or health care centers, which composed the experimental group was equal to 8.4 years. As indicated by the sum of ranks on Table 14, the group which had been receiving AAT, which was identified as group 1.00, had a significantly lower level of

**Table 14**

**Sum Of Ranks: Mann-Whitney Test (Wilcoxon Rank Sum Test) - For Comparing Pre-test Scores Between-Groups On The Beck Anxiety Inventory And On The Beck Depression Inventory - Original Experimental Group, N=41 And Original Control Group, N=39**

|       | Group | N  | Mean Rank | Sum of Ranks |
|-------|-------|----|-----------|--------------|
| FORMB | .00   | 39 | 39.81     | 1552.50      |
|       | 1.00  | 41 | 41.16     | 1687.50      |
|       | Total | 80 |           |              |
| BAI   | .00   | 39 | 44.47     | 1734.50      |
|       | 1.00  | 41 | 36.72     | 1505.50      |
|       | Total | 80 |           |              |
| BDI   | .00   | 39 | 44.88     | 1750.50      |
|       | 1.00  | 41 | 36.33     | 1489.50      |
|       | Total | 80 |           |              |

**Analysis Of Variance On Pre-test Scores Compared With Post-test<sub>1</sub>, Post-test<sub>2</sub>, And Post-test<sub>3</sub> Scores Obtained On The Beck Anxiety Inventory From The Experimental Group (N=9) And From The Control Group (N=13)**

Nine out of fourteen residents in the experimental group, who participated in the initial pre-testing and who volunteered to complete this phase of the study, actually completed this phase of the study.

Table 15 presents the pre-test and the series of post-test scores on the Beck Anxiety Inventory from those nine individuals. The initial pre-test scores for one individual who became ill, the last observation, the score of 22 on post-test<sub>1</sub>,

**Table 15**

**Pre-test And Post-test Scores On The Beck Anxiety Inventory -  
Experimental Group - Had Been Receiving Animal-Assisted Therapy, N=9**

| Gender                                                          | Pre-test | Post-test <sub>1</sub> | Post-test <sub>2</sub> | Post-test <sub>3</sub> |
|-----------------------------------------------------------------|----------|------------------------|------------------------|------------------------|
| F                                                               | 1        | 0                      | 0                      | 0                      |
| F                                                               | 5        | 5                      | 5                      | 9                      |
| F                                                               | 16       | 22                     | 9                      | 10                     |
| F                                                               | 5        | -                      | -                      | -                      |
| F                                                               | 28       | -                      | -                      | -                      |
| F                                                               | 10       | -                      | -                      | -                      |
| M                                                               | 9        | 2                      | 2                      | 4                      |
| F                                                               | 12       | 0                      | 0                      | 0                      |
| F                                                               | 5        | 4                      | 4                      | 3                      |
| F                                                               | 0        | 4                      | 3                      | 1                      |
| F                                                               | 3        | 12                     | 21                     | 27                     |
| F                                                               | 19       | -                      | -                      | -                      |
| F                                                               | 7        | 22                     | 22                     | 12                     |
| —Indicates not present and did not complete the survey.         |          |                        |                        |                        |
| Pre-test                                                        |          |                        |                        |                        |
| Six Week Wait                                                   |          |                        |                        |                        |
| Post-test <sub>1</sub>                                          |          |                        |                        |                        |
| Post-test <sub>2</sub> (24 Hours After Post-test <sub>1</sub> ) |          |                        |                        |                        |
| Post-test <sub>3</sub> (2 Weeks After <sub>2</sub> )            |          |                        |                        |                        |
| Maximum Possible Score=63                                       |          |                        |                        |                        |

was carried forward to arrive at a score of 22 for post-test<sub>2</sub>, which this individual did not complete 24 hours after post-test<sub>1</sub>. Also, one row of scores, individual, although an initial volunteer for this phase of the study, entered all scores in the same column for each inventory. Thus, this individual may not have been cognizant of the importance of making critical and honest decisions regarding each item on each separate inventory.

Thirteen out of fourteen residents in the control group, who participated in the initial pre-testing and who volunteered to complete this phase of the study, actually completed this phase of the study. Table 16 presents the pre-test and series of post-test scores on the Beck Anxiety

Table 16

**Pre-test And Post-test Scores On The Beck Anxiety Inventory Control Group - Had Not Been Receiving Animal-Assisted Therapy, N=13**

| Gender                                                               | Pre-test | Post-test <sub>1</sub> | Post-test <sub>2</sub> | Post-test <sub>3</sub> |
|----------------------------------------------------------------------|----------|------------------------|------------------------|------------------------|
| F                                                                    | 7        | 5                      | 3                      | 6                      |
| F                                                                    | 29       | 33                     | 36                     | 27                     |
| F                                                                    | 21       | 17                     | 17                     | 15                     |
| F                                                                    | 3        | 2                      | 2                      | 1                      |
| F                                                                    | 4        | 35                     | 30                     | 14                     |
| M                                                                    | 5        | 4                      | 4                      | 1                      |
| M                                                                    | 10       | 12                     | 9                      | 14                     |
| F                                                                    | 11       | 3                      | 3                      | 2                      |
| F                                                                    | 8        | 13                     | 5                      | 7                      |
| F                                                                    | 21       | 1                      | 4                      | 0                      |
| F                                                                    | 23       | 12                     | 14                     | 15                     |
| F                                                                    | 0        | 3                      | 8                      | 0                      |
| M                                                                    | 8        | 1                      | 0                      | 1                      |
| ---Indicates Not Present And Did Not Complete Survey.                |          |                        |                        |                        |
| Pre-test                                                             |          |                        |                        |                        |
| 2-4 Week Wait                                                        |          |                        |                        |                        |
| Post-test <sub>1</sub>                                               |          |                        |                        |                        |
| Post-test <sub>2</sub> (24 Hours After Post-test <sub>1</sub> )      |          |                        |                        |                        |
| Post-test <sub>3</sub> (2 To 2½ Weeks After Post-test <sub>2</sub> ) |          |                        |                        |                        |
| Maximum Possible Score=63                                            |          |                        |                        |                        |

Inventory from those individuals. As was the case for the nine members of the experimental group who completed this phase of the study, the initial pre-test scores from the thirteen control group residents were considered to be pre-test scores for this phase of the study. In the case of row three on Table 16, for one individual who became ill, the last observation, the score of 17 on post-test<sub>1</sub>, was carried forward to arrive at a score of 17 on post-test<sub>2</sub>, which this individual did not complete 24 hours after post-test<sub>1</sub>. In order to compare the scores on Table 15 with the scores on Table 16, scores from the experimental group and scores from the control group were examined by

a computer generated Normal Quantile (Q-Q) Plot, which is based on percentiles. Residuals were examined for normality and were found to be normally distributed in both cases. SPSS was used to generate a repeated measures variance of analysis (ANOVA), one with within-subject effects equal to time and one with between-subject effects equal to group. Descriptive statistics presented in Table 17 indicate that the pattern of means did not vary greatly. Thus, it is clear that a larger sample size would not have resulted in significant findings. Based on the significance level of .106 presented in Table 17.1, the group variances were shown to be equal across groups. Table 17.2 indicates that the test of within-subjects effect was not significant:  $F(3, 60) = .379, p = .769$ . Table 17.3 indicates that the test of between-subjects effects was not significant:  $F(1, 20) = .727, p = .404$ .

Profile plots of estimated marginal means on the Beck Anxiety Inventory are displayed by Figure 4. Based on this plot, at the time of pre-testing the level of anxiety in the experimental group was lower than the level of anxiety in the control group. In the case of the experimental group, after each individual was exposed to thirty minutes of the AAT dog for at least two weeks during a six-week period, group scores on post-test<sub>1</sub> indicated an increase in the level of anxiety among the members of the experimental group as a whole. Group scores on post-test<sub>2</sub>, which was

Table 17

## The Beck Anxiety Inventory-Descriptive Statistics

|                      | GROUP        | Mean    | Std. Deviation | N  |
|----------------------|--------------|---------|----------------|----|
| BAIPRE               | Control      | 11.5385 | 8.9872         | 13 |
|                      | Experimental | 6.4444  | 5.1988         | 9  |
|                      | Total        | 9.4545  | 7.9386         | 22 |
| BAIPOST <sub>1</sub> | Control      | 10.8462 | 11.5315        | 13 |
|                      | Experimental | 7.8889  | 8.7528         | 9  |
|                      | Total        | 9.6364  | 10.3627        | 22 |
| BAIPOST <sub>2</sub> | Control      | 10.3846 | 11.1918        | 13 |
|                      | Experimental | 7.3333  | 8.4853         | 9  |
|                      | Total        | 9.1364  | 10.0678        | 22 |
| BAIPOST <sub>3</sub> | Control      | 7.9231  | 8.4010         | 13 |
|                      | Experimental | 7.3333  | 8.6313         | 9  |
|                      | Total        | 7.6818  | 8.2945         | 22 |

Table 17.1

## Box's Tests Of Equality Of Covariance Matrices On The Beck Anxiety Inventory

|         |        |
|---------|--------|
| Box's M | 20.661 |
| F       | 1.582  |
| df1     | 10     |
| df2     | 1379   |
| Sig.    | .106   |

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept\*GROUP  
Within-subjects Design: TIME

Table 17.2

## Tests Of Within-Subjects Effects On The Beck Anxiety Inventory

Measure: MEASURE\_1  
Sphericity Assumed

| Source         | Type III Sum of Squares | df | Mean Square | F    | Sig. |
|----------------|-------------------------|----|-------------|------|------|
| TIME           | 36.249                  | 3  | 12.083      | .379 | .769 |
| TIME*<br>GROUP | 54.113                  | 3  | 18.038      | .565 | .640 |
| Error (TIME)   | 1914.842                | 60 | 31.914      |      |      |

a. computed using alpha = .05

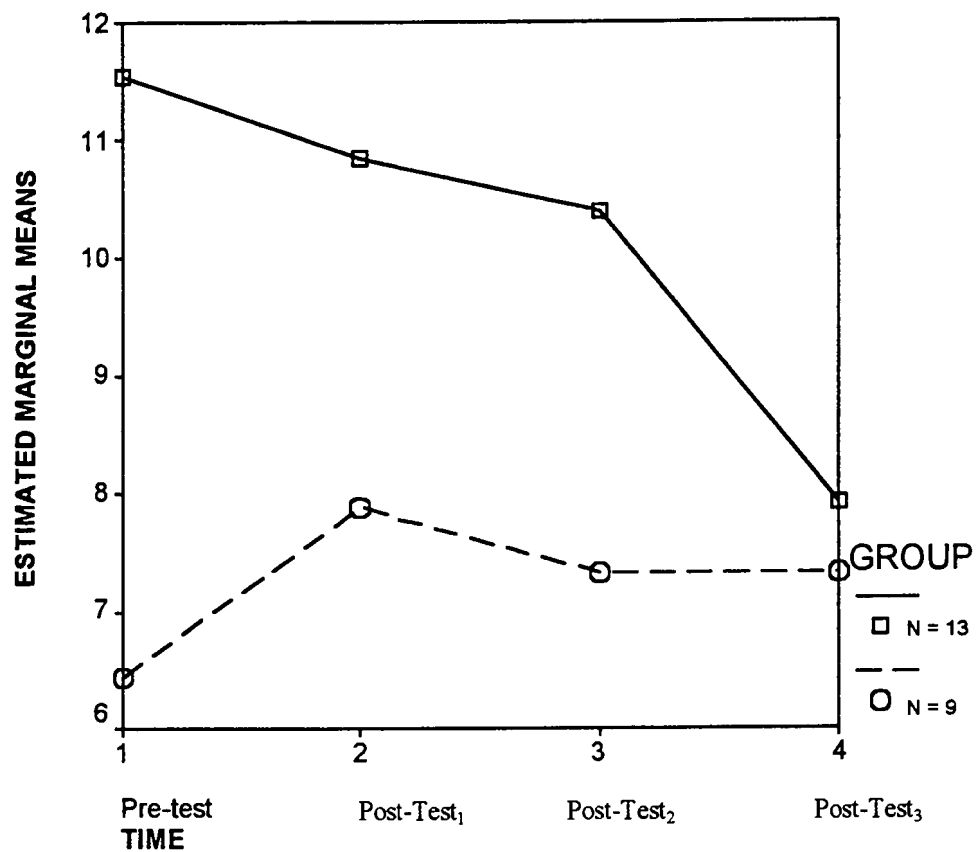
Table 17.3

## Tests Of Between-Subjects Effects On The Beck Anxiety Inventory

Measure: MEASURE\_1  
Transformed Variable: Average

| Source    | Type III Sum of Squares | df | Mean Square | F      | Sig. |
|-----------|-------------------------|----|-------------|--------|------|
| Intercept | 6457.626                | 1  | 6457.626    | 25.824 | .000 |
| GROUP     | 181.762                 | 1  | 181.762     | .727   | .404 |
| Error     | 5001.192                | 20 | 250.060     |        |      |

a. Computed using alpha = .05



**Figure 4**

### Profile Plots - The Beck Anxiety Inventory

□=Control Group  
○=Experimental Group

#### Experimental Group -

Time Between Pre-test and Post-test<sub>1</sub> : 6 Weeks  
Time Between Post-test<sub>1</sub> And Post-test<sub>2</sub>: 24 Hours  
Time Between Post-test<sub>2</sub> And Post-test<sub>3</sub>: 2 Weeks

#### Control Group -

Time Between Pre-test and Post-test<sub>1</sub> : 2 To 4 Weeks  
Time Between Post-test<sub>1</sub> And Post-test<sub>2</sub>: 24 Hours  
Time Between Post-test<sub>2</sub> And Post-test<sub>3</sub>: 2 To 2½ Weeks

administered 24 hours after post-test<sub>1</sub>, showed a slight drop in anxiety. Post-test<sub>3</sub> group scores, which were obtained two weeks after post-test<sub>2</sub> scores, showed no change in the group's level of anxiety when compared to the group's scores at the time of administration of post-test<sub>2</sub>. In the case of the control group, however, Figure 4 indicates a higher level of anxiety among this group's members upon pre-testing. Scores obtained on post-test<sub>1</sub>, which was administered to members after a two to four week wait, and scores obtained on post-test<sub>2</sub> twenty-four hours after post-test<sub>1</sub> was administered, as well as scores obtained on post-test<sub>3</sub> two to two and one-half weeks after post-test<sub>2</sub> all showed a progressive decline in the level of anxiety among control group members.

**Analysis Of Variance On Pre-test Scores Compared With Post-test<sub>1</sub>, Post-test<sub>2</sub>, And Post-test<sub>3</sub> Scores Obtained On The Beck Depression Inventory From The Experimental Group (N=9) And From The Control Group (N=13)**

Nine out of fourteen residents in the experimental group, who participated in the initial pre-testing and who volunteered to complete this phase of the study, actually completed this phase of the study. The pre-test and the series of post-test scores on the Beck Depression Inventory form those nine individuals are presented in Table 18. A Normal Q-Q Plot was computer generated as a means of examining residual scores for normality. It was determined that all score exhibited normal distribution. The initial pre-

**Table 18**  
**Pre-test And Post-test Scores On The Beck Depression Inventory -**  
**Experimental Group - Had Been Receiving Animal-Assisted Therapy, N=9**

| Gender                                                            | Pre-test | Post-test <sub>1</sub> | Post-test <sub>2</sub> | Post-test <sub>3</sub> |
|-------------------------------------------------------------------|----------|------------------------|------------------------|------------------------|
| F                                                                 | 1        | 0                      | 0                      | 1                      |
| F                                                                 | 13       | 13                     | 10                     | 10                     |
| F                                                                 | 13       | 12                     | 10                     | 9                      |
| F                                                                 | 19       | -                      | -                      | -                      |
| F                                                                 | 8        | -                      | -                      | -                      |
| F                                                                 | 9        | -                      | -                      | -                      |
| M                                                                 | 6        | 9                      | 4                      | 8                      |
| F                                                                 | 8        | 8                      | 11                     | 11                     |
| F                                                                 | 4        | 8                      | 6                      | 7                      |
| F                                                                 | 9        | 8                      | 8                      | 10                     |
| F                                                                 | 13       | 7                      | 19                     | 15                     |
| F                                                                 | 5        | -                      | -                      | -                      |
| F                                                                 | 18       | 23                     | 23                     | 17                     |
| —Indicates not present and did not complete the survey.           |          |                        |                        |                        |
| Pre-test                                                          |          |                        |                        |                        |
| Six Week Wait                                                     |          |                        |                        |                        |
| Post-test <sub>1</sub>                                            |          |                        |                        |                        |
| Post-test <sub>1</sub> , (24 Hours After Post-test <sub>1</sub> ) |          |                        |                        |                        |
| Post-test <sub>1</sub> , (2 Weeks After Post-test <sub>1</sub> )  |          |                        |                        |                        |
| Maximum Possible Score=63                                         |          |                        |                        |                        |

test scores from those 9 residents were considered to be pre-test scores for this phase of the study. In the case of row thirteen, or the last row on Table 18, for one individual who became ill, the last observation, the score of 23 on post-test<sub>1</sub>, was carried forward to arrive at a score of 23 for post-test<sub>2</sub>, which this individual was not able to complete 24 hours after post-test<sub>1</sub>. Also, one row of scores, individual, although an initial volunteer for this phase of the study, entered all scores in the same column for each inventory. This pattern had also been observed for this individual upon pre-testing and upon subsequent post-testing at three separate times on the BDI. Thus, this individual may not have been

cognizant of the importance of making critical and honest decisions regarding each item on the BDI.

Thirteen out of fourteen residents in the control group, who participated in the initial pre-testing and who volunteered to complete this phase of the study, actually completed this phase of the study. Table 19 presents the pre-test and series of post-test scores on the Beck Depression Inventory from those individuals. As in the case of the nine members of the experimental group who completed this phase of the study, the initial pre-test scores from the thirteen residents in the control group were considered to be pre-test scores for this phase of the study. In the case of row three on Table 19, for one individual who became ill, the last observation, the score of 23 on post-test<sub>1</sub>, was carried forward to arrive at a score of 23 on post-test<sub>2</sub>, which this individual was not able to complete 24 hours after post-test<sub>1</sub>. SPSS was used to generate a repeated measures variance of analysis (ANOVA), one with within-subject effects equal to time and one with between-subjects effects equal to group, in order to compare the scores listed on Table 18 with the scores listed on Table 19. Descriptive statistics presented in Table 20 indicate that the pattern of means did not vary greatly. Thus, it was clear that a larger sample size would not have resulted in significant findings.

**Table 19**

**Pre-test And Post-test Scores On The Beck Depression Inventory -  
Control Group - Had Not Been Receiving Animal-Assisted Therapy, N=13**

| Gender                                                               | Pre-test | Post-test <sub>1</sub> | Post-test <sub>2</sub> | Post-test <sub>3</sub> |
|----------------------------------------------------------------------|----------|------------------------|------------------------|------------------------|
| F                                                                    | 20       | 18                     | 9                      | 16                     |
| F                                                                    | 10       | 9                      | 9                      | 8                      |
| F                                                                    | 22       | 23                     | 23                     | 14                     |
| F                                                                    | 8        | 5                      | 8                      | 7                      |
| F                                                                    | 11       | 13                     | 12                     | 14                     |
| M                                                                    | 1        | 2                      | 4                      | 2                      |
| M                                                                    | 2        | 1                      | 1                      | 4                      |
| F                                                                    | 7        | 0                      | 3                      | 3                      |
| F                                                                    | 14       | 19                     | 13                     | 11                     |
| F                                                                    | 7        | 14                     | 11                     | 11                     |
| F                                                                    | 16       | 14                     | 15                     | 16                     |
| F                                                                    | 6        | 10                     | 7                      | 6                      |
| M                                                                    | 3        | 0                      | 11                     | 1                      |
| —Indicates Not Present And Did Not Complete Survey.                  |          |                        |                        |                        |
| Pre-test                                                             |          |                        |                        |                        |
| 2-4 Week Wait                                                        |          |                        |                        |                        |
| Post-test <sub>1</sub>                                               |          |                        |                        |                        |
| Post-test <sub>2</sub> (24 Hours After Post-test <sub>1</sub> )      |          |                        |                        |                        |
| Post-test <sub>3</sub> (2 To 2½ Weeks After Post-test <sub>2</sub> ) |          |                        |                        |                        |
| Maximum Possible Score=63                                            |          |                        |                        |                        |

**Table 20**

**The Beck Depression Inventory - Descriptive Statistics**

|                      | GROUP        | Mean    | Std. Deviation | N  |
|----------------------|--------------|---------|----------------|----|
| BAIPRE               | Control      | 9.7692  | 6.6352         | 13 |
|                      | Experimental | 9.4444  | 5.3177         | 9  |
|                      | Total        | 9.6364  | 5.9964         | 22 |
| BAIPOST <sub>1</sub> | Control      | 9.8462  | 7.7765         | 13 |
|                      | Experimental | 9.7778  | 6.1599         | 9  |
|                      | Total        | 9.8182  | 7.0009         | 22 |
| BAIPOST <sub>2</sub> | Control      | 9.6923  | 5.6919         | 13 |
|                      | Experimental | 10.1111 | 7.1317         | 9  |
|                      | Total        | 9.8636  | 6.1590         | 22 |
| BAIPOST <sub>3</sub> | Control      | 8.6923  | 5.3445         | 13 |
|                      | Experimental | 9.7778  | 4.6037         | 9  |
|                      | Total        | 9.1364  | 4.9694         | 22 |

Based on the significance level of .342 presented in Table 20.1, the group variances were shown to be equal across groups. Table 20.2 indicates that the tests of within-subjects effects was not significant:  $F(3, 60) = .238, p = .869$ . Table 20.3 indicates that the tests of between-subjects effects was not significant:  $F(1, 20) = .013, p = .912$ .

Figure 5 displays profile plots of estimated marginal means of measure on scores obtained on the Beck Depression Inventory from the experimental group and from the control group. Based on this plot, at the time of pre-testing the level of depression in the experimental group was slightly lower than the level of depression in the control group. In the case of the experimental group, after each individual was exposed to thirty minutes of the AAT dog for at least two weeks during a six week period, group scores on post-test<sub>1</sub>, and group scores on post-test<sub>2</sub>, which was administered 24 hours after post-test<sub>1</sub>, showed that levels of depression increased. Post-test<sub>3</sub> group scores, which were obtained two weeks after post-test<sub>2</sub> scores, displayed a slight decrease in the level of depression among the nine members of this experimental group.

It should be noted that the residents no longer received thirty minutes of exposure in a group setting to the AAT dog between post-test<sub>2</sub> and post-test<sub>3</sub>. Instead, during the two-week period which lapsed between post-test<sub>2</sub> and post-test<sub>3</sub> the residents returned to their chosen visitation pattern with

**Table 20.1**

**Box's Test Of Equality Of Covariance Matrices On The Beck Depression Inventory**

|         |        |
|---------|--------|
| Box's M | 14.639 |
| F       | 1.121  |
| df1     | 10     |
| df2     | 1379   |
| Sig.    | .342   |

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept+GROUP

Within-subjects Design: TIME

**Table 20.2**

**Tests Of Within-Subjects Effects On The Beck Depression Inventory**

**Measure: MEASURE\_1**

**Sphericity Assumed**

| Source         | Type III Sum of Squares | df | Mean Square | F    | Sig. |
|----------------|-------------------------|----|-------------|------|------|
| TIME           | 5.598                   | 3  | 1.866       | .238 | .869 |
| TIME*<br>GROUP | 6.143                   | 3  | 2.048       | .262 | .853 |
| Error (TIME)   | 469.538                 | 60 | 7.826       |      |      |

a. computed using alpha = .05

**Table 20.3**

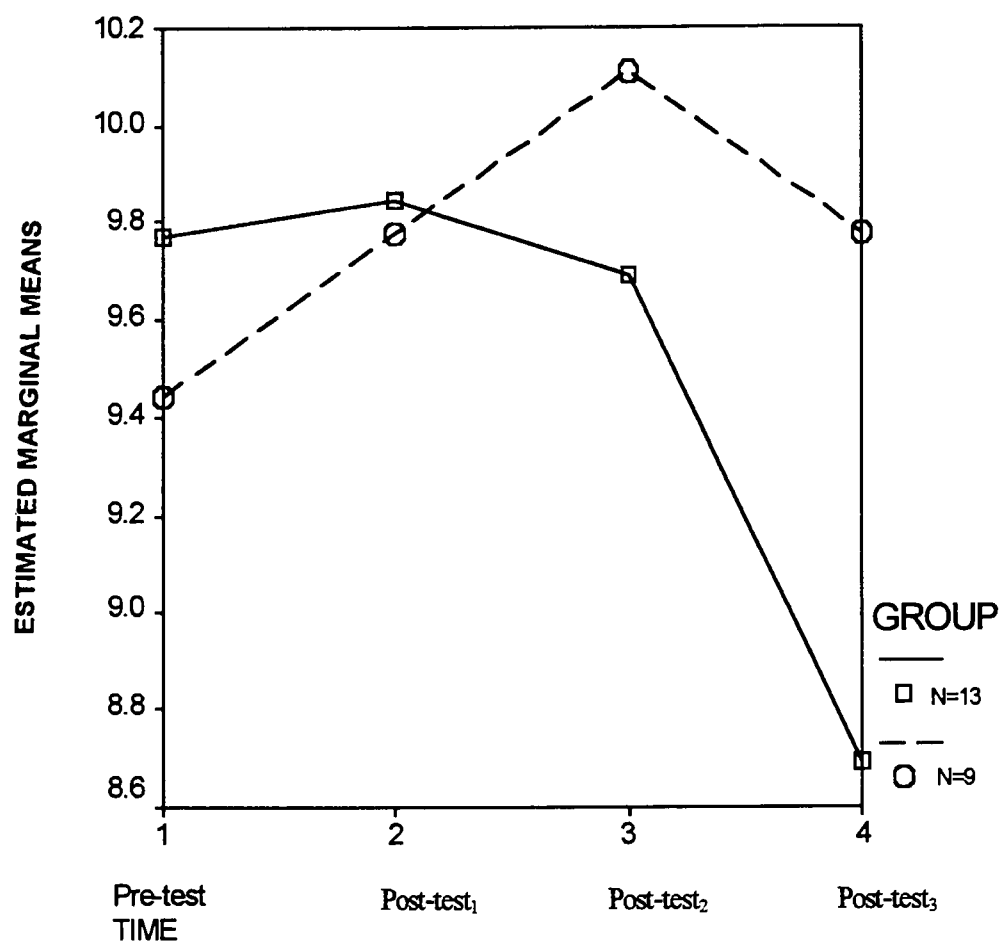
**Tests Of Between-Subjects Effects On The Beck Depression Inventory**

**Measure: MEASURE\_1**

**Sphericity Assumed**

| Source         | Type III Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|-------------------------|----|-------------|--------|------|
| TIME           | 7905.641                | 1  | 7905.641    | 60.297 | .000 |
| TIME*<br>GROUP | 1.641                   | 1  | 1.641       | 1.641  | .912 |
| Error (TIME)   | 469.538                 | 60 | 7.826       |        |      |

a. computed using alpha = .05



**Figure 5**

### Profile Plots - The Beck Depression Inventory

□=Control Group  
○=Experimental Group

#### Experimental Group -

Time Between Pre-test and Post-test<sub>1</sub> : 6 Weeks  
Time Between Post-test<sub>1</sub> And Post-test<sub>2</sub>: 24 Hours  
Time Between Post-test<sub>2</sub> And Post-test<sub>3</sub>: 2 Weeks

#### Control Group -

Time Between Pre-test and Post-test<sub>1</sub> : 2 To 4 Weeks  
Time Between Post-test<sub>1</sub> And Post-test<sub>2</sub>: 24 Hours  
Time Between Post-test<sub>2</sub> And Post-test<sub>3</sub>: 2 To 2½ Weeks

either of the two AAT dogs or with the one AAT cat, which regularly visited the facility. This allowed individuals to visit with the animal(s) of their choice and to visit with the AAT volunteer of their choice, as well as to visit for the length of time they preferred, which in many cases was only for a few minutes. This same pattern was followed in the case of administration of the Beck Anxiety Inventory for the time period which lapsed between post-test<sub>2</sub> and post-test<sub>3</sub>.

In the case of the control group, however, Figure 5 indicated a slightly higher level of depression upon pre-testing, when compared to the determined level of depression for the experimental group upon pre-testing. Scores obtained from the control group on post-test<sub>1</sub>, two to four weeks after the pre-test indicated little change in the depression level of this group of participants. It should be noted that a decline in the level of depression among control group members was indicated on Figure 5 at the time of post-test<sub>2</sub>, which was administered 24 hours after post-test<sub>1</sub>. A marked degree of decline in the level of depression among the control group members was indicated at the time of post-test<sub>3</sub>, which was administered to members of the control group two to two and one-half weeks after post-test<sub>2</sub>.

### **Analysis Of Pre-test Scores On Form A, Form B, And Form C Of Attitudes About Human & Animal Bonds**

The total possible score attainable on Form A was equal to a positive 18 or a negative 18. The total possible score attainable on Form B or on Form C was equal to a positive or a negative 42. A total score which had a positive value indicated a positive attitude toward the animal(s) which visited the resident, while a total score which had a negative value indicated a negative attitude toward how animal visits or animals made the resident feel. Total scores on Form A, Form B, and Form C were previously presented on Tables 11 and 12.

Descriptive statistics were computer generated based on the total score for each Form A completed. The scores on Form A ranged from a minimum score of - 3.00 to a maximum score of + 18.00 (N=41). The mean score was on Form A was + 11.90, as is listed in Table 21. A computer generated frequency distribution of obtained scores, a Normal Q-Q Plot, and a Detrended Normal Q-Q Plot revealed that scores on Form A were not normally distributed (Appendix I). This indicated that the answers given for Form A varied considerably from individual to individual. Overall, a positive attitude toward the animal(s) which visited the experimental group existed among the participants, as indicated by the mean score of + 11.90.

**Table 21**  
**Descriptive Statistics - Form A**

|       |                                  |             | Statistic | Std. Error |
|-------|----------------------------------|-------------|-----------|------------|
| FORMA | Mean                             |             | 11.9024   | .8129      |
|       | 95% Confidence Interval for Mean | Lower Bound | 10.2596   |            |
|       |                                  | Upper Bound | 13.5453   |            |
|       | 5% trimmed mean                  |             | 12.3320   |            |
|       | Median                           |             | 13.0000   |            |
|       | Variance                         |             | 27.090    |            |
|       | Std. Deviation                   |             | 5.2048    |            |
|       | Minimum                          |             | -3.00     |            |
|       | Maximum                          |             | 18.00     |            |
|       | Range                            |             | 21.00     |            |
|       | Interquartile Range              |             | 6.0000    |            |
|       | Skewness                         |             | -1.086    | .369       |
|       | Kurtosis                         |             | 1.219     | .724       |

The total possible score attainable on Form B, which was administered to the experimental group of participants (N=41), was a positive or a negative 42, and the total possible score attainable by an individual on Form C, which was administered to members of the control group (N=39), was a positive or a negative 42. Scores on Form B, which were totaled for each participant's completed form, were compared with scores on Form C, which were totaled for each participant's completed form. The total number of scores on Form B and Form C was equal to 80. This agreed with the fact that 41 participants in the experimental group completed Form B and 39 participants in the control group completed Form C. Upon computer generating and viewing a histogram, a Normal Q-Q Plot, and a Detrended Normal Q-Q Plot of those 80 scores, the distribution of scores was not found to be normally

distributed. This meant that a large variety of scores, which ranged from - 28 to + 42, were calculated for individual forms, as previously presented on Table 11 and Table 12. A mean score of + 26.99 was obtained when calculated from total scores obtained from the total of 80 residents who completed Forms B and C (Table 22, "Form B"). This was interpreted to indicate that a large variety of attitudes toward human and animal bonds existed, and that a positive attitude existed among the 80 participants who completed Form B and Form C of Attitudes About Human & Animal Bonds. Since the scores on Form B and Form C were not normally distributed, the Wilcoxon Rank Sum Test, which is equivalent to the Mann-Whitney U Test, was used as a rank test for two independent samples. The Wilcoxon Rank Sum Test is an excellent alternative to the t-test. During the process of comparing the scores by the computer generated Wilcoxon Rank Sum Test on Form B with the scores on Form C, the code of 1.00 was used when

**Table 22**  
**Descriptive Statistics - Form B Compared With Form C Of**  
**Attitudes About Human & Animal Bonds**

|       | N  | Mean    | Std.<br>Deviation | Minimum | Maximum |
|-------|----|---------|-------------------|---------|---------|
| FORMB | 80 | 26.9875 | 13.3857           | -28.00  | 42.00   |
| BAI   | 80 | 9.6750  | 8.4115            | .00     | 41.00   |
| BDI   | 80 | 9.2875  | 6.7790            | .00     | 31.00   |
| GROUP | 80 | .5125   | .5030             | .00     | 1.00    |

entering the 41 individual scores on Form B from the experimental group, and the code of .00 was used when entering the 39 scores on Form C from the control group. As shown on Table 23, the Wilcoxon nonparametric two-tailed test of significance for the two separate groups, the experimental group which completed Form B and the control group which completed Form C, indicated an asymptotic two-tailed significance level equal to .795, which when divided by 2 was equal to .397. This obtained significance level of .397 indicated that there was no significant difference between the experimental and the control group's attitudes about human and animal bonds upon pre-testing. Form B was administered as a pre-test after an average of 8.4 years

**Table 23**

**Wilcoxon Rank Sum Test - Comparison Of Pre-test Scores On Form B With Pre-test Scores On Form C**

|                                                             |  |  |          |          |          |
|-------------------------------------------------------------|--|--|----------|----------|----------|
| Mann-Whitney U                                              |  |  | FORMB    | BAI      | BDI      |
| Wilcoxon W                                                  |  |  | 772.500  | 644.500  | 628.500  |
| Z                                                           |  |  | 1552.500 | 1505.500 | 1489.500 |
| Asymp. Sig. (2-tailed)                                      |  |  | -.260    | -1.495   | -1.650   |
| Monte Carlo Sig. (2-tailed)                                 |  |  | .795     | .135     | .099     |
| Sig.                                                        |  |  | .800     | .141     | .096     |
| 99% Confidence Interval                                     |  |  |          |          |          |
| Lower Bound                                                 |  |  | .789     | .132     | .088     |
| Upper Bound                                                 |  |  | .810     | .150     | .103     |
| Monte Carlo Sig. (1-tailed)                                 |  |  | .397     | .073     | .049     |
| Sig.                                                        |  |  |          |          |          |
| 99% Confidence Interval                                     |  |  |          |          |          |
| Lower Bound                                                 |  |  | .384     | .066     | .043     |
| Upper Bound                                                 |  |  | .410     | .080     | .055     |
| a Based on 10000 sampled tables with starting seed 2000000. |  |  |          |          |          |
| b Grouping Variable: GROUP                                  |  |  |          |          |          |

of AAT at the experimental group sites, and Form C was administered as a pre-test at the control group sites which had not received AAT. Form B and Form C were administered to the respective groups during Spring 1997. the control group sites which had not received AAT. Form B and Form C were administered to the respective groups during Spring 1997.

**Descriptive Statistics: A Comparison Of Individuals' Pre-test Scores On Form A With Their Post-test Scores On Form A Of Attitudes About Human & Animal Bonds: Experimental Group, N=13.**

Thirteen out of 14 residents in the original experimental group, who volunteered to complete this phase of the study, actually completed this phase of the study. The pre-test scores and the post-test scores on Form A of Attitudes About Human & Animal Bonds from those 13 participants are presented in Table 24. Row 4 on Table 24 was deleted due to the fact that this particular resident was not available at the time of post-testing, and thus did not complete the post-test for Form A.

The means arrived at, after computer analysis of the pre-test and post-test scores on Form A for all 13 individuals who completed both the pre-test and the post-test, were equal to 12.69 in the case of the group's pre-test scores on Form A and 12.61 in the case of the group's post-test scores on Form A (Table 24.1).

The total possible score attainable per individual on Form A was a positive or a negative 18. Therefore, group members' attitudes about

**Table 24**

**Comparisons Of Individual Pre-test And Post-test Scores On Form A  
(Attitudes About Human & Animal Bonds) - Experimental Group -  
Received Animal-Assisted Therapy, N=13**

| <b>Gender</b> | <b>Pre-test Score</b> | <b>Post-test Score</b> |
|---------------|-----------------------|------------------------|
| F             | +12                   | +9                     |
| F             | +5                    | +11                    |
| F             | +16                   | +14                    |
| F             | +9                    | ---                    |
| F             | +8                    | +7                     |
| F             | +12                   | +14                    |
| M             | +18                   | +18                    |
| F             | +18                   | +17                    |
| F             | +15                   | +13                    |
| F             | +9                    | +15                    |
| F             | +18                   | +12                    |
| F             | +11                   | +11                    |
| F             | +14                   | +14                    |

**Table 24.1**

**Form A - Paired Samples Statistics**

|                    | <b>Mean</b> | <b>N</b> | <b>Std Deviation</b> | <b>Std. Error Mean</b> |
|--------------------|-------------|----------|----------------------|------------------------|
| <b>Pair 1 PREA</b> | 12.6923     | 13       | 4.2305               | 1.1733                 |
| <b>POSTA</b>       | 12.6154     | 13       | 3.2026               | .8882                  |

human and animal bonds were positive at the time of pre-testing and at the time of post-testing.

**Paired Samples Statistics: Pre-test Scores On Form B (Experimental Group, N=13) Compared With Pre-test Scores On Form C (Control Group, N=14) And Post-test Scores On Form B (Experimental Group, N=13) Compared With Post-test Scores On Form C (Control Group, N=14)**

Table 25 presents total scores on Form B of Attitudes About Human & Animal Bonds. Pre-test and post-test scores obtained from individual residents in the experimental group (N= 13) on Form B of Attitudes About Human & Animal Bonds were compared with pre-test and post-test scores obtained on Form C from individual residents in the control group (N=14). Tables 25.1, 25.2, and 25.3 were computer generated when scores on Form B (Table 25) were compared with scores on Form C (Table 26). Row 4 on Table 25 was deleted since that particular subject was not present at the time of post-testing, and thus did not complete the post-test on Form B. Descriptive statistics indicated a maximum score of + 42 and a minimum score of +1 on combined pre-B and pre-C tests. A maximum score of + 42 and a minimum score of - 4 were arrived at for post-B and post-C tests (Table 25.1). A Normal Q-Q Plot determined that scores on each pre-test and post-test of each form exhibited normal distribution.

Since Form B and Form C were essentially the same instrument, pre-test scores on Form B, which was administered to the experimental group

**Table 25**

**Comparisons Of Individual Pre-test And Post-test Scores On Form B  
(Attitudes About Human & Animal Bonds) Experimental Group -  
Received Animal-Assisted Therapy, N=13**

| <b>Gender</b> | <b>Pre-test Score</b> | <b>Post-test Score</b> |
|---------------|-----------------------|------------------------|
| F             | +29                   | +35                    |
| F             | +37                   | +34                    |
| F             | +23                   | +40                    |
| F             | +3                    | ---                    |
| F             | +20                   | +29                    |
| M             | +23                   | +30                    |
| F             | +42                   | +41                    |
| F             | +32                   | +34                    |
| F             | +15                   | +37                    |
| F             | +36                   | +37                    |
| F             | +38                   | +27                    |
| F             | +33                   | +23                    |
| F             | +23                   | +22                    |

---Indicates not present and did not complete the survey.

**Table 25.1**  
**Descriptive Statistics - Pre-test Scores On Form B And On Form C**  
**And Post-test Scores On Form B And On Form C**

|       |                                  | Statistic | Std. Error |
|-------|----------------------------------|-----------|------------|
| PREB  | Mean                             | 27.0000   | 2.3131     |
|       | 95% Confidence Interval for Mean |           |            |
|       | Lower Bound                      | 22.454    |            |
|       | Upper Bound                      | 31.746    |            |
|       | 5% Trimmed Mean                  | 27.5823   |            |
|       | Median                           | 30.0000   |            |
|       | Variance                         | 144.462   |            |
|       | Std. Deviation                   | 12.0192   |            |
|       | Minimum                          | 1.00      |            |
|       | Maximum                          | 42.00     |            |
|       | Range                            | 41.00     |            |
|       | Interquartile Range              | 17.0000   |            |
|       | Skewness                         | -.802     |            |
|       | Kurtosis                         | -.334     |            |
| POSTB | Mean                             |           |            |
|       | 95% Confidence Interval for Mean |           | 2.7106     |
|       | Lower Bound                      | 72.9259   |            |
|       | Upper Bound                      | 22.3542   |            |
|       | 5% Trimmed Mean                  | 33.4976   |            |
|       |                                  | 33.4976   |            |
|       | Median                           | 28.8457   |            |
|       | Variance                         | 34.0000   |            |
|       | Std. Deviation                   | 198.379   |            |
|       |                                  | 14.087    |            |
|       | Minimum                          | -.400     |            |
|       | Maximum                          | 42.00     |            |
|       | Range                            |           |            |
|       | Interquartile Range              | 46.00     |            |
|       |                                  | 17.0000   |            |
|       | Skewness                         | -1.092    | .448       |
|       | Kurtosis                         | .054      | .872       |

Table 25. 2

## Test Of Within-Subjects Effects - Form B Compared With Form C

| Source       | Type III Sum Of Squares | df | Mean Square | F    | Sig  |
|--------------|-------------------------|----|-------------|------|------|
| TIME         | 13.260                  | 1  | 13.260      | .212 | .649 |
| TIME*        | 42.594                  | 1  | 42.594      | .680 | .417 |
| GROUP        | 1566.332                | 25 | 62.653      |      |      |
| Error (TIME) |                         |    |             |      |      |

a. Computed using alpha = .05

Table 25. 3

## Test Of Between-Subjects Effects - Form B Compared With Form C

| Source       | Type III Sum Of Squares | df | Mean Square | F       | Sig  |
|--------------|-------------------------|----|-------------|---------|------|
| TIME         | 40793.705               | 1  | 40793.705   | 140.895 | .000 |
| TIME*        | 66.594                  | 1  | 66.594      |         | .636 |
| GROUP        | 7238.332                | 25 | 289.533     |         |      |
| Error (TIME) |                         |    |             |         |      |

a. Computed using alpha = .05

Table 26

**Comparisons Of Individual Pre-test And Post-test Scores On Form C  
(Attitudes About Human & Animal Bonds) - Control Group - Was Not  
Receiving Animal-Assisted Therapy, N=14**

| Gender | Pre-test Score | Post-test Score |
|--------|----------------|-----------------|
| F      | +17            | +10             |
| F      | +23            | +37             |
| F      | +8             | +3              |
| F      | +30            | +3              |
| F      | +36            | +42             |
| F      | +30            | +39             |
| M      | +37            | +41             |
| M      | +38            | +33             |
| F      | +7             | +30             |
| F      | +31            | +14             |
| F      | +1             | -4              |
| F      | +35            | +40             |
| F      | +40            | +34             |
| F      | +42            | +42             |

(N=13), and pre-test scores on Form C, which was administered to the control group (N =14), were compared. Post-test scores on Form B were compared with post-test scores on Form C. An SPSS generated ANOVA indicated that the test of within-subjects effects was not significant:  $F(1,25) = .680$ ,  $p = .417$  (Table 25.2). A test of between-subjects effects was not significant:  $F(1,25) = .230$ ,  $p = .636$  (Table 25.3).

Profile plots of estimated marginal means of measure of pre-test and post-test scores on Form B and on Form C are displayed in Figure 6. It should be noted that the experimental group (N=13) had received AAT for thirty minutes during a two-week period out of a total of six weeks between pre-testing and post-testing, while the control group (N=14) had not received AAT and had not been exposed to a substituted activity. Based on this plot, at the time of pre-testing the experimental group's attitude about human and animal bonds was only slightly more positive than the control group's attitude about human and animal bonds. Upon post-testing, however, when the experimental group and the control group scores were compared, the experimental group exhibited an increase in their positive attitude toward human and animal bonds, however, this increase was not statistically significant. The control group's attitude did not increase in a positive direction.

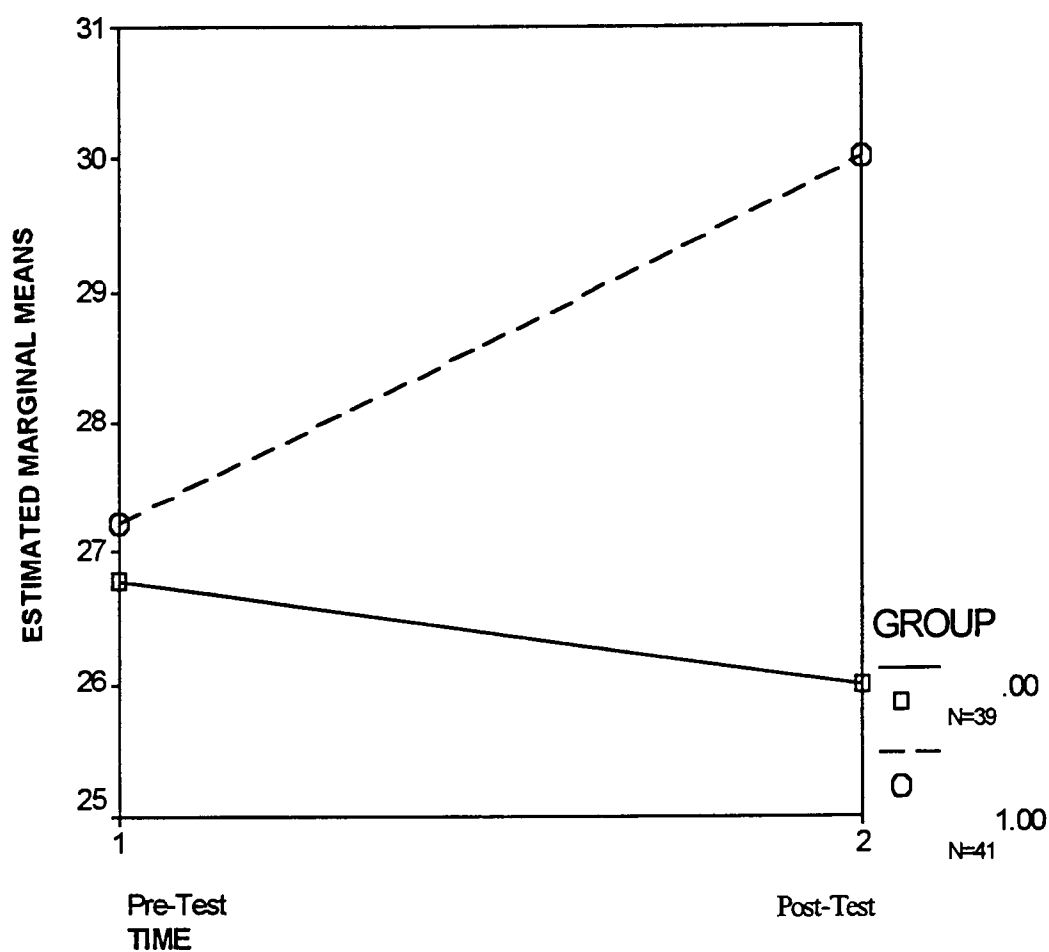


Figure 6

Profile Plots Of Pre-test And Post-test Scores On Form B And Form C

□=Control Group  
○=Experimental Group

Time From Pre-test to Post-test-  
Experimental Group: 6 weeks  
Control Group: 4 to 4½ Weeks

### **Staff Attitudes About Animal-Assisted Therapy**

The return rate for the questionnaire, Staff Attitudes About Animal-Assisted Therapy, was calculated. A return rate of 73.81 percent was calculated for the experimental group, staff who worked at sites which had AAT, and a return rate of 27.83 percent was calculated for the control group, staff who worked at sites which did not have AAT.

The responses received on the instrument constructed to determine staff attitudes about animal-assisted therapy were analyzed. After separating completed forms into two groups, one from staff at sites receiving AAT (the experimental group) and one from staff at sites not receiving AAT (the control group), all answers were numerically coded to facilitate analysis by computer. The code sheet was used to present a profile of staff demographics at facilities which received AAT and a profile of staff demographics at facilities which did not receive AAT. The demographic data was presented for each group in table format (Appendix D).

Job categories of staff who responded to the form were established from a separate code sheet for each group. The job categories were listed as administrative, activities, nursing, social services, nutrition, clerical, maintenance, speech pathology, and staff development. The total number of respondents per category were listed when they responded either with yes or no to a specific question on the form. Responses to the statement,

"Animal visits help residents cope with anxiety, depression, and/or loneliness", were tallied. Responses to the statement, "Animal visits provide residents with friendship, relaxation, emotional support, comfort, someone to converse with, companionship, a topic of conversation, love, entertainment, attention, acceptance, a better quality of life, a sense of well-being, and/or touch/sensory stimulation", were tallied. The five most important items from the list of factors which animal visits provided residents with, which the residents listed from most important to least important, were determined. Concerns reported by respondents in regard to hygiene, safety, or loss of an AAT animal were numerically totaled for each group per job category of staff. Code sheets were generated (Appendix D).

In the case of the experimental group of staff respondents 26.98 percent of the responses came from activities or assistant activities directors, 20.63 percent of the responses came from nursing staff, 17.46 percent of the responses came from administrators or administrative assistants, 11.11 percent of the responses came from social services staff, 7.94 percent of the responses came from clerical staff, 6.35 percent of the responses came from nutrition staff, 4.76 percent of the responses came from maintenance personnel, 3.17 percent of the responses came from speech pathology personnel, and 1.59 percent of the responses came from members of staff development.

Responses per job category of staff at sites receiving AAT (N=63) regarding the percent of respondents who thought that animal visits helped residents cope with anxiety, depression, and/or loneliness are presented in Table 27. The number of staff who reported they thought that animal visits helped residents cope with anxiety, depression, and/or loneliness was calculated. The corresponding percent of staff per job category who responded yes per factor from the total 63 staff from the experimental group sites was calculated. It was concluded that the staff respondents perceived that AAT was most beneficial in helping the residents of the assisted living or health care centers in which they were employed cope with loneliness, depression, and anxiety, in that order.

The responses to the statement, if you have any of the following concerns (hygiene, safety, or having to cope with loss of the animal due to its death or due to the lack of a source to provide the animal visitations) about the animal being with the residents, please check them, are presented in Table 28. The number of staff who reported concerns was calculated. The corresponding percent of staff per job category from the total 63 staff from the experimental group sites who reported concerns per factor was calculated. 30.16 percent of staff indicated concerns regarding loss of the animal, 19.05 percent indicated safety concerns, and 17.46 percent of the staff respondents had concerns regarding hygiene.

**Table 27**

**Profile Of Staff In Facilities Receiving Animal-Assisted Therapy Who Thought That Animal Visits Helped Residents Cope With Anxiety, Depression, And/Or Loneliness, N=63**

| Job Category            | #            | Anxiety % | #            | Depression % | #            | Loneliness % |
|-------------------------|--------------|-----------|--------------|--------------|--------------|--------------|
| Administration          | 8            | 72.73     | 3            | 81.32        | 5            | 90.91        |
| Activities              | 17           | 100       | 2            | 100          | 6            | 100          |
| Nursing                 | 11           | 84.81     | 1            | 92.31        | 2            | 92.31        |
| Social Services         | 5            | 71.43     | 2            | 71.43        | 2            | 100          |
| Nutrition               | 1            | 25        | 2            | 50           | 2            | 100          |
| Clerical                | 2            | 40        | 2            | 100          | 2            | 100          |
| Maintenance             | 1            | 33.33     | 0            | 0            | 0            | 100          |
| Speech Pathology        | 2            | 100       | 0            | 100          | 0            |              |
| Staff Development       | 0            | 0         | 0            | 100          | 0            | 100          |
| Total # And % Reporting | 47 or 74.60% |           | 56 or 88.88% |              | 60 or 92.25% |              |

**Table 28**

**Profile Of Staff Reporting Concerns In Facilities Receiving Animal-Assisted Therapy, N=63**

| Job Category                    | #            | Hygiene % | #            | Safety % | #            | Loss Of Animal % |
|---------------------------------|--------------|-----------|--------------|----------|--------------|------------------|
| Administration                  | 3            | 27.27     | 3            | 25       | 5            | 26               |
| Activities                      | 0            | 0         | 2            | 16.75    | 6            | 32               |
| Nursing                         | 2            | 18.18     | 1            | 0        | 2            | 10.50            |
| Social Services                 | 1            | 9.09      | 2            | 16.75    | 2            | 10.50            |
| Nutrition                       | 2            | 18.18     | 2            | 16.75    | 2            | 10.50            |
| Clerical                        | 2            | 18.18     | 2            | 16.75    | 2            | 10.50            |
| Maintenance                     | 1            | 9.09      | 0            | 0        | 0            | 0                |
| Speech Pathology                | 0            | 0         | 0            | 0        | 0            | 0                |
| Staff Development               | 0            | 0         | 0            | 0        | 0            | 0                |
| Total # And % Reporting Concern | 11 or 17.46% |           | 12 or 19.05% |          | 19 or 30.16% |                  |

Staff responses to the statement "please rank 5 of the 14 items above in the order which you consider the most to least important factors provided to the residents by the visiting animal(s)", were also examined. The form, Staff Attitudes About Animal-Assisted Therapy, had provided the staff with 14 terms (factors) which they were asked to check if they thought that animal visits provided residents with that specific term. Those terms were: friendship, relaxation, emotional support, comfort, someone to converse with, companionship, a topic of conversation, love, entertainment, attention, acceptance, a better quality of life, a sense of well-being, and/or touch/sensory stimulation. Staff were asked to check as many or as few terms as they thought applied. Staff responses indicated that the following terms were considered to be the most important factors provided by AAT to residents at the facilities which received AAT where they were employed: love, companionship, touch/sensory stimulation, a better quality of life, comfort, attention, and emotional support. The least important factors provided by AAT to residents were indicated by the staff respondents to be love, touch/sensory stimulation, a better quality of life, emotional support, a topic of conversation, acceptance, entertainment, a sense of well-being, and friendship (Table 29).

**Table 29**

**Profile Of Staff Opinions Regarding The Most And The Least Important Factors Provided By Animal-Assisted Therapy To Residents, N=63 (Experimental Group Sites)**

| <b>Most Important Factors (Terms) Provided By AAT to Residents</b>  |                                                |
|---------------------------------------------------------------------|------------------------------------------------|
| <b>Factor (Term)</b>                                                | <b>Job Category Ranking As Most Important</b>  |
| Love                                                                | Nutrition                                      |
|                                                                     | Clerical                                       |
|                                                                     | Staff Development                              |
| Companionship                                                       | Administrative                                 |
|                                                                     | Maintenance                                    |
| Touch/Sensory Stimulation                                           | Nursing                                        |
|                                                                     | Nutrition                                      |
| Better Quality of Life                                              | Activities                                     |
| Comfort                                                             | Social Services                                |
| Attention                                                           | Nutrition                                      |
| Emotional Support                                                   | Nutrition                                      |
| No Clear Indicator                                                  | Speech Pathology                               |
| <b>Least Important Factors (Terms) Provided By AAT To Residents</b> |                                                |
| <b>Factor (Term)</b>                                                | <b>Job Category Ranking As Least Important</b> |
| Love                                                                | Maintenance                                    |
| Touch/Sensory Stimulation                                           | Social Services                                |
| Better Quality of Life                                              | Maintenance                                    |
| Emotional Support                                                   | Nursing                                        |
| Topic of Conversation                                               | Administrative                                 |
|                                                                     | Activities                                     |
|                                                                     | Nutrition                                      |
|                                                                     | Maintenance                                    |
|                                                                     | Social Services                                |
|                                                                     | Staff Development                              |
| Acceptance                                                          | Administrative                                 |
| Entertainment                                                       | Social Services                                |
| A Sense of Well-being                                               | Speech Pathology                               |
| Friendship                                                          | Clerical                                       |

After similar analyses were performed on the responses obtained from staff who worked at sites which did not receive animal-assisted therapy, the control group of staff respondents, the following information was interpreted: (1) No staff members from speech pathology or from staff development responded to the questionnaire; (2) 33.33 percent of the responses came from activities staff, 24.25 percent of the responses were received from administrative staff, 12.12 percent of the responses were received from maintenance staff, 9.09 percent of the responses came from nursing staff, 9.09 percent of the responses came from nutrition staff, 6.06 percent of the responses came from social services staff, and 6.06 percent of the responses came from clerical staff. Table 30 was constructed to present the responding staff attitudes about animal-assisted therapy in

**Table 30**

**Profile Of Staff In Facilities Not Receiving Animal-Assisted Therapy Who Thought That Animal Visits Helped Residents Cope With Anxiety, Depression, And/Or Loneliness, N=33**

| <b>Job Category</b>                    | <b>#</b>     | <b>Anxiety %</b> | <b>#</b>     | <b>Depression %</b> | <b>#</b>   | <b>Loneliness</b> |
|----------------------------------------|--------------|------------------|--------------|---------------------|------------|-------------------|
| <b>Administration</b>                  | 6            | 18.18            | 6            | 18.18               | 8          | 24.24             |
| <b>Activities</b>                      | 8            | 24.24            | 10           | 30.30               | 11         | 33.33             |
| <b>Nursing</b>                         | 2            | 6.06             | 1            | 3.03                | 3          | 9.09              |
| <b>Social Services</b>                 | 2            | 6.06             | 2            | 6.06                | 2          | 6.06              |
| <b>Nutrition</b>                       | 0            | 0                | 2            | 6.06                | 3          | 9.09              |
| <b>Clerical</b>                        | 0            | 0                | 1            | 3.03                | 2          | 6.06              |
| <b>Maintenance</b>                     | 2            | 6.06             | 5            | 9.09                | 4          | 12.12             |
| <b>Total # And % Reporting Concern</b> | 20 or 60.61% |                  | 25 or 75.76% |                     | 33 or 100% |                   |

regard to the percent of respondents per job category who said that animal visits helped residents cope with anxiety, depression, and/or loneliness. It was concluded that the staff respondents from the assisted living and health care sites which did not receive AAT perceived that AAT was most beneficial in helping residents cope with loneliness, depression and anxiety, in that order.

The responses to the statement, if you have any of the following concerns (hygiene, safety, or having to cope with loss of the animal due to its death or due to the lack of a source to provide the animal visitations) about the animal(s) being with the residents, please check them, were examined. 48.48 percent of the respondents indicated concerns regarding safety, 36.36 percent reported concerns regarding hygiene, and 30.30 percent reported concerns regarding loss of the animal (Table 31).

**Table 31**

**Profile Of Staff Reporting Concerns In Facilities Not Receiving Animal-Assisted Therapy, N=33**

| Category                        | #            | Hygiene<br>% | #            | Safety<br>% | #            | Loss Of Animal<br>% |
|---------------------------------|--------------|--------------|--------------|-------------|--------------|---------------------|
| Administration                  | 6            | 41           | 4            | 25          | 4            | 40                  |
| Activities                      | 2            | 17           | 6            | 31          | 0            | 0                   |
| Nursing                         | 2            | 17           | 3            | 19          | 1            | 10                  |
| Social Services                 | 0            | 0            | 1            | 6           | 2            | 20                  |
| Nutrition                       | 0            | 0            | 1            | 6           | 1            | 10                  |
| Clerical                        | 1            | 8            | 2            | 13          | 1            | 10                  |
| Maintenance                     | 2            | 17           | 0            | 0           | 1            | 10                  |
| Speech Pathology                | 0            | 0            | 0            | 0           | 0            | 0                   |
| Staff Development               | 0            | 0            | 0            | 0           | 0            | 0                   |
| Total # And % Reporting Concern | 12<br>36.36% |              | 16<br>48.48% |             | 10<br>30.30% |                     |

In the case of sites which received AAT administrative staff indicated a higher percent o concern regarding hygiene and safety, while activities staff indicated a higher percent of concern regarding loss of the animal, when compared with the other job categories of staff who responded to the questionnaire. Administrative staff at sites which did not receive AAT reported a higher percent of concern regarding hygiene, loss of the animal, and safety. At the same sites activities staff reported a higher percent of concern regarding safety, and hygiene when compared with the other job categories of staff who responded to the questionnaire.

Staff responses to the statement, please rank 5 of the 14 items above in the order which you consider the most to least important factors provided to the residents by the visiting animal(s), were also examined in the case of the responses received from staff members working at sites which did not receive AAT. Staff responses indicated that the following terms were considered to be the most important factors provided by AAT to residents: love, friendship, and relaxation. A topic of conversation and comfort were the least important factors listed (Table 32).

Love was the only factor ranked as most important by staff from both sites, those receiving AAT and those not receiving AAT. A topic of conversation was the only factor ranked by both groups as the least important factor provided by animal-assisted therapy to residents of assisted

**Table 32**

**Profile Of Staff Opinions Regarding The Most And The Least Important Factors Provided By Animal-Assisted Therapy To Residents, N=33 (Control Group Sites)**

| <b>Most Important Factors (Terms) Provided By AAT to Residents</b>  |                                               |
|---------------------------------------------------------------------|-----------------------------------------------|
| <b>Factor (Term)</b>                                                | <b>Job Category Ranking As Most Important</b> |
| Love                                                                | Activities                                    |
| Friendship                                                          | Administration                                |
| Relaxation                                                          | Administration                                |
| No Clear Indicator                                                  | Nursing                                       |
|                                                                     | Social Services                               |
|                                                                     | Nutrition                                     |
|                                                                     | Clerical                                      |
|                                                                     | Maintenance                                   |
| <b>Least Important Factors (Terms) Provided By AAT to Residents</b> |                                               |
| <b>Factor (Term)</b>                                                | <b>Category Ranking as Least Important</b>    |
| Topic of Conversation                                               | Administration                                |
| Comfort                                                             | Activities                                    |
| No Clear Indicator                                                  | Nursing                                       |
|                                                                     | Social Services                               |
|                                                                     | Nutrition                                     |
|                                                                     | Clerical                                      |
|                                                                     | Maintenance                                   |

living and health care communities.

## **SUMMARY OF CHAPTER IV**

In this chapter the analyses of data collected from the various samples were discussed and supported by the use of titled tables and figures. The sections of this chapter included an introduction to the statement of the problem and a list of the contents of this chapter, a section on data analyses and findings as indicated after statistical analyses of:

- Pilot Test Population Demographic Information And Instrumentation Analyses

- Analysis Of Pre-test Scores: The Beck Anxiety Inventory And The Beck Depression Inventory - Scores Obtained From The Original Groups
- Analysis Of Variance On Pre-test Scores Compared With Post-test<sub>1</sub>, Post-test<sub>2</sub>, And Post-test<sub>3</sub> Scores Obtained On The Beck Anxiety Inventory From The Experimental Group (N=9) And From The Control Group (N=13)
- Analysis Of Variance On Pre-test Scores Compared With Post-test<sub>1</sub>, Post-test<sub>2</sub>, And Post-test<sub>3</sub> Scores Obtained On The Beck Depression Inventory From The Experimental Group (N=9) And From The Control Group (N=13)
- Analysis Of Pre-test Scores On Form A, Form B, And Form C Of Attitudes About Human & Animal Bonds
- Descriptive Statistics: A Comparison Of Individuals' Pre-test Scores On Form A With Their Post-test Scores On Form A Of Attitudes About Human & Animal Bonds: Experimental Group, N=13
- Paired Samples Statistics: Pre-test Scores On Form B (Experimental Group, N=13) Compared With Pre-test Scores On Form C (Control Group, N=14) And Post-test Scores On Form B (Experimental Group, N=13) Compared With Post-test Scores On Form C (Control Group, N=14)
- Staff Attitudes About Animal-Assisted Therapy

For each separate section of data analysis, the respective sample was reviewed. Nominal data was described by its categorization, and pertinent demographic data was presented in the form of tables and figures.

## **CHAPTER V**

### **SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS**

#### **INTRODUCTION**

The primary purpose of this study was to determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare the experimental groups' and the control groups' attitudes about human and animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

This chapter will focus upon the following sections: (1) a summary of the findings during which the scope and sequence of each research question is outlined separately, (2) a list of the findings based on the analysis of the data in this study, (3) conclusions which outline what was concluded for each separate research question based on the findings,

(4) recommendations for further study, and (5) summary remarks which provide a synopsis of this chapter's contents.

### **SUMMARY**

The participants who volunteered to be subjects in this study were alert, oriented residents at assisted living or health care communities in East Tennessee during Spring 1997. The experimental group was composed of 41 residents at five different sites, while the control group was composed of 39 residents at seven different sites. A pilot study was conducted for the purposes of determining length of time for administration of each instrument utilized in this study, and for determining any unforeseen difficulties with successful execution of the protocol as outlined for data collection.

Specifically, the research questions were addressed in order to determine (1) if animal-assisted therapy served to reduce anxiety and depression in residents of assisted living and health care communities in East Tennessee; (2) if changes occurred in levels of measured anxiety or in levels of measured depression experienced by a group of residents from the original experimental group, who were visited by an AAT dog for an increased time period per week for two weeks, when the group's pre-test and series of three post-test scores on the BAI and on the BDI were compared with the control group's scores; (3) if Form A, Form B and Form

C of Attitudes About Human & Animal Bonds indicated a positive or negative attitude toward animals when administered in a pre-test/post-test format; and (4) what Staff Attitudes About Animal-Assisted Therapy indicated when responses from staff at assisted living and health care sites which received AAT were compared with responses from staff which did not receive AAT. After an extensive review of the validity and reliability of the short forms of the Beck Anxiety Inventory and the Beck Depression Inventory, these instruments were used to measure levels of anxiety and depression among the specified population. Form A, Form B, and Form C of Attitudes About Human & Animal Bonds and the form Staff Attitudes About Animal-Assisted Therapy were constructed for the purposes of this study. The statistical methods used in the analyses of data included: analysis of variance to determine if there were significant differences between the groups on the dependent variables (anxiety and depression), Wilcoxon Rank Sums Test to determine which group differed significantly, if at all, on the dependent variables, and descriptive statistics to compare calculated means and percents and to profile (1) the pilot study population, (2) the populations participating as either an experimental or a control group, and (3) the populations responding to the questionnaire Staff Attitudes About Animal-Assisted Therapy.

## FINDINGS

Based on the research questions addressed and on the analyses of the data collected during the study, the findings are as follows:

1. Pre-test scores indicate no significant difference in the levels of measured anxiety reported by members of the original experimental group (N=41) and the original control group (N=39); however, pre-test scores indicate a significant difference in the levels of measured depression reported by the members of these groups, with the level of depression being higher in the control group.
2. Levels of measured anxiety and levels of measured depression increase in the experimental group (N=9) after two weeks of exposure to an animal-assisted therapy dog and do not return to the group's reported pre-test levels by post-test<sub>3</sub>, while levels of measured anxiety drop progressively from pre-test to post-test<sub>3</sub> and levels of measured depression drop progressively from post-test<sub>1</sub> to post-test<sub>3</sub> among the control group members (N=13).
3. Attitudes About Human & Animal Bonds: Upon pre-testing a mean score on Form A of + 11.90 indicates a positive attitude among experimental group members (N=41), and a comparison of pre-test scores on Form B and Form C indicates no significant

difference among attitudes between the experimental group (N=41) and the control group (N=39). A mean pre-test score of + 12.69 and a mean post-test score of + 12.61 on Form A indicate positive attitudes among experimental group members (N=13), and a comparison of pre-test scores on Form B (N=13) with pre-test scores on Form C (N=14) indicates a slightly more positive attitude among experimental group members. A comparison of post-test scores on Form B (N=13) with post-test scores on Form C (N=14) indicates an increase in positive attitudes among experimental group members and a decrease in positive attitudes about human and animal bonds among control group members, although neither change is statistically significant.

4. Staff Attitudes About Animal-Assisted Therapy: Staff at sites which are receiving animal-assisted therapy and staff at sites which are not receiving AAT think that animal visits help residents cope with loneliness, depression, and anxiety, in that order. Staff at sites which are receiving AAT report concerns as (1) loss of the animal, (2) safety, and (3) hygiene, while staff at sites which are not receiving AAT report concerns as (1) safety, (2) hygiene, and (3) loss of the animal. Staff at sites which are receiving AAT list the most important factors that animals are

providing as love, companionship, touch/sensory stimulation, a better quality of life, comfort, attention, and emotional support, while staff at sites which are not receiving AAT report love, friendship, and relaxation as the most important factors that animals are providing.

## **CONCLUSIONS**

The following conclusions are made based on the findings and are specific to this study where the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care centers in East Tennessee, as well as those centers participating residents attitudes about human and animal bonds and those centers and other similar centers staff attitudes about animal-assisted therapy are examined.

1. When the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities is examined by employing the Beck Anxiety Inventory and the Beck Depression Inventory, AAT does not contribute significantly to the reduction of anxiety; however, AAT does contribute significantly to the reduction of depression.
2. After two weeks of exposure to an AAT dog, there is an increase in levels of measured anxiety and depression in the experimental

group (N=9), and there is a decrease in levels of measured anxiety and depression from the time of pre-testing to the time of post-test<sub>3</sub> in the control group (N=13).

3. Members of the original experimental group (N=41) and members of the original control group (N=39) have positive attitudes about human and animal bonds. Increasing the residents length of exposure time to an AAT dog to thirty minutes per week for two weeks results in a slight increase in the experimental group's positive attitude about human and animal bonds.
4. Staff perceptions that animal-assisted therapy is more effective at helping residents of assisted living and health care centers cope with depression, when comparing anxiety and depression, are accurate when based on results from the Beck Anxiety Inventory and the Beck Depression Inventory.

### **RECOMMENDATIONS**

The following are recommendations for further study of the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities:

A study should be conducted with two separate groups of residents in separate assisted living and health care communities that have never

received animal-assisted therapy. pre-test scores on the BAI and on the BDI should be obtained initially, and one of the groups should be exposed to AAT for an extended period of time. A post-test should be administered at the end of the AAT exposure. An additional study should be conducted with two separate groups of residents in the same assisted living and health care community that has never received AAT. After pre-testing to determine levels of anxiety and depression in each group, one of the groups should be exposed to thirty minutes of exposure to an AAT dog for two consecutive weeks, and both groups should receive the first post-test. Another session of two consecutive weeks of exposure to the same AAT dog should follow post-test<sub>1</sub>, and both groups should receive post-test<sub>2</sub>. Twenty-four hours later both groups should receive post-test<sub>3</sub>, and two weeks later both groups should receive post-test<sub>4</sub>. Finally, post-test<sub>5</sub> should be administered two months after post-test<sub>4</sub>. No AAT should be administered to either group after post-test<sub>2</sub>.

A second study should employ residents at the same facility. They should be divided randomly into experimental and control groups, as this would shed some light regarding the extrapolation of obtained data, since variables such as environmental factors, facility atmosphere, and staff policies and philosophies may vary somewhat from one assisted living or health care facility to another.

1. A study is needed which is similar in design to the present research with a true random sample of residents in assisted living and health care facilities. As a result of random sampling, the populations would not be composed of volunteers who may have volunteered for the present study because they liked animals. Random sampling would result in a definite mixture of residents who liked animals and residents who did not like animals.
2. It is absolutely critical to find an AAT volunteer (or volunteers) who will maintain the AAT visits as outlined by the time series design in order for the administrators, the activities directors, and the participating residents at the assisted-living and health care facilities to conduct their scheduled activities of daily living with a minimum amount of disruption.
3. Validity and reliability should be established for the instruments which were constructed for the purposes of this study: Form A, Form B, and Form C of Attitudes About Human & Animal Bonds and Staff Attitudes About Animal-Assisted Therapy.
4. A study should be conducted among residents of the same age group as in this study who live in their own homes in order to compare levels of measured anxiety and depression between

home-dwellers who own animals and home-dwellers who do not own animals.

5. Health educators could provide information regarding the benefits of AAT to staff who are not familiar with animal-assisted therapy. Health educators could increase the knowledge pool of benefits derived from AAT to staff who are familiar with animal-assisted therapy.
6. The range of studies similar to this research needs to be expanded since this study has implications for health education. AAT is a simple, cost-effective, adjunctive therapy which promises benefits to the increasing number of institutionalized elderly. Similar studies need to be conducted as means of quantitatively measuring the effect of animal-assisted therapy on the social and physical health of the elderly residing in long-term care facilities.

### **SUMMARY REMARKS**

The sections which composed this chapter were contained in the introduction: a summary of the major findings, a list of all findings based on the statistical analyses of the data, conclusions made based on the findings, and recommendations for future studies. The introduction revisited the purpose of this study, while the summary section reviewed the population, research questions, instrumentation, and statistical analyses. Findings were organized according to each variable, thus, like findings for

the experimental and for the control groups were discussed in sequence. The conclusions related back to the statement of the problem and addressed the individual research questions presented in Chapter I. The recommendations, in regard to further study, highlighted factors which could have facilitated the conduct of this study, and also addressed a potentially more successful methodology.

## **CHAPTER VI**

### **THE STUDY IN RETROSPECT**

#### **INTRODUCTION**

The primary purpose of this study was to determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities in East Tennessee. A second purpose was to analyze by use of a time series design the effect of thirty minutes of exposure to an AAT dog during a two-week period on anxiety and depression among a group of residents which was part of the original larger group of participants. A third purpose was to compare the experimental groups' and the control groups' attitudes about human and animal bonds. The final purpose of this study was to analyze assisted living and health care center's staff attitudes about animal-assisted therapy.

Animal-assisted therapy is a goal-directed intervention in which an animal is incorporated as an integral part of treatment processes. AAT is delivered by a certified volunteer handler and an animal who can work in a variety of settings. AAT treatment is designed to improve the therapy of physically, cognitively, psychosocially, and physiologically challenged individuals. AAT certified animals act as catalysts as well as therapeutic mediums in conjunction with their skilled volunteer handlers. AAT is a

therapeutic tool used to help reinforce the human-animal bond, proven to increase the recovery rate of patients, and to successfully assist with a variety of physical, physiological, and psychological impairments. Animal-assisted activities are intended to provide opportunities for human-animal interaction and to promote educational and motivational benefits while reinforcing the important bond between humans members of the animal kingdom and the animals themselves. Qualified volunteer specialists and their accompanying animals enhance and assist in the communication process with different individuals or groups in a variety of settings (International Wildlife Education and Conservation [IWECC], 1996).

The elderly compose the fastest growing segment of the population in our society. It is projected that thirty percent of the U.S. population will be age 65 and older by the year 2020. The majority of the elderly live in the community; however, the number of our elderly who reside in long-term care facilities is becoming larger because of the increase in life expectancy. Entering an institution can have a negative effect on a person's sense of well-being. This deterioration in physical or mental health, or both, added to leaving one's home, one's personal belongings, one's family, and perhaps also one's pets has contributed to a patient feeling 'disoriented, isolated, angry or depressed' (San Francisco Society for the Prevention of the Cruelty to Animals [SF/SPCA], 1986). These

persons are prime candidates for deprivation in the areas of socialization and sensory stimulation (McQuillen, 1985). Visiting pets and people recreate an aura of domesticity for residents in long-term care facilities who have suddenly been cut off from their homes and families by age and/or illness (Savishinsky, 1992).

This concluding chapter allows for identification of strengths and weaknesses of the research plan and for identification of strengths and weaknesses of the methodology employed in this study. This chapter contains a reflective introduction, a section for reflections on the findings, and a summary which completes the discussion of this study.

### **REFLECTIONS ON THE FINDINGS**

To accomplish this type of study, interdisciplinary cooperation is needed. Non-judgmental comments among the facilities' staff, the animal-assisted therapy program(s) supervisors, and the human AAT volunteers is absolutely essential. The animal does not judge but offers a feeling of intense loyalty. It is not frightening or demanding, nor does it expose its master to the ugly strain of constant criticism. It provides its owner (and its human acquaintances) with the chance to feel important (Siegel, 1962). Nevertheless, residents of long-term facilities who do not wish to be exposed to animals should have a pet-free area within the participating facility.

Despite widespread use of the terms pet therapy, pet-facilitated therapy, animal-facilitated therapy, and animal-assisted therapy, few quantitative studies that examined the relationship between the presence of animals and the responses of the elderly have been documented. The importance of allowing records to be kept of the day and the length of each animal-assisted therapy visit, and the importance of allowing records of each participant's attendance at the AAT sessions is critical when conducting similar studies. Evidence on the nature of the effect of AAT presented in the literature to date has been largely anecdotal or based on clinical case studies. There is a definite need for quantitative data-based evaluation to balance the anecdotal evidence which permeates much of the animal-assisted therapy's legacy to date.

The difficulties involved in obtaining consent to conduct such a scientific study in institutional settings, such as assisted living and health care facilities, and the difficulties involved in soliciting the cooperation of AAT volunteers to participate in this scientific study were important factors which need to be addressed. In reflection, when considering the fact that 19 out of 31 administrators or activities directors approached to take part in this study declined, the reasons associated with those declines need to be questioned. The conclusion is that alert, oriented residents should have the right to make decisions regarding participation in research projects

themselves, when the research has been established as involving no foreseeable risks to the participants.

The strong bias that AAT works among the participating AAT volunteers in this study was not always tempered with the fact that potential AAT failures should be documented with objective scientific observation. Presenting the successes and the failures associated with AAT allows formations of important records which can be reviewed for future research projects needed to investigate the possibility of correctable systems breakdown, whether in the facility itself or with the nature of the interaction of the specific AAT volunteer and the specific animal being used for purposes of therapy.

During the course of this study several residents stated a preference for one or more specific volunteers and a preference for one or more of their accompanying animals. These anecdotal or personal accounts revealed a preference for one or more AAT volunteers based on the volunteer's personality and also based on the accompanying AAT animal's personality. These preferences, especially since they were brought into the light, may account for some of the unexpected rises in levels of measured anxiety and depression among the participants in the experimental group (N=9). Some of the participating residents may have felt forced to visit with an AAT volunteer or with an AAT animal with whom they felt uncomfortable.

This may have resulted in the visits with the AAT volunteer and the AAT animal having somewhat of a disturbing effect as opposed to a relaxing effect upon specific residents who expressed a preference to visit with other AAT volunteers and their accompanying animals.

In retrospect, the willingness of more than one AAT volunteer and his/her accompanying animal to spend thirty minutes for two consecutive weeks visiting with the experimental group of participants in this study would have given each participant in this study a choice of visiting with the AAT volunteer and animal which that particular resident found most enjoyable. This leaves room for future research to investigate the effect of specific AAT volunteers and the effect of specific AAT animals on levels of measured anxiety and depression in residents of assisted living and health care communities. Perhaps the degree to which the AAT human volunteer interacts with each individual resident affects the individual resident's perception of the animal's benefit in that particular resident's own case.

Since all members of the experimental group (N =9) resided at one facility and the members of the control group (N=13) resided at three separate facilities, the Hawthorne Effect may have been more pronounced among the members of the control group due to more time allotments for becoming better acquainted with members of the control group, simply as a result of fewer numbers of people to attend to during the instrument

administration phase of the study at the three separate facilities. This reflection indicates a possible weakness in methodology, which was not correctable during this study due to the unavailability of a sufficient number of participants residing at one assisted living or at one health care facility which fit the criteria established for a site from which to solicit control group members.

Considerations for future research need to include the limitation that fluctuating attendance in a group setting of long-term care facility residential participants could covertly affect the social atmosphere of the group setting. It is not possible to demand that residents' appointments with physicians, medication schedules, visits with unexpected visitors, illnesses, and/or deaths come to an abrupt halt. Therefore, in order to determine the efficacy of AAT in long-term care facilities, it should be remembered that initial groups of volunteering residents which are as large as possible be solicited.

A weakness in the research plan included the lack of planning by training an assistant to help with requests made for assistance when several members in a group of participants needed help with reading and/or writing. No accommodations for an accompanying assistant were made prior to beginning the research. In retrospect, having a trained assistant to help the residents with reading and/or writing would have

alleviated some of the problems encountered, such as the unwillingness or the unavailability of a resident assistant to help with the study as outlined.

An additional weakness in methodology in this study resulted from the requests of the administrators at two of the experimental group facilities to present this study to the residents at those facilities by placing a letter of introduction to the proposed study in the residents' mailboxes. There was no control over the length of time which passed between the introduction of this study by letter at those facilities and the time that the initial face-to-face meeting with the interested residents was held. It was mentioned by the assistants at those facilities, who had been assigned by the administration to assist with introductions, that some residents, who had initially signed up for the study after having received the letter of introduction to the study in their mailboxes, had lost interest by the time a face-to-face meeting with the interested residents as a group was allowed. This meeting was critical to the success of the study since it allowed for time to elaborate on the purpose of and need for the study and for time to answer any questions that potential participants might have had. In retrospect, the study could have been best introduced to potential participants by meeting with the interested residents personally at all facilities. Also, the time lapse between the meeting of introduction and the actual data collection phase of the study should begin as soon as possible, and it should proceed on schedule

as agreed upon by the administration at each respective facility. This can only be accomplished during future studies, which either replicate this study or which replicate this study with modifications, when the administration commits to the contract and the established schedule for data collection as agreed upon between the consenting parties.

It is crucial to similar studies which may be conducted in the future that the importance of maintaining the schedule as outlined in regard to point testing be held as a contract between the consenting parties.

Activities which are scheduled impromptu for the residents should not be scheduled during the previously agreed upon days and hours for data collection for the purposes of such a study. The need to maintain rigorous scientific methodology during this investigation was occasionally interrupted by lack of cooperation and by lack of consistency when honoring written contracts.

When addressing possible modifications for the instruments which were constructed for the purposes of this study, it was determined that the addition of a neutral or undecided response category to Form A, to Form B, and to Form C would have been appropriate for the population studied. This decision was arrived at after documenting comments made and after observing the degree of difficulty among some members of the specified

population when completing select items, which varied from participant to participant in the population utilized for the purposes of this study.

Volunteering is an act of the will; however, good will and good intentions are not necessarily enough to keep AAT volunteers involved in their work. To volunteer is to offer one's time, which is a gift that can never be reclaimed, in exchange for other people's gratitude, which is a reward which can rarely be bought. The perfect symmetry of such altruism is very attractive, but this idealized image conveys only one of the many meanings that voluntarism has had for individuals in our culture. Beyond altruism, or besides it, people have used their volunteer work to achieve grace, to further their careers, to assuage guilt, to fulfill vows, to combat boredom, to lay ghosts to rest, and to confront a myriad of other existential problems. For all of its bad press and lack of pay, voluntarism has long occupied a rather substantial place in the American search for meaning and fulfillment (Savishinsky, 1992). More extensive training of AAT volunteer leaders regarding the potential for participating in empirical research studies, and the resultant atmosphere inside a long-term care institution involved in such a study might pave the way for more studies to be conducted. Also, the development of additional support systems for the AAT volunteers and their supervisors might make the benefits and the short-comings of animal-assisted therapy more accessible to quantitative measurement.

Regulatory agencies and accrediting bodies require that health care institutions provide presumably therapeutic stimuli in residents' living areas. The use of pets for therapeutic purposes represents an interactional therapy that draws upon an abundant resource. Unwanted dogs and cats can be made available for more hours at a much lower cost and in greater numbers than can psychiatrists, nurses, poets, and others, the costs of veterinary care, housing, and training not withstanding. Thus, animal-assisted therapy meets the criterion posed by Wolanin for a successful interactional therapy - sustainability (Robb, Boyd, and Pristash, 1980).

The success of research endeavors in the health sciences is dependent on effective planning, which must be well thought-out. Effective planning demands communication, cooperation, and coordination. The following specific suggestions are presented to facilitate the conduct of future studies designed to empirically determine the effect of animal-assisted therapy on levels of measured anxiety and depression in residents of assisted living and health care communities:

1. Plan effectively by anticipating what will be needed. Meet with and interview the potential AAT volunteers and their animals personally. Discuss the need for long-term time commitment to the study outlined. Agree upon a regular communication schedule in order that any unexpected questions or concerns which may arise may be

addressed immediately. Stress the need for objectivity, and therefore the need to refrain from interjecting personal positive or negative comments regarding the study during visitation periods with the participating residents.

2. Request a meeting with the administration and suggest that any comments made which conflict with the outlined protocol may result in confusion and noncompliance with the study as outlined. Request that the administration refrain from interjecting personal opinions during the course of the study.
3. Request a meeting with all alert, oriented residents, and present the study personally. Introduce yourself and the reasons for conducting the study. Answer questions honestly and thoroughly. No additional interpretations from others are needed. This will allow for consistency when conducting the study as outlined from facility to facility.
4. Solicit as large a population of long-term facility residents as possible. Take into account the potential for a high attrition rate among the selected population. Patience and a time commitment to the data collection process of no less than six months is necessary.
5. Personally train one assistant to help with reading, writing and/or comprehension of instruments.

6. Select a site to pursue a future study in a location other than East Tennessee since the present study exhausted the potential for sufficient numbers of participants.
7. Offer an incentive for participation. This may result in a true random sample of subjects. The choice of the incentive offered may vary from facility to facility. Prior to beginning a study, consult the administration at each participating facility regarding the most appropriate and effective incentive for the particular population.

### **SUMMARY OF CHAPTER VI**

This chapter, Chapter VI, of the dissertation contains the following sections: an introduction, a section entitled reflections on the findings, and a brief summary. This chapter permits a place for critiquing the dissertation and for addressing variances in results and expectations. It also allows for statements to be made which indicate that the health science professional considered (and considers) animal-assisted therapy an important adjunctive therapy which leaves considerable space for future studies based on guidelines established by the scientific method for performing serious research.

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## APPENDICES

## **APPENDIX A**

### **A Sample Of The Animal-Assisted Therapy Volunteer Information Sheet**

The information requested here is for research purposes only. **Please complete a separate form for each animal that accompanies you when you visit at any Assisted Living Facility or any Health Care Center/Nursing Home.** Your individual responses will be held absolutely confidential. You may omit any questions which you choose to omit.

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## **APPENDIX B**

The Beck Anxiety Inventory (BAI)

The Beck Depression Inventory (BDI)



NAME \_\_\_\_\_

DATE \_\_\_\_\_

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

|                                           | NOT<br>AT<br>ALL | MILDLY<br>It did not<br>bother me much. | MODERATELY<br>It was very unpleasant,<br>but I could stand it. | SEVERELY<br>I could barely<br>stand it. |
|-------------------------------------------|------------------|-----------------------------------------|----------------------------------------------------------------|-----------------------------------------|
| 1. Numbness or tingling.                  |                  |                                         |                                                                |                                         |
| 2. Feeling hot.                           |                  |                                         |                                                                |                                         |
| 3. Wobbliness in legs.                    |                  |                                         |                                                                |                                         |
| 4. Unable to relax.                       |                  |                                         |                                                                |                                         |
| 5. Fear of the worst happening.           |                  |                                         |                                                                |                                         |
| 6. Dizzy or lightheaded.                  |                  |                                         |                                                                |                                         |
| 7. Heart pounding or racing.              |                  |                                         |                                                                |                                         |
| 8. Unsteady.                              |                  |                                         |                                                                |                                         |
| 9. Terrified.                             |                  |                                         |                                                                |                                         |
| 10. Nervous.                              |                  |                                         |                                                                |                                         |
| 11. Feelings of choking.                  |                  |                                         |                                                                |                                         |
| 12. Hands trembling.                      |                  |                                         |                                                                |                                         |
| 13. Shaky.                                |                  |                                         |                                                                |                                         |
| 14. Fear of losing control.               |                  |                                         |                                                                |                                         |
| 15. Difficulty breathing.                 |                  |                                         |                                                                |                                         |
| 16. Fear of dying.                        |                  |                                         |                                                                |                                         |
| 17. Scared.                               |                  |                                         |                                                                |                                         |
| 18. Indigestion or discomfort in abdomen. |                  |                                         |                                                                |                                         |
| 19. Faint.                                |                  |                                         |                                                                |                                         |
| 20. Face flushed.                         |                  |                                         |                                                                |                                         |
| 21. Sweating (not due to heat).           |                  |                                         |                                                                |                                         |



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17 A B C D E

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Date: \_\_\_\_\_

Name: \_\_\_\_\_ Marital Status: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_ Education: \_\_\_\_\_

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which best describes the way you have been feeling the past week, including today. If several statements within a group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p>1 0 I do not feel sad.<br/>1 I feel sad.<br/>2 I am sad all the time and I can't snap out of it.<br/>3 I am so sad or unhappy that I can't stand it.</p> <p>2 0 I am not particularly discouraged about the future.<br/>1 I feel discouraged about the future.<br/>2 I feel I have nothing to look forward to.<br/>3 I feel that the future is hopeless and that things cannot improve.</p> <p>3 0 I do not feel like a failure.<br/>1 I feel I have failed more than the average person.<br/>2 As I look back on my life, all I can see is a lot of failures.<br/>3 I feel I am a complete failure as a person.</p> <p>4 0 I get as much satisfaction out of things as I used to.<br/>1 I don't enjoy things the way I used to.<br/>2 I don't get real satisfaction out of anything anymore.<br/>3 I am dissatisfied or bored with everything.</p> <p>5 0 I don't feel particularly guilty.<br/>1 I feel guilty a good part of the time.<br/>2 I feel quite guilty most of the time.<br/>3 I feel guilty all of the time.</p> <p>6 0 I don't feel I am being punished.<br/>1 I feel I may be punished.<br/>2 I expect to be punished.<br/>3 I feel I am being punished.</p> <p>7 0 I don't feel disappointed in myself.<br/>1 I am disappointed in myself.<br/>2 I am disgusted with myself.<br/>3 I hate myself.</p> | <p>8 0 I don't feel I am any worse than anybody else.<br/>1 I am critical of myself for my weaknesses or mistakes.<br/>2 I blame myself all the time for my faults.<br/>3 I blame myself for everything bad that happens.</p> <p>9 0 I don't have any thoughts of killing myself.<br/>1 I have thoughts of killing myself, but I would not carry them out.<br/>2 I would like to kill myself.<br/>3 I would kill myself if I had the chance.</p> <p>10 0 I don't cry any more than usual.<br/>1 I cry more now than I used to.<br/>2 I cry all the time now.<br/>3 I used to be able to cry, but now I can't cry even though I want to.</p> <p>11 0 I am no more irritated now than I ever am.<br/>1 I get annoyed or irritated more easily than I used to.<br/>2 I feel irritated all the time now.<br/>3 I don't get irritated at all by the things that used to irritate me.</p> <p>12 0 I have not lost interest in other people.<br/>1 I am less interested in other people than I used to be.<br/>2 I have lost most of my interest in other people.<br/>3 I have lost all of my interest in other people.</p> <p>13 0 I make decisions about as well as I ever could.<br/>1 I put off making decisions more than I used to.<br/>2 I have greater difficulty in making decisions than before.<br/>3 I can't make decisions at all anymore.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Subtotal Page 1

CONTINUED ON BACK

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>14 0 I don't feel I look any worse than I used to.<br/> 1 I am worried that I am looking old or unattractive.<br/> 2 I feel that there are permanent changes in my appearance that make me look unattractive.<br/> 3 I believe that I look ugly.</p> <p>15 0 I can work about as well as before.<br/> 1 It takes an extra effort to get started at doing something.<br/> 2 I have to push myself very hard to do anything.<br/> 3 I can't do any work at all.</p> <p>16 0 I can sleep as well as usual.<br/> 1 I don't sleep as well as I used to.<br/> 2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.<br/> 3 I wake up several hours earlier than I used to and cannot get back to sleep.</p> <p>17 0 I don't get more tired than usual.<br/> 1 I get tired more easily than I used to.<br/> 2 I get tired from doing almost anything.<br/> 3 I am too tired to do anything.</p> <p>18 0 My appetite is no worse than usual.<br/> 1 My appetite is not as good as it used to be.<br/> 2 My appetite is much worse now.<br/> 3 I have no appetite at all anymore.</p> | <p>19 0 I haven't lost much weight, if any, lately.<br/> 1 I have lost more than 5 pounds.<br/> 2 I have lost more than 10 pounds.<br/> 3 I have lost more than 15 pounds.</p> <p>I am purposely trying to lose weight by eating less. Yes _____ No _____</p> <p>20 0 I am no more worried about my health than usual.<br/> 1 I am worried about physical problems such as aches and pains; or upset stomach; or constipation.<br/> 2 I am very worried about physical problems and it's hard to think of much else.<br/> 3 I am so worried about my physical problems that I cannot think about anything else.</p> <p>21 0 I have not noticed any recent change in my interest in sex.<br/> 1 I am less interested in sex than I used to be.<br/> 2 I am much less interested in sex now.<br/> 3 I have lost interest in sex completely.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\_\_\_\_\_ Subtotal Page 2

\_\_\_\_\_ Subtotal Page 1

\_\_\_\_\_ Total Score

## **APPENDIX C**

Attitudes About Human & Animal Bonds: Form A, Form B And  
Form C

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM A

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION BY CHECKING A TERM DIRECTLY UNDERNEATH  
EACH SENTENCE.

THE ANIMAL(S) WHICH VISIT(S) ME:

1. GIVES ME AFFECTION.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

2. GIVES ME COMPANIONSHIP.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

3. BRINGS UP PLEASANT MEMORIES.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

4. GIVES ME A SENSE OF WELL-BEING.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

5. ACCEPTS ME.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

6. LOVES ME.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

7. MAKES ME FEEL USEFUL.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

8. RELAXES ME AS I TOUCH HIM/HER.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

9. ENJOYS BEING TALKED TO.

STRONGLY AGREE   AGREE   DISAGREE   STRONGLY DISAGREE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM B

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION. FOR EXAMPLE, IF YOU LIKE VISITS FROM THE ANIMAL, YOU WOULD PLACE A CHECK IN THE BLANK, AS SHOWN IN THE EXAMPLE BELOW.

AFTER THE ANIMAL VISITS I FEEL:

BETTER ☒ \_\_\_\_\_ WORSE

AFTER THE ANIMAL VISITS I FEEL:

LOVED \_\_\_\_\_ UNLOVED

LONELY \_\_\_\_\_ SOCIABLE

SECURE \_\_\_\_\_ INSECURE

SAD \_\_\_\_\_ HAPPY

CALM \_\_\_\_\_ TENSE

DEPRESSED \_\_\_\_\_ ELATED

ACCEPTED \_\_\_\_\_ REJECTED

TIRED \_\_\_\_\_ ENERGETIC

IN CONTROL \_\_\_\_\_ POWERLESS

BORED \_\_\_\_\_ ENTERTAINED

RELAXED \_\_\_\_\_ ANXIOUS

WORTHLESS \_\_\_\_\_ IMPORTANT

TALKATIVE \_\_\_\_\_ QUIET

DEFENSIVE \_\_\_\_\_ COOPERATIVE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM C

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION. FOR EXAMPLE, IF YOU LIKE VISITS FROM THE ANIMAL, YOU WOULD PLACE A CHECK IN THE BLANK, AS SHOWN IN THE EXAMPLE BELOW.

ANIMALS MAKE ME FEEL:

BETTER ☒ \_\_\_\_\_ WORSE

ANIMALS MAKE ME FEEL:

LOVED \_\_\_\_\_ UNLOVED

LONELY \_\_\_\_\_ SOCIABLE

SECURE \_\_\_\_\_ INSECURE

SAD \_\_\_\_\_ HAPPY

CALM \_\_\_\_\_ TENSE

DEPRESSED \_\_\_\_\_ ELATED

ACCEPTED \_\_\_\_\_ REJECTED

TIRED \_\_\_\_\_ ENERGETIC

IN CONTROL \_\_\_\_\_ POWERLESS

BORED \_\_\_\_\_ ENTERTAINED

RELAXED \_\_\_\_\_ ANXIOUS

WORTHLESS \_\_\_\_\_ IMPORTANT

TALKATIVE \_\_\_\_\_ QUIET

DEFENSIVE \_\_\_\_\_ COOPERATIVE

## **APPENDIX D**

The Questionnaire, Staff Attitudes About Animal-Assisted  
Therapy

The Letter Mailed With The Questionnaire

Profiles Of Staff Demographics At Facilities Receiving AAT,  
N=63

Profiles Of Staff Demographics At Facilities Not Receiving  
AAT, N=33

Code Sheets Of Responses On The Returned Questionnaires

### STAFF ATTITUDES ABOUT ANIMAL-ASSISTED THERAPY

The answers to the following questions are important since they will help me finish work toward my doctoral degree; therefore, I would truly appreciate your answering all of the following questions with your honest opinion.

1. YOUR POSITION/TITLE \_\_\_\_\_
2. LENGTH OF TIME IN THIS POSITION \_\_\_\_\_ (months or years?)
3. TYPE OF FACILITY \_\_\_\_\_
4. YOUR RACE \_\_\_\_\_ 5. YOUR SEX \_\_\_\_\_ 6. YOUR AGE \_\_\_\_\_

PLEASE CHECK THE FOLLOWING TERM IF YOU THINK THAT ANIMAL VISITS HELP RESIDENTS COPE WITH THAT SPECIFIC TERM. YOU MAY CHECK AS MANY OR AS FEW TERMS AS YOU THINK APPLY.

1. ANXIETY \_\_\_\_\_
2. DEPRESSION \_\_\_\_\_
3. LONELINESS \_\_\_\_\_

PLEASE CHECK THE FOLLOWING TERM IF YOU THINK THAT ANIMAL VISITS PROVIDE RESIDENTS WITH THAT SPECIFIC TERM. YOU MAY CHECK AS MANY OR AS FEW AS YOU THINK APPLY.

- |                                   |                                     |
|-----------------------------------|-------------------------------------|
| 1. FRIENDSHIP _____               | 8. LOVE _____                       |
| 2. RELAXATION _____               | 9. ENTERTAINMENT _____              |
| 3. EMOTIONAL SUPPORT _____        | 10. ATTENTION _____                 |
| 4. COMFORT _____                  | 11. ACCEPTANCE _____                |
| 5. SOMEONE TO CONVERSE WITH _____ | 12. BETTER QUALITY OF LIFE _____    |
| 6. COMPANIONSHIP _____            | 13. A SENSE OF WELL-BEING _____     |
| 7. A TOPIC OF CONVERSATION _____  | 14. TOUCH/SENSORY STIMULATION _____ |

PLEASE RANK 5 OF THE 14 ITEMS ABOVE IN THE ORDER WHICH YOU CONSIDER THE MOST TO LEAST IMPORTANT FACTORS PROVIDED TO THE RESIDENTS BY THE VISITING ANIMAL(S).

1. Most important \_\_\_\_\_
2. Next important \_\_\_\_\_
3. Next important \_\_\_\_\_
4. Next important \_\_\_\_\_
5. Least important \_\_\_\_\_

IF YOU HAVE ANY OF THE FOLLOWING CONCERNS ABOUT THE ANIMAL(S) BEING WITH THE RESIDENTS, PLEASE CHECK THEM.

1. HYGIENE CONCERNS \_\_\_\_\_
2. SAFETY CONCERNS \_\_\_\_\_
3. HAVING TO COPE WITH LOSS OF THE ANIMAL DUE TO ITS DEATH OR DUE TO THE LACK OF A SOURCE TO PROVIDE THE ANIMAL VISITATIONS \_\_\_\_\_

ANY COMMENTS? \_\_\_\_\_

**Dear Administrator and/or Activities Director:**

**Hello. My name is Cathy Hagmann, and I am collecting data for my dissertation on the topic of Animal (Pet)-Assisted Therapy. I am completing my Ph.D. in Community Health at UT-Knoxville, and part of the requirement for completion of this degree is to write a dissertation.**

**I have visited many Assisted Living and Health Care facilities in the area and collected data from voluntarily participating residents in those facilities. They have given me the bulk of the information that I need; however, I have now added the enclosed survey, "Staff Attitudes About Animal-Assisted Therapy".**

**Would you please be so kind as to ask several members of your staff (Administrator, Activities Director, Assistant Activities Director, etc.) to complete this form within the next week, if possible? It is simply a check-off list, but I would appreciate their input. If your facility does not currently receive visits from any pets, please complete the forms, but check this blank \_\_\_\_\_. As a result, please return this letter in order that I may have this information. Thank you.**

**I enclosed a self-addressed, stamped envelope for the forms to be returned to me by mail.**

**Again, I would truly appreciate your assistance. Without cooperation from people like you it would not have been possible to work on or to complete my dissertation project.**

**You may feel free to call Dr. Bill C. Wallace, a professor in the Health, Leisure, and Safety Sciences Department who is my major advisor and dissertation project supervisor, on campus at 974-5041, if you have any questions. If Dr. Wallace is not available when you call, please leave a message and he will return your call as soon as he possibly can.**

**Thank you for your time and assistance.**

**Sincerely,**

**Cathy Hagmann**

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category              |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Employee Title</b> | <b>Number Employees Responding To Questionnaire</b> |
| Administration        | 11                                                  |
|                       |                                                     |
| <b>Age</b>            |                                                     |
| 20-30                 | 0                                                   |
| 30-40                 | 6                                                   |
| 40-50                 | 0                                                   |
| 50-60                 | 3                                                   |
| 60-70                 | 0                                                   |
| Omitted               | 2                                                   |

**Mean Age Of Administration Employees Responding To Questionnaire 40.8**

|                                        |   |
|----------------------------------------|---|
| <b>Type Of Facility Where Employed</b> |   |
| Assisted Living = AL                   | 3 |
| Health Care = HC                       | 8 |
| Omitted = X                            | 0 |
|                                        |   |

|                                                                     |   |
|---------------------------------------------------------------------|---|
| <b>Race Of Administration Employees Responding To Questionnaire</b> |   |
| Caucasian                                                           | 9 |
| Black                                                               | 0 |
| Other                                                               | 0 |
| Omitted                                                             | 2 |
|                                                                     |   |

|                                                                       |   |
|-----------------------------------------------------------------------|---|
| <b>Gender Of Administration Employees Responding To Questionnaire</b> |   |
| Female                                                                | 7 |
| Male                                                                  | 2 |
| Omitted                                                               | 2 |
|                                                                       |   |

**Mean Number Of Years Of Employment for Administration Employees Of Administration Employees Responding To Questionnaire = 10.22**

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category                                 |         | Number Employees Responding To Questionnaire |  |
|------------------------------------------|---------|----------------------------------------------|--|
| Employee Title                           | Total # |                                              |  |
| Activities                               | 17      |                                              |  |
| Age                                      |         |                                              |  |
| 20-30                                    | 2       |                                              |  |
| 30-40                                    | 5       |                                              |  |
| 40-50                                    | 3       |                                              |  |
| 50-60                                    | 1       |                                              |  |
| 60-70                                    | 0       |                                              |  |
| Omitted                                  | 5       |                                              |  |
| Mean Age Of Activities Employees = 35.33 |         |                                              |  |
| Type Of Facility Where Employed          |         |                                              |  |
| Assisted Living = AL                     | 3       |                                              |  |
| Health Care = HC                         | 14      |                                              |  |
| Omitted = X                              | 0       |                                              |  |
| Race                                     |         |                                              |  |
| Caucasian                                | 12      |                                              |  |
| Black                                    | 0       |                                              |  |
| Other                                    | 0       |                                              |  |
| Omitted                                  | 5       |                                              |  |
| Gender                                   |         |                                              |  |
| Female                                   | 10      |                                              |  |
| Male                                     | 3       |                                              |  |
| Omitted                                  | 4       |                                              |  |

Mean Number Of Years Employed At Site 4.8

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category                              |    | Number Employees Responding To Questionnaire |  |
|---------------------------------------|----|----------------------------------------------|--|
| Employee Title                        |    | Total #                                      |  |
| Nursing                               |    | 13                                           |  |
| Age                                   |    |                                              |  |
| 20-30                                 |    | 2                                            |  |
| 30-40                                 |    | 3                                            |  |
| 40-50                                 |    | 3                                            |  |
| 50-60                                 |    | 3                                            |  |
| 60-70                                 |    | 0                                            |  |
| Omitted                               |    | 2                                            |  |
| Mean Age Of Nursing Employees = 40.18 |    |                                              |  |
| Type Of Facility Where Employed       |    |                                              |  |
| Assisted Living = AL                  |    | 3                                            |  |
| Health Care = HC                      |    | 10                                           |  |
| Omitted = X                           |    | 0                                            |  |
| Race                                  |    |                                              |  |
| Caucasian                             |    | 11                                           |  |
| Black                                 |    | 1                                            |  |
| Other                                 |    | 0                                            |  |
| Omitted                               |    | 1                                            |  |
| Gender                                |    |                                              |  |
| Female                                | 11 |                                              |  |
| Male                                  | 1  |                                              |  |
| Omitted                               | 1  |                                              |  |

Mean Number Of Years Of Employment for Nursing Employees  
7.41

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category                                 |   | Number Employees Responding To Questionnaire |  |
|------------------------------------------|---|----------------------------------------------|--|
| Employee Title                           |   | Total #                                      |  |
| Social Services                          |   |                                              |  |
| Age                                      |   |                                              |  |
| 20-30                                    |   | 0                                            |  |
| 30-40                                    |   | 1                                            |  |
| 40-50                                    |   | 3                                            |  |
| 50-60                                    |   | 1                                            |  |
| 60-70                                    |   | 0                                            |  |
| Omitted                                  |   | 2                                            |  |
| Mean Age Of Social Services Employees 46 |   |                                              |  |
| Type Of Facility Where Employed          |   |                                              |  |
| Assisted Living = AL                     |   | 2                                            |  |
| Health Care = HC                         |   | 5                                            |  |
| Omitted = X                              |   | 1                                            |  |
| Race                                     |   |                                              |  |
| Caucasian                                |   | 6                                            |  |
| Black                                    |   | 0                                            |  |
| Other                                    |   | 0                                            |  |
| Omitted                                  |   | 1                                            |  |
| Gender                                   |   |                                              |  |
| Female                                   | 6 |                                              |  |
| Male                                     | 0 |                                              |  |
| Omitted                                  | 1 |                                              |  |

Mean Number Of Years Of Employment for Social Services Employees = 12.83

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category       | Number Employees Responding To Questionnaire |  |
|----------------|----------------------------------------------|--|
| Employee Title | Total #                                      |  |
|                |                                              |  |
| Nutrition      | 4                                            |  |
| Age            |                                              |  |
| 20-30          | 0                                            |  |
| 30-40          | 1                                            |  |
| 40-50          | 0                                            |  |
| 50-60          | 2                                            |  |
| 60-70          | 0                                            |  |
| Omitted        | 1                                            |  |

**Mean Age Of Nutrition Employees 45.66**

| Type Of Facility Where Employed |   |  |
|---------------------------------|---|--|
| Assisted Living = AL            | 2 |  |
| Health Care = HC                | 2 |  |
| Omitted = X                     | 0 |  |
|                                 |   |  |
| Race                            |   |  |
| Caucasian                       | 4 |  |
| Black                           | 0 |  |
| Other                           | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |
| Gender                          |   |  |
| Female                          | 4 |  |
| Male                            | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |

**Mean Number Of Years Of Employment for Nutrition Employees = 4.5**

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category       | Number Employees Responding To Questionnaire |  |
|----------------|----------------------------------------------|--|
| Employee Title | Total #                                      |  |
|                |                                              |  |
| Clerical       | 5                                            |  |
| Age            |                                              |  |
| 20-30          | 2                                            |  |
| 30-40          | 1                                            |  |
| 40-50          | 2                                            |  |
| 50-60          | 1                                            |  |
| 60-70          | 0                                            |  |
| Omitted        | 0                                            |  |

**Mean Age Of Clerical Employees = 39**

| Type Of Facility Where Employed |   |  |
|---------------------------------|---|--|
| Assisted Living = AL            | 0 |  |
| Health Care = HC                | 4 |  |
| Omitted = X                     | 1 |  |
|                                 |   |  |
| Race                            |   |  |
| Caucasian                       | 5 |  |
| Black                           | 0 |  |
| Other                           | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |
| Gender                          |   |  |
| Female                          | 5 |  |
| Male                            | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |

**Mean Number Of Years Of Employment for Clerical Employees = 4.04**

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category                                  |   | Number Employees Responding To Questionnaire |  |
|-------------------------------------------|---|----------------------------------------------|--|
| Employee Title                            |   | Total #                                      |  |
| Maintenance                               |   | 3                                            |  |
| Age                                       |   |                                              |  |
| 20-30                                     |   | 0                                            |  |
| 30-40                                     |   | 0                                            |  |
| 40-50                                     |   | 3                                            |  |
| 50-60                                     |   | 0                                            |  |
| 60-70                                     |   | 0                                            |  |
| Omitted                                   |   | 0                                            |  |
| Mean Age Of Maintenance Employees = 42.33 |   |                                              |  |
| Type Of Facility Where Employed           |   |                                              |  |
| Assisted Living = AL                      |   | 2                                            |  |
| Health Care = HC                          |   | 1                                            |  |
| Omitted = X                               |   | 0                                            |  |
| Race                                      |   |                                              |  |
| Caucasian                                 |   | 3                                            |  |
| Black                                     |   | 0                                            |  |
| Other                                     |   | 0                                            |  |
| Omitted                                   |   | 0                                            |  |
| Gender                                    |   |                                              |  |
| Female                                    | 2 |                                              |  |
| Male                                      | 1 |                                              |  |
| Omitted                                   | 0 |                                              |  |

**Mean Number Of Years Of Employment for Maintenance Employees = 14.2**

## Profile Of Staff Demographics At Facilities Receiving AAT, N=63

| Category         | Number Employees Responding To Questionnaire |  |
|------------------|----------------------------------------------|--|
| Employee Title   | Total #                                      |  |
|                  |                                              |  |
| Speech Pathology | 2                                            |  |
| Age              |                                              |  |
| 20-30            | 0                                            |  |
| 30-40            | 1                                            |  |
| 40-50            | 1                                            |  |
| 50-60            | 0                                            |  |
| 60-70            | 0                                            |  |
| Omitted          | 0                                            |  |

**Mean Age Of Speech Pathology Employees = 32**

| Type Of Facility Where Employed |   |  |
|---------------------------------|---|--|
| Assisted Living = AL            | 0 |  |
| Health Care = HC                | 2 |  |
| Omitted = X                     | 0 |  |
|                                 |   |  |
| Race                            |   |  |
| Caucasian                       | 2 |  |
| Black                           | 0 |  |
| Other                           | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |
| Gender                          |   |  |
| Female                          | 2 |  |
| Male                            | 0 |  |
| Omitted                         | 0 |  |
|                                 |   |  |

**Mean Number Of Years Of Employment for Speech Pathology Employees = 1.85**

# **Profile Of Staff Demographics At Facilities Receiving AAT, N=63**

| Category          | Number Employees Responding To Questionnaire |  |
|-------------------|----------------------------------------------|--|
| Employee Title    | Total #                                      |  |
|                   |                                              |  |
| Staff Development | 1                                            |  |
| Age               |                                              |  |
| 20-30             | 0                                            |  |
| 30-40             | 1                                            |  |
| 40-50             | 0                                            |  |
| 50-60             | 0                                            |  |
| 60-70             | 0                                            |  |
| Omitted           | 0                                            |  |

**Mean Age Of Staff Development Employees = 32**

|                                        |   |  |
|----------------------------------------|---|--|
| <b>Type Of Facility Where Employed</b> |   |  |
| Assisted Living = AL                   | 0 |  |
| Health Care = HC                       | 1 |  |
| Omitted = X                            | 0 |  |
|                                        |   |  |
| <b>Race</b>                            |   |  |
| Caucasian                              | 1 |  |
| Black                                  | 0 |  |
| Other                                  | 0 |  |
| Omitted                                | 0 |  |
|                                        |   |  |
| <b>Gender</b>                          |   |  |
| Female                                 | 1 |  |
| Male                                   | 0 |  |
| Omitted                                | 0 |  |
|                                        |   |  |

**Mean Number Of Years Of Employment for Staff Development Employees = 3**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| <b>Category</b>       |                                                     |
|-----------------------|-----------------------------------------------------|
| <b>Employee Title</b> | <b>Number Employees Responding To Questionnaire</b> |
| Administration        | 8                                                   |
|                       |                                                     |
| <b>Age</b>            |                                                     |
| 20-30                 | 0                                                   |
| 30-40                 | 1                                                   |
| 40-50                 | 4                                                   |
| 50-60                 | 1                                                   |
| 60-70                 | 1                                                   |
| Omitted               | 1                                                   |

**Mean Age Of Administration Employees Responding To Questionnaire 52.66**

| <b>Type Of Facility Where Employed</b> |   |
|----------------------------------------|---|
| Assisted Living = AL                   | 7 |
| Health Care = HC                       | 1 |
| Omitted = X                            | 0 |
|                                        |   |

| <b>Race Of Administration Employees Responding To Questionnaire</b> |   |
|---------------------------------------------------------------------|---|
| Caucasian                                                           | 7 |
| Black                                                               |   |
| Other                                                               |   |
| Omitted                                                             | 1 |
|                                                                     |   |

| <b>Gender Of Administration Employees Responding To Questionnaire</b> |   |
|-----------------------------------------------------------------------|---|
| Female                                                                | 7 |
| Male                                                                  |   |
| Omitted                                                               | 1 |
|                                                                       |   |

**Mean Number Of Years Of Employment for Administration Employees Of Administration Employees Responding To Questionnaire = 9.68**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category       | Number Employees Responding To Questionnaire |  |
|----------------|----------------------------------------------|--|
| Employee Title | Total #                                      |  |
|                |                                              |  |
| Activities     | 11                                           |  |
| Age            |                                              |  |
| 20-30          | 3                                            |  |
| 30-40          | 1                                            |  |
| 40-50          | 3                                            |  |
| 50-60          | 3                                            |  |
| 60-70          | 1                                            |  |
| Omitted        |                                              |  |

**Mean Age Of Activities Employees = 43.36**

| Type Of Facility Where Employed |    |  |
|---------------------------------|----|--|
| Assisted Living = AL            | 6  |  |
| Health Care = HC                | 5  |  |
| Omitted = X                     |    |  |
|                                 |    |  |
| Race                            |    |  |
| Caucasian                       | 11 |  |
| Black                           | 0  |  |
| Other                           | 0  |  |
| Omitted                         | 0  |  |
|                                 |    |  |
| Gender                          |    |  |
| Female                          | 11 |  |
| Male                            | 0  |  |
| Omitted                         | 0  |  |
|                                 |    |  |

**Mean Number Of Years Employed At Site = 3.1**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category                                    |         | Number Employees Responding To Questionnaire |
|---------------------------------------------|---------|----------------------------------------------|
| Employee Title                              | Total # |                                              |
|                                             |         |                                              |
| Nursing                                     | 3       |                                              |
| Age                                         |         |                                              |
| 20-30                                       |         |                                              |
| 30-40                                       | 1       |                                              |
| 40-50                                       | 2       |                                              |
| 50-60                                       | 0       |                                              |
| 60-70                                       | 0       |                                              |
| Omitted                                     | 0       |                                              |
| <b>Mean Age Of Nursing Employees =43.33</b> |         |                                              |
|                                             |         |                                              |
| <b>Type Of Facility Where Employed</b>      |         |                                              |
| Assisted Living = AL                        | 2       |                                              |
| Health Care = HC                            | 1       |                                              |
| Omitted = X                                 | 0       |                                              |
|                                             |         |                                              |
| Race                                        |         |                                              |
| Caucasian                                   | 3       |                                              |
| Black                                       | 0       |                                              |
| Other                                       | 0       |                                              |
| Omitted                                     | 0       |                                              |
|                                             |         |                                              |
| Gender                                      |         |                                              |
| Female                                      | 3       |                                              |
| Male                                        | 0       |                                              |
| Omitted                                     | 0       |                                              |
|                                             |         |                                              |

**Mean Number Of Years Of Employment for Nursing Employees = 1.5**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category                                        |   | Number Employees Responding To Questionnaire |  |
|-------------------------------------------------|---|----------------------------------------------|--|
| Employee Title                                  |   | Total #                                      |  |
| Social Services                                 |   | 2                                            |  |
| Age                                             |   |                                              |  |
| 20-30                                           |   | 1                                            |  |
| 30-40                                           |   |                                              |  |
| 40-50                                           |   |                                              |  |
| 50-60                                           |   |                                              |  |
| 60-70                                           |   |                                              |  |
| Omitted                                         |   | 1                                            |  |
| <b>Mean Age Of Social Services Employees 28</b> |   |                                              |  |
|                                                 |   |                                              |  |
| <b>Type Of Facility Where Employed</b>          |   |                                              |  |
| Assisted Living = AL                            |   | 2                                            |  |
| Health Care = HC                                |   |                                              |  |
| Omitted = X                                     |   |                                              |  |
| Race                                            |   |                                              |  |
| Caucasian                                       |   | 1                                            |  |
| Black                                           |   | 0                                            |  |
| Other                                           |   | 0                                            |  |
| Omitted                                         |   | 1                                            |  |
| Gender                                          |   |                                              |  |
| Female                                          | 1 |                                              |  |
| Male                                            | 0 |                                              |  |
| Omitted                                         | 1 |                                              |  |

**Mean Number Of Years Of Employment for Social Services Employees =2**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category                                   |   | Number Employees Responding To Questionnaire |  |
|--------------------------------------------|---|----------------------------------------------|--|
| Employee Title                             |   | Total #                                      |  |
| Nutrition                                  |   | 3                                            |  |
| Age                                        |   |                                              |  |
| 20-30                                      |   |                                              |  |
| 30-40                                      |   |                                              |  |
| 40-50                                      |   | 2                                            |  |
| 50-60                                      |   | 1                                            |  |
| 60-70                                      |   |                                              |  |
| Omitted                                    |   |                                              |  |
| <b>Mean Age Of Nutrition Employees =49</b> |   |                                              |  |
| <b>Type Of Facility Where Employed</b>     |   |                                              |  |
| Assisted Living = AL                       |   | 3                                            |  |
| Health Care = HC                           |   | 0                                            |  |
| Omitted = X                                |   | 0                                            |  |
| <b>Race</b>                                |   |                                              |  |
| Caucasian                                  |   | 3                                            |  |
| Black                                      |   | 0                                            |  |
| Other                                      |   | 0                                            |  |
| Omitted                                    |   | 0                                            |  |
| <b>Gender</b>                              |   |                                              |  |
| Female                                     | 3 |                                              |  |
| Male                                       | 0 |                                              |  |
| Omitted                                    | 0 |                                              |  |

**Mean Number Of Years Of Employment for Nutrition Employees =4.3**

# **Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category       | Number Employees Responding To Questionnaire |  |
|----------------|----------------------------------------------|--|
| Employee Title | Total #                                      |  |
|                |                                              |  |
| Clerical       | 2                                            |  |
| Age            |                                              |  |
| 20-30          | 0                                            |  |
| 30-40          | 0                                            |  |
| 40-50          | 2                                            |  |
| 50-60          | 0                                            |  |
| 60-70          | 0                                            |  |
| Omitted        | 0                                            |  |

**Mean Age Of Clerical Employees = 44**

| Type Of Facility Where Employed |    |  |
|---------------------------------|----|--|
| Assisted Living = AL            | 2  |  |
| Health Care = HC                | 0  |  |
| Omitted = X                     | 0  |  |
|                                 |    |  |
| Race                            |    |  |
| Caucasian                       | 2  |  |
| Black                           | 0  |  |
| Other                           | 0  |  |
| Omitted                         | 0  |  |
|                                 |    |  |
| Gender                          |    |  |
| Female                          | 2  |  |
| Male                            | 0  |  |
| Omitted                         | 00 |  |
|                                 |    |  |

**Mean Number Of Years Of Employment for Clerical Employees = 4.3**

**Profile Of Staff Demographics At Facilities Not Receiving AAT, N=33**

| Category                               |   | Number Employees Responding To Questionnaire |  |
|----------------------------------------|---|----------------------------------------------|--|
| Employee Title                         |   | Total #                                      |  |
| Maintenance                            |   | 4                                            |  |
| Age                                    |   |                                              |  |
| 20-30                                  |   | 0                                            |  |
| 30-40                                  |   | 0                                            |  |
| 40-50                                  |   | 2                                            |  |
| 50-60                                  |   | 2                                            |  |
| 60-70                                  |   | 0                                            |  |
| Omitted                                |   | 0                                            |  |
| Mean Age Of Maintenance Employees = 50 |   |                                              |  |
| Type Of Facility Where Employed        |   |                                              |  |
| Assisted Living = AL                   |   | 4                                            |  |
| Health Care = HC                       |   | 0                                            |  |
| Omitted = X                            |   | 0                                            |  |
| Race                                   |   |                                              |  |
| Caucasian                              |   | 4                                            |  |
| Black                                  |   | 0                                            |  |
| Other                                  |   | 0                                            |  |
| Omitted                                |   | 0                                            |  |
| Gender                                 |   |                                              |  |
| Female                                 | 4 |                                              |  |
| Male                                   | 0 |                                              |  |
| Omitted                                | 0 |                                              |  |

**Mean Number Of Years Of Employment for Maintenance Employees = 16.2**

| Profile Of The Staff Respondents From The Experimental Group Population |         |       |         |         |         |                             |               |            |              |              |              |       |         |     |     |     |
|-------------------------------------------------------------------------|---------|-------|---------|---------|---------|-----------------------------|---------------|------------|--------------|--------------|--------------|-------|---------|-----|-----|-----|
| Gender                                                                  |         |       | Age     |         |         |                             | Race          |            | LORAF        |              |              |       | Marital |     |     |     |
| F=1                                                                     | M=0     | <65=1 | 65-74=2 | 75-84=3 | 85-94=4 | 94-99=5                     | C=1           | B=0        | <1yr.=1      | 1-5 yrs=2    | 5-10 yrs=3   | 10+=4 | S=1     | M=2 | W=3 | D=4 |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              | 3            |       |         | 2   | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       | 1       |     |     |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            | 1            |              |              |       |         | 2   |     |     |
|                                                                         |         |       |         |         | 4       |                             |               | 0          |              | 2            |              |       |         | 2   |     |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     |     | 3   |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            | 1            |              |              |       |         |     |     | 3   |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     |     | 3   |
| 1                                                                       |         |       |         |         |         |                             | 1             |            |              |              | 3            |       |         |     |     | 4   |
| 1                                                                       |         | 1     |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       |         | 2   |     |     |
| 1                                                                       |         |       |         |         |         | 5                           | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              |              | 4     |         |     | 3   |     |
|                                                                         | 0       |       |         | 3       |         |                             | 1             |            |              | 2            |              |       | 1       |     |     |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            | 1            |              |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     |     | 4   |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       | 1       |     |     |     |
|                                                                         | 0       |       |         |         | 4       |                             | 1             |            | 1            |              |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       | 2       |         |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              |              | 4     |         |     | 3   |     |
|                                                                         | 0       |       |         | 3       |         |                             | 1             |            |              |              | 3            |       | 1       |     |     |     |
|                                                                         | 0       |       | 2       |         |         |                             | 1             |            |              |              | 3            |       | 1       |     |     |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            | 1            |              |              |       | 1       |     |     |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
|                                                                         | 0       |       |         |         | 4       |                             | 1             |            |              |              |              | 4     |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       |         |     | 3   |     |
| 1                                                                       |         |       |         |         | 4       |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            | 1            |              |              |       |         | 2   |     |     |
|                                                                         | 0       |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              |              | 4     |         |     | 3   |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              |              | 3            |       | 1       |     |     |     |
| 1                                                                       |         |       |         | 3       |         |                             | 1             |            |              | 2            |              |       |         |     | 3   |     |
| 35                                                                      | 6       | 1     | 2       | 19      | 19      | 1                           | 40            | 1          | 6            | 18           | 13           | 4     | 7       | 4   | 29  | 2   |
| Gender                                                                  |         | Age   |         | Race    |         | Marital Status: S=Single =1 |               |            |              |              |              |       |         |     |     |     |
| Female =1                                                               | Male =0 | <65=1 | 65-74=2 | 75-84=3 | 85-94=4 | 94-99=5                     | C=Caucasian=1 | B=Black= 2 | M=Married =2 | W=Widowed =3 | D=Divorced = |       |         |     |     |     |

| Profile Of The Staff Respondents From The Control Group Population |   |            |       |              |       |             |   |                |         |                 |     |         |   |    |   |    |
|--------------------------------------------------------------------|---|------------|-------|--------------|-------|-------------|---|----------------|---------|-----------------|-----|---------|---|----|---|----|
| Gender                                                             |   | Age        |       |              |       | Race        |   | Reside         |         |                 |     | Marital |   |    |   |    |
| F                                                                  | M | <65        | 65-74 | 75-84        | 85-94 | C           | B | <1 yr          | 1-5 yrs | 5-10 yrs        | 10+ | S       | M | W  | D | SP |
|                                                                    | 1 | 61         |       |              |       | 1           |   | 3 wks          |         |                 |     | 1       |   |    |   |    |
|                                                                    | 1 |            |       |              | 89    | 1           |   |                |         | 7               |     |         |   | 1  |   |    |
|                                                                    | 1 |            |       | 81           |       | 1           |   |                | 3.5     |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 80           |       | 1           |   |                | 3       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 85    | 1           |   |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 85    | 1           |   |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 84           |       | 1           |   |                | 1.3     |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 87    | 1           |   | 0.5            |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 87    | 1           |   | 0.5            |         |                 |     |         |   |    | 1 |    |
| 1                                                                  |   |            |       | 82           |       | 1           |   | 0.75           |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 82           |       | 1           |   |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 76           |       | 1           |   | 0.3            |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 84           |       | 1           |   | 0.1            |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 75           |       | 1           |   | 0.5            |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 89    | 1           |   |                |         | 6               |     |         |   | 1  |   |    |
|                                                                    | 1 |            |       |              | 88    | 1           |   |                |         | 6               |     | 1       |   |    |   |    |
| 1                                                                  |   | 26         |       |              |       | 1           |   |                | 4       |                 |     |         |   |    | 1 |    |
|                                                                    | 1 | 43         |       |              |       | 1           |   |                |         |                 | 12  | 1       |   |    |   |    |
| 1                                                                  |   |            |       | 84           |       | 1           |   | 0.4            |         |                 |     |         |   |    |   | 1  |
| 1                                                                  |   |            |       |              | 85    | 1           |   |                | 1       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 89    | 1           |   |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 76           |       | 1           |   | 0.8            |         |                 |     |         | 1 |    |   |    |
|                                                                    | 1 |            |       | 79           |       | 1           |   | 0.9            |         |                 |     |         |   |    | 1 |    |
| 1                                                                  |   |            |       | 79           |       | 1           |   |                | 1.2     |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 90    | 1           |   |                | 1       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 90    | 1           |   |                | 1.5     |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            | 67    |              |       | 1           |   | 0.2            |         |                 |     |         |   |    | 1 |    |
|                                                                    | 1 | 62         |       |              |       | 1           |   |                | 2.2     |                 |     |         |   |    |   | 1  |
| 1                                                                  |   |            |       |              | 87    | 1           |   |                | 2       |                 |     | 1       |   |    |   |    |
| 1                                                                  |   |            | 72    |              |       | 1           |   |                | 3       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            | 71    |              |       | 1           |   |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       |              | 87    | 1           |   |                | 2.75    |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 79           |       | 1           |   | 0.1            |         |                 |     |         | 1 |    |   |    |
| 1                                                                  |   |            | 65    |              |       | 1           |   | 0.25           |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            | 65    |              |       | 1           |   | 0.25           |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   | 58         |       |              |       |             | 2 |                | 2       |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            | 73    |              |       | 1           |   | 0.5            |         |                 |     |         |   | 1  |   |    |
| 1                                                                  |   |            |       | 83           |       |             | 2 |                | 1.2     |                 |     |         | 1 |    |   |    |
| 1                                                                  |   | 55         |       |              |       |             | 2 |                | 2       |                 |     |         |   | 1  |   |    |
| 32                                                                 | 7 | 6          | 6     | 7            | 20    | 36          | 3 | 15             | 20      | 3               | 1   | 4       | 3 | 26 | 4 | 2  |
| LORAF= Length of Residence At Facility                             |   |            |       |              |       |             |   | Marital Status |         |                 |     |         |   |    |   |    |
| ender                                                              |   | Race       |       |              |       | S=Single =1 |   | W=Widow =3     |         | SP=Separated =5 |     |         |   |    |   |    |
| =Female = 1                                                        |   | M=Male = 0 |       | Caucasian =1 |       | Black =2    |   | M=Married=2    |         | D=Divorced =4   |     |         |   |    |   |    |

# Code Sheet For Ranks

## Items Considered Most Or Least Important

Profile of Staff Attitudes About Animal-Assisted Therapy At Facilities Not Receiving AAT,  
N=33

| Administration                       | 1 | 2             | 3 | 4 | 5 | 6 | 7 | 8                            | 9                            | 10 | 11         | 12 | 13 | 14 |
|--------------------------------------|---|---------------|---|---|---|---|---|------------------------------|------------------------------|----|------------|----|----|----|
| Rank 1                               |   |               |   |   | 1 | 1 |   | 2                            | 1                            |    | 1          | 1  |    | 2  |
| Rank 2                               |   |               |   |   |   | 3 |   |                              | 1                            | 4  |            |    |    |    |
| Rank 3                               |   | 1             |   | 1 |   |   | 1 | 2                            |                              |    |            |    |    | 3  |
| Rank 4                               | 3 |               | 1 | 1 |   | 1 |   |                              | 1                            |    |            |    |    |    |
| Rank 5                               |   |               |   |   |   |   | 4 | 1                            | 1                            |    |            |    |    | 2  |
| Ranked # 1 by Administrators         |   |               |   |   |   |   |   | Ranked # 5 by Administrators |                              |    |            |    |    |    |
| Friendship =4                        |   | Relaxation =4 |   |   |   |   |   |                              | Topic of Conversation = 4    |    |            |    |    |    |
|                                      |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Activities                           |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Rank 1                               |   |               |   |   |   | 3 |   | 5                            |                              |    |            |    |    |    |
| Rank 2                               | 1 |               | 1 |   |   | 1 | 7 | 2                            |                              | 2  | 1          |    | 1  | 1  |
| Rank 3                               | 1 |               |   |   |   | 2 | 1 | 1                            |                              | 3  |            |    |    | 3  |
| Rank 4                               | 2 |               |   |   |   | 1 | 3 | 2                            |                              | 1  |            |    |    | 2  |
| Rank 5                               | 1 | 1             | 1 |   | 2 |   | 1 |                              | 4                            |    |            |    |    |    |
| Ranked # 1 by Activities Employees   |   |               |   |   |   |   |   |                              | Ranked # 5 by Administrators |    | Activities |    |    |    |
| Love = 5                             |   |               |   |   |   |   |   |                              | Comfort =4                   |    |            |    |    |    |
|                                      |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Nursing                              |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Rank 1                               |   |               |   |   |   | 1 |   | 1                            |                              |    |            |    |    | 1  |
| Rank 2                               | 1 |               | 1 |   |   |   |   |                              |                              |    |            |    |    | 1  |
| Rank 3                               |   |               |   | 1 |   |   |   |                              |                              | 1  | 1          |    |    |    |
| Rank 4                               |   |               |   | 1 |   |   | 1 | 1                            |                              |    |            |    |    |    |
| Rank 5                               |   |               | 1 |   |   |   |   |                              | 1                            |    |            | 1  |    |    |
| Ranked # 1by Nursing Employees       |   |               |   |   |   |   |   |                              | Ranked # 5 by Administrators |    | Nursing    |    |    |    |
| No clear indications in any category |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
|                                      |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Social Services                      |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Rank 1                               |   |               |   |   |   |   |   |                              |                              |    |            |    | 1  | 1  |
| Rank 2                               |   |               |   |   |   | 1 |   | 1                            |                              |    |            |    |    |    |
| Rank 3                               |   |               |   |   |   |   | 1 |                              |                              | 1  |            |    |    |    |
| Rank 4                               |   |               |   | 1 |   |   |   | 1                            |                              |    |            |    |    |    |
| Rank 5                               |   | 1             |   |   |   | 1 |   |                              |                              |    |            |    |    |    |
| Ranked # 1                           |   |               |   |   |   |   |   |                              | Ranked #5                    |    |            |    |    |    |
| No clear indications in any category |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
|                                      |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Nutrition                            |   |               |   |   |   |   |   |                              |                              |    |            |    |    |    |
| Rank 1                               | 1 |               |   |   | 1 |   |   | 1                            |                              |    |            |    |    |    |
| Rank 2                               | 1 |               |   | 1 |   |   |   | 1                            |                              |    |            |    |    |    |
| Rank 3                               |   |               | 1 |   |   |   |   |                              |                              | 2  |            |    |    |    |
| Rank 4                               |   | 1             |   | 1 |   | 1 |   |                              |                              |    |            |    |    |    |
| Rank 5                               | 1 |               |   |   |   |   |   |                              | 1                            |    |            |    |    | 1  |
| Ranked # 1                           |   |               |   |   |   |   |   |                              | Ranked #5                    |    |            |    |    |    |

Profile of Staff Attitudes About Animal-Assisted Therapy at Facilities Not Receiving AAT,  
N=33

| Admin. | Code # | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|--------|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|        | 300    |   |   | 1 |   | 1 |   | 1 |   | 1 | 1 |   |   |   | 1 |   |   | 1 |
|        | 301    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|        | 302    | 1 | 1 | 1 |   |   | 1 |   |   | 1 | 1 | 1 | 1 | 1 |   |   |   | 1 |
|        | 303    | 1 | 1 | 1 | 1 | 1 |   |   |   | 1 | 1 | 1 |   | 1 | 1 | 1 |   |   |
|        | 304    | 1 | 1 | 1 |   | 1 |   | 1 |   | 1 | 1 | 1 |   | 1 |   | 1 | 1 | 1 |
|        | 305    |   |   | 1 | 1 |   |   | 1 |   |   | 1 | 1 | 1 |   |   |   | 1 | 1 |
|        | 306    | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|        | 307    | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|        |        | 6 | 6 | 8 | 3 | 6 | 4 | 6 | 3 | 6 | 8 | 8 | 6 | 6 | 4 | 5 | 4 | 7 |

| Activities |     | A | B  | C  | D | E | F | G | H | I | J  | K  | L | M | N | O | P | Q  |
|------------|-----|---|----|----|---|---|---|---|---|---|----|----|---|---|---|---|---|----|
|            | 308 | 1 | 1  | 1  | 1 | 1 |   | 1 |   |   | 1  | 1  | 1 | 1 |   |   |   | 1  |
|            | 309 | 1 | 1  | 1  |   | 1 | 1 |   |   | 1 | 1  | 1  | 1 | 1 |   |   |   | 1  |
|            | 310 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1  |
|            | 311 | 1 | 1  | 1  | 1 | 1 |   | 1 |   |   | 1  |    |   |   |   |   |   | 1  |
|            | 312 |   | 1  | 1  | 1 |   | 1 | 1 | 1 | 1 | 1  | 1  | 1 | 1 |   |   | 1 | 1  |
|            | 313 | 1 | 1  | 1  | 1 | 1 |   | 1 | 1 | 1 | 1  | 1  | 1 | 1 | 1 |   |   | 1  |
|            | 314 |   | 1  | 1  | 1 | 1 | 1 | 1 |   | 1 | 1  | 1  | 1 | 1 | 1 |   |   | 1  |
|            | 315 | 1 | 1  | 1  | 1 |   |   | 1 |   |   | 1  | 1  |   |   |   |   |   | 1  |
|            | 316 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1  |
|            | 317 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1  | 1 | 1 | 1 | 1 | 1 | 1  |
|            | 318 |   |    | 1  | 1 | 1 |   |   |   |   | 1  | 1  | 1 | 1 | 1 |   | 1 | 1  |
|            |     | 8 | 10 | 11 | 9 | 9 | 6 | 6 | 9 | 7 | 11 | 10 | 9 | 9 | 6 | 3 | 5 | 11 |

| Nursing |     | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
|---------|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|         | 319 |   | 1 | 1 | 1 | 1 |   |   | 1 |   | 1 | 1 | 1 | 1 |   | 1 |
|         | 320 | 1 |   | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 | 1 |
|         | 321 | 1 |   | 1 | 1 | 1 |   | 1 |   | 1 | 1 |   | 1 | 1 | 1 | 1 |
|         |     | 2 | 1 | 3 | 3 | 3 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 3 | 2 | 1 |

| Social Services |     | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P |
|-----------------|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|                 | 322 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|                 | 323 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|                 |     | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |

| Nutrition |     | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|-----------|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|           | 324 |   | 1 | 1 | 1 |   |   | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 |   |   |   |
|           | 325 |   |   | 1 | 1 | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 | 1 | 1 |   |   | 1 |
|           | 326 |   | 1 | 1 |   |   | 1 | 1 |   | 1 |   |   | 1 |   |   |   |   |   |
|           |     | 0 | 2 | 3 | 2 | 1 | 2 | 3 | 1 | 3 | 1 | 2 | 3 | 2 | 2 | 0 | 0 | 1 |
|           |     |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   | 1 |

| Clerical |     | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|----------|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|          | 327 |   |   | 1 | 1 |   |   |   |   |   |   | 1 |   |   |   |   |   | 1 |
|          | 328 |   | 1 | 1 | 1 |   | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |   |   | 1 |
|          |     | 0 | 1 | 2 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 2 |

| Maintenance |     | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q |
|-------------|-----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
|             | 329 |   |   | 1 |   | 1 |   |   |   | 1 |   | 1 | 1 | 1 | 1 |   |   | 1 |
|             | 330 |   | 1 | 1 | 1 |   | 1 | 1 |   | 1 |   | 1 | 1 |   |   | 1 | 1 | 1 |
|             | 331 | 1 | 1 | 1 | 1 | 1 |   |   | 1 |   | 1 | 1 |   | 1 |   | 1 | 1 | 1 |
|             | 332 | 1 | 1 | 1 | 1 |   | 1 | 1 |   |   |   |   | 1 | 1 |   |   |   | 1 |
|             |     | 2 | 3 | 4 | 3 | 2 | 2 | 2 | 1 | 2 | 1 | 3 | 3 | 3 | 1 | 2 | 2 | 4 |

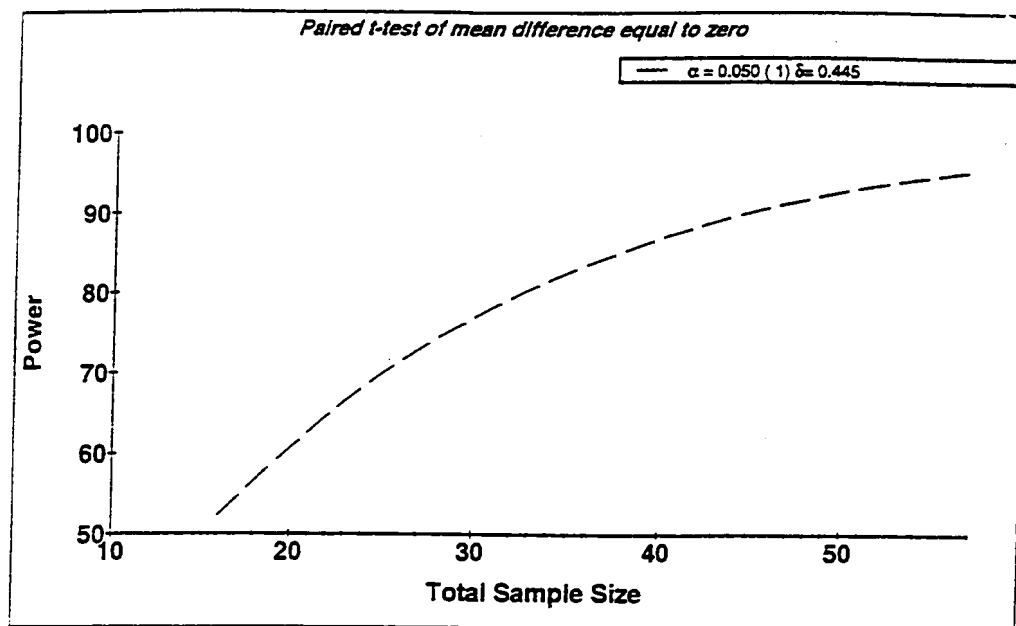
# Key

|                |                              |                            |                               |
|----------------|------------------------------|----------------------------|-------------------------------|
| Anxiety = A    | Emotional Support = F        | Love = K                   | A Sense of Well-Being = P     |
| Depression = B | Comfort = G                  | Entertainment = L          | Touch/Sensory Stimulation = Q |
| Loneliness = C | Someone to Converse With = H | Attention = M              |                               |
| Friendship = D | Companionship = I            | Acceptance = N             |                               |
| Relaxation = E | Topic of Conversation = J    | Better Quality of Life = O |                               |

## **APPENDIX E**

Power Analysis: On The Beck Anxiety Inventory (BAI)

Power Analysis: On The Beck Depression Inventory (BDI)

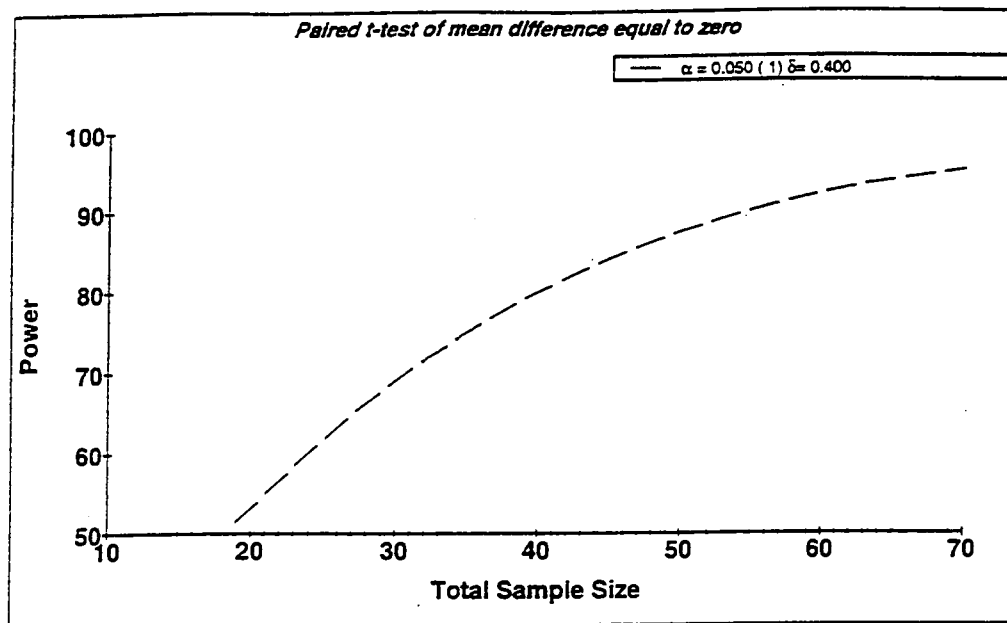


nQuery Advisor statement

Paired t-test of mean difference equal to zero

A sample size of 33 will have 80% power to detect a difference in means of -5.500 (e.g. a First condition mean,  $\mu_1$ , of 11.500 and a Second condition mean,  $\mu_2$ , of 17.000), assuming a standard deviation of differences of 12.360, using a paired t-test with a 0.050 one-sided significance level.

#### POWER ANALYSIS ON THE BAI



nQuery Advisor statement

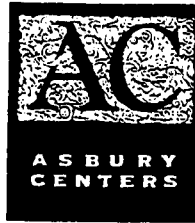
Paired t-test of mean difference equal to zero

A sample size of 41 will have 80% power to detect a difference in means of  $-4.000$  (e.g. a First condition mean,  $\mu_1$ , of  $18.700$  and a Second condition mean,  $\mu_2$ , of  $22.700$ ), assuming a standard deviation of differences of  $10.000$ , using a paired t-test with a  $0.050$  one-sided significance level.

#### POWER ANALYSIS ON THE BDI

## **APPENDIX F**

**A Sample Of Letters, Forms, And Instruments Mailed Or  
Delivered To The Administrator And/Or To The Activities  
Director At Each Participating Facility**



asbury acres

## INFORMED CONSENT FORM

### ASBURY ACRES RETIREMENT CENTER

2648 Sevierville Road

Maryville, Tennessee 37801

This research is being done to gain a better understanding of the roles that animal-assisted therapy (AAT) provided by various sources fills when serving residents of Assisted Living Communities and Health Care Centers in East Tennessee. Separate facilities are used to serve as experimental groups, which receive AAT, and as control groups, which are not currently receiving AAT. Thus, Asbury Acres Assisted Living Center could serve as one of the model experimental groups.

This study is designed to provide insight into the levels of anxiety and/or depression which may be experienced by those residents and the contributions that AAT could make to alleviate some of the residents' anxiety and/or depression. Data collected from the experimental groups would be compared with the data collected from the control groups.

The study is being conducted by Catherine E. Hagmann, MA, CHES, a Ph.D. candidate in the department of Health, Leisure, and Safety Sciences at The University of Tennessee at Knoxville. The results of this study will become her dissertation which must be completed in order for her to be granted her degree.

I understand that the inventories which will be administered to the residents, upon their approval, are of a self report nature and that there are no foreseeable risks or discomforts to the subjects in the study. I also understand that the participating residents have the right to withdraw under the auspices of informed consent at any time without judgment.

I understand that all records identifying the participants in this study will be coded and will be securely stored under the supervision of Dr. Bill C. Wallace in the Health, Leisure, and Safety Sciences Department at UTK in order to maintain absolute confidentiality. I also am aware that only the researcher, Catherine Hagmann, will have access to any information which identifies the participants by name.

I understand that any consultants who are relied upon by Catherine Hagmann for assistance with statistical analyses of the data collected will have access only to numerical codes and not to names which identify individual residents. Also, any data that is reported in written or oral form as a result of this study will be reported without identifying the residents personally, therefore, absolute confidentiality will be maintained.

I understand that this study may help to give a better understanding of ways that AAT may serve residents of assisted living communities or health care/retirement centers. I also understand that there are no direct benefits to the individual participants, staff, or administration who are involved in this study.

2648 SEVIERVILLE ROAD, MARYVILLE, TN 37804. PHONE (423) 984-1660 FAX (423) 982-1617

*Retirement communities and health centers related to the Holston Conference of the United Methodist Church*



asbury acres

page 2

I understand that any pictures made of the facility, the administration, the participating residents, and/or the staff will be made only with approval from these people. I also understand that any photographs made will be made only by Catherine Hagmann, and that they will not be made until all data has been collected for this study. I understand that photographs may be subsequently made into slides for purposes of presentation aids during any subsequent reports on this study by Catherine Hagmann. I also understand that no resident will be identified by name during any slide presentations, unless a resident agrees in writing to his/her identification by name. I agree, however, that the facility itself, its Administrator, its Activities Director, and the Assistant to the Activities Director may be identified by name during slide presentations and in the acknowledgments section of the written dissertation.

I understand that I may contact the researcher whose name appears above and/or the Project Director at (423) 974-5041 if I have any questions about this research or about the rights of the participants.

I agree to allow Cathy Hagmann to ask for residents' voluntary participation in this study. I have read the above information and under the auspices of informed consent I agree to participate in this study by voluntarily giving my written permission to allow Cathy Hagmann to seek the participation of the residents at Asbury Acres Retirement Center.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

#### EXAMPLE FOR AN EXPERIMENTAL GROUP

2648 SEVIERVILLE ROAD, MARYVILLE, TN 37804. PHONE (423) 984-1660 FAX (423) 982-1617

*Retirement communities and health centers related to the Holston Conference of the United Methodist Church*

**ASBURY ACRES RETIREMENT CENTER**  
**RESIDENT INFORMED CONSENT FORM**

This research is being done to gain a better understanding of the role that animal-assisted therapy (AAT) fills when serving residents of various assisted living and health care centers. The study will provide insight into levels of anxiety and/or depression which may be experienced by those residents and the contributions that AAT could make to alleviate those levels of anxiety and/or depression. The study is being conducted by Cathy Haggman, M.A., CHES, a Ph.D. candidate in the Department of Health, Leisure, and Safety Sciences in UTK's College of Human Ecology.

I understand that my participation in the study is entirely voluntary. I understand that I will be given a self-report inventory called "ATTITUDES ABOUT HUMAN & ANIMAL BONDS" to complete on one occasion. I understand, also, that I will then be given two additional self-report inventories, one about anxiety and one about depression, to complete. I understand that these reports can be completed by checking the answer that I consider the best answer for me at the time for each question. I understand that there are no right or wrong answers and that my answers are not going to be used to clinically diagnose any one person's degree of or lack of anxiety and depression.

I also understand that all records identifying me as a participant in this study will be coded with a number and will be securely stored in order to maintain absolute confidentiality. Only the principal investigator, Cathy Haggman, will have access to the records themselves. Also, any data that is reported in written or oral form as a result of this study will be reported without identifying me personally.

I understand that there are no direct benefits to me as an individual participant in this study. I understand that I must not pay a fee to participate in this study and that I will not be paid to participate in this study. I also understand that I have the right to withdraw my consent and to discontinue my participation at any time without any judgment.

I understand that I may contact the student researcher and/or the Project Director, Dr. Bill C. Wallace, at (423) 974-5041 if I have any questions about this research or about my rights as a subject. I have read the above information and I agree to participate in this study, voluntarily, with full knowledge of my role as a participant in this study.

After I sign this paper I realize that I will be given a short "Resident Information" questionnaire to answer. I understand that all residents in this study at all participating sites are given the same questions to answer and that all information will be used to get an average age, etc. of all participants. My signature below indicates that I am a willing participant in this study.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

**EXAMPLE FOR AN EXPERIMENTAL GROUP**

EXAMPLE FOR AN EXPERIMENTAL GROUP OR FOR A CONTROL GROUP

## RESIDENT INFORMATION

### ASBURY ACRES RETIREMENT CENTER

Maryville, Tennessee

The information requested here is for research purposes only. Your individual responses will be held absolutely confidential. Your cooperation and thoroughness are appreciated.

Please check the appropriate response or place your answer in the space provided.

1. What is your gender? Female \_\_\_\_\_ Male \_\_\_\_\_
2. What is your age? \_\_\_\_\_
3. What is your race? \_\_\_\_\_
4. How long have you resided at Asbury Acres? \_\_\_\_\_  
(months or years?)
5. What is your marital status?  
single \_\_\_\_\_  
married \_\_\_\_\_  
separated \_\_\_\_\_  
divorced \_\_\_\_\_  
widowed \_\_\_\_\_

THANK YOU!

**EXAMPLE FOR AN EXPERIMENTAL GROUP OR FOR A CONTROL GROUP**

**ASBURY ACRES RETIREMENT CENTER  
2648 Sevierville Road  
Maryville, Tennessee 37801**

**PERMISSION TO MAKE AND USE PICTURES AND SLIDES**

I agree to allow Cathy Hagmann to make my picture during a future visit at Asbury Acres. I know that these pictures will be made into slides. I also realize that the slides will be used by Cathy during any future reports on the results of her study at Asbury Acres.

I know that I will not be paid now or in the future for allowing my picture to be made. I also know that the pictures will not be returned to me.

I agree to allow my name to be used when my pictures are being shown to people who are interested in the results of Cathy's study at Asbury Acres.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

If I do not want my name to be used when my picture is used I will sign on the line below. My signature on the line below means that I do not mind if my picture is made, but I simply do not want my name used when my pictures are shown during any report on this study. I also realize that the pictures or slides will not be returned to me.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM A

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION BY CHECKING A TERM DIRECTLY UNDERNEATH  
EACH SENTENCE.

THE ANIMAL(S) WHICH VISIT(S) ME:

1. GIVES ME AFFECTION.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

2. GIVES ME COMPANIONSHIP.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

3. BRINGS UP PLEASANT MEMORIES.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

4. GIVES ME A SENSE OF WELL-BEING.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

5. ACCEPTS ME.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

6. LOVES ME.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

7. MAKES ME FEEL USEFUL.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

8. RELAXES ME AS I TOUCH HIM/HER.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

9. ENJOYS BEING TALKED TO.

STRONGLY AGREE AGREE DISAGREE STRONGLY DISAGREE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM B

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION. FOR EXAMPLE, IF YOU LIKE VISITS FROM THE ANIMAL, YOU WOULD PLACE A CHECK IN THE BLANK, AS SHOWN IN THE EXAMPLE BELOW.

AFTER THE ANIMAL VISITS I FEEL:

BETTER ☒ \_\_\_\_\_ WORSE

AFTER THE ANIMAL VISITS I FEEL:

LOVED \_\_\_\_\_ UNLOVED

LONELY \_\_\_\_\_ SOCIABLE

SECURE \_\_\_\_\_ INSECURE

SAD \_\_\_\_\_ HAPPY

CALM \_\_\_\_\_ TENSE

DEPRESSED \_\_\_\_\_ ELATED

ACCEPTED \_\_\_\_\_ REJECTED

TIRED \_\_\_\_\_ ENERGETIC

IN CONTROL \_\_\_\_\_ POWERLESS

BORED \_\_\_\_\_ ENTERTAINED

RELAXED \_\_\_\_\_ ANXIOUS

WORTHLESS \_\_\_\_\_ IMPORTANT

TALKATIVE \_\_\_\_\_ QUIET

DEFENSIVE \_\_\_\_\_ COOPERATIVE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM C

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION. FOR EXAMPLE, IF YOU LIKE VISITS FROM THE ANIMAL, YOU WOULD PLACE A CHECK IN THE BLANK, AS SHOWN IN THE EXAMPLE BELOW.

ANIMALS MAKE ME FEEL:

BETTER ☒ \_\_\_\_\_ WORSE

ANIMALS MAKE ME FEEL:

LOVED \_\_\_\_\_ UNLOVED

LONELY \_\_\_\_\_ SOCIABLE

SECURE \_\_\_\_\_ INSECURE

SAD \_\_\_\_\_ HAPPY

CALM \_\_\_\_\_ TENSE

DEPRESSED \_\_\_\_\_ ELATED

ACCEPTED \_\_\_\_\_ REJECTED

TIRED \_\_\_\_\_ ENERGETIC

IN CONTROL \_\_\_\_\_ POWERLESS

BORED \_\_\_\_\_ ENTERTAINED

RELAXED \_\_\_\_\_ ANXIOUS

WORTHLESS \_\_\_\_\_ IMPORTANT

TALKATIVE \_\_\_\_\_ QUIET

DEFENSIVE \_\_\_\_\_ COOPERATIVE



NAME \_\_\_\_\_

DATE \_\_\_\_\_

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

|                                           | NOT<br>AT<br>ALL | MILDLY<br>It did not<br>bother me much. | MODERATELY<br>It was very unpleasant,<br>but I could stand it. | SEVERELY<br>I could barely<br>stand it. |
|-------------------------------------------|------------------|-----------------------------------------|----------------------------------------------------------------|-----------------------------------------|
| 1. Numbness or tingling.                  |                  |                                         |                                                                |                                         |
| 2. Feeling hot.                           |                  |                                         |                                                                |                                         |
| 3. Wobbliness in legs.                    |                  |                                         |                                                                |                                         |
| 4. Unable to relax.                       |                  |                                         |                                                                |                                         |
| 5. Fear of the worst happening.           |                  |                                         |                                                                |                                         |
| 6. Dizzy or lightheaded.                  |                  |                                         |                                                                |                                         |
| 7. Heart pounding or racing.              |                  |                                         |                                                                |                                         |
| 8. Unsteady.                              |                  |                                         |                                                                |                                         |
| 9. Terrified.                             |                  |                                         |                                                                |                                         |
| 10. Nervous.                              |                  |                                         |                                                                |                                         |
| 11. Feelings of choking.                  |                  |                                         |                                                                |                                         |
| 12. Hands trembling.                      |                  |                                         |                                                                |                                         |
| 13. Shaky.                                |                  |                                         |                                                                |                                         |
| 14. Fear of losing control.               |                  |                                         |                                                                |                                         |
| 15. Difficulty breathing.                 |                  |                                         |                                                                |                                         |
| 16. Fear of dying.                        |                  |                                         |                                                                |                                         |
| 17. Scared.                               |                  |                                         |                                                                |                                         |
| 18. Indigestion or discomfort in abdomen. |                  |                                         |                                                                |                                         |
| 19. Faint.                                |                  |                                         |                                                                |                                         |
| 20. Face flushed.                         |                  |                                         |                                                                |                                         |
| 21. Sweating (not due to heat).           |                  |                                         |                                                                |                                         |

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17 A B C D E

09018425



Date: \_\_\_\_\_

Name: \_\_\_\_\_ Marital Status: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_ Education: \_\_\_\_\_

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which **best** describes the way you have been feeling the **past week, including today**. If several statements within a group seem to apply equally well, circle each one. **Be sure to read all the statements in each group before making your choice.**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 0 I do not feel sad.<br/>1 I feel sad.<br/>2 I am sad all the time and I can't snap out of it.<br/>3 I am so sad or unhappy that I can't stand it.</p> <p>2 0 I am not particularly discouraged about the future.<br/>1 I feel discouraged about the future.<br/>2 I feel I have nothing to look forward to.<br/>3 I feel that the future is hopeless and that things cannot improve.</p> <p>3 0 I do not feel like a failure.<br/>1 I feel I have failed more than the average person.<br/>2 As I look back on my life, all I can see is a lot of failures.<br/>3 I feel I am a complete failure as a person.</p> <p>4 0 I get as much satisfaction out of things as I used to.<br/>1 I don't enjoy things the way I used to.<br/>2 I don't get real satisfaction out of anything anymore.<br/>3 I am dissatisfied or bored with everything.</p> <p>5 0 I don't feel particularly guilty.<br/>1 I feel guilty a good part of the time.<br/>2 I feel quite guilty most of the time.<br/>3 I feel guilty all of the time.</p> <p>6 0 I don't feel I am being punished.<br/>1 I feel I may be punished.<br/>2 I expect to be punished.<br/>3 I feel I am being punished.</p> <p>7 0 I don't feel disappointed in myself.<br/>1 I am disappointed in myself.<br/>2 I am disgusted with myself.<br/>3 I hate myself.</p> | <p>8 0 I don't feel I am any worse than anybody else.<br/>1 I am critical of myself for my weaknesses or mistakes.<br/>2 I blame myself all the time for my faults.<br/>3 I blame myself for everything bad that happens.</p> <p>9 0 I don't have any thoughts of killing myself.<br/>1 I have thoughts of killing myself, but I would not carry them out.<br/>2 I would like to kill myself.<br/>3 I would kill myself if I had the chance.</p> <p>10 0 I don't cry any more than usual.<br/>1 I cry more now than I used to.<br/>2 I cry all the time now.<br/>3 I used to be able to cry, but now I can't cry even though I want to.</p> <p>11 0 I am no more irritated now than I ever am.<br/>1 I get annoyed or irritated more easily than I used to.<br/>2 I feel irritated all the time now.<br/>3 I don't get irritated at all by the things that used to irritate me.</p> <p>12 0 I have not lost interest in other people.<br/>1 I am less interested in other people than I used to be.<br/>2 I have lost most of my interest in other people.<br/>3 I have lost all of my interest in other people.</p> <p>13 0 I make decisions about as well as I ever could.<br/>1 I put off making decisions more than I used to.<br/>2 I have greater difficulty in making decisions than before.<br/>3 I can't make decisions at all anymore.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Subtotal Page 1

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>14    0    I don't feel I look any worse than I used to.</p> <p>1    1    I am worried that I am looking old or unattractive.</p> <p>2    2    I feel that there are permanent changes in my appearance that make me look unattractive.</p> <p>3    3    I believe that I look ugly.</p><br><p>15    0    I can work about as well as before.</p> <p>1    1    It takes an extra effort to get started at doing something.</p> <p>2    2    I have to push myself very hard to do anything.</p> <p>3    3    I can't do any work at all.</p><br><p>16    0    I can sleep as well as usual.</p> <p>1    1    I don't sleep as well as I used to.</p> <p>2    2    I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.</p> <p>3    3    I wake up several hours earlier than I used to and cannot get back to sleep.</p><br><p>17    0    I don't get more tired than usual.</p> <p>1    1    I get tired more easily than I used to.</p> <p>2    2    I get tired from doing almost anything.</p> <p>3    3    I am too tired to do anything.</p><br><p>18    0    My appetite is no worse than usual.</p> <p>1    1    My appetite is not as good as it used to be.</p> <p>2    2    My appetite is much worse now.</p> <p>3    3    I have no appetite at all anymore.</p> | <p>19    0    I haven't lost much weight, if any, lately.</p> <p>1    1    I have lost more than 5 pounds.</p> <p>2    2    I have lost more than 10 pounds.</p> <p>3    3    I have lost more than 15 pounds.</p><br><p>I am purposely trying to lose weight by eating less. Yes _____ No _____</p><br><p>20    0    I am no more worried about my health than usual.</p> <p>1    1    I am worried about physical problems such as aches and pains; or upset stomach; or constipation.</p> <p>2    2    I am very worried about physical problems and it's hard to think of much else.</p> <p>3    3    I am so worried about my physical problems that I cannot think about anything else.</p><br><p>21    0    I have not noticed any recent change in my interest in sex.</p> <p>1    1    I am less interested in sex than I used to be.</p> <p>2    2    I am much less interested in sex now.</p> <p>3    3    I have lost interest in sex completely.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\_\_\_\_\_ Subtotal Page 2

\_\_\_\_\_ Subtotal Page 1

\_\_\_\_\_ Total Score

## **APPENDIX G**

**A Sample Of The Letters Of Introduction To The Study Which  
Were Written And Placed In The Residents' Mailboxes At The  
Request Of The Activities Directors At Three Of The Twelve  
Participating Facilities**



asbury acres

**Dear Resident,**

**Hello. My name is Cathy Hagmann. I am a student at The University of Tennessee in Knoxville. After I talked with Cynthia Huffman and Cindy Dean, I decided to write you to ask for your help.**

**I need your help in order to finish my doctoral degree in Community Health. I would like to ask you to help me by answering some questions for me when I visit you several different times over the next few months. If you can answer some questions for me, this will help me find out how you feel before and after the animal visits you from the HABIT program.**

**It would be easier if everyone meets in a group for my questions. It would also be easier to do my study if everyone meets as a group for four times when the animal visits. Ms. Huffman and Ms. Dean will let you know exactly when these times will be as soon as we finish our schedule.**

**I would truly appreciate your help because I cannot finish this part of my University studies without your help.**

**Thank you very much.**

**Please sign your name below if you are willing to meet with Ms. Huffman, Ms. Dean, and me sometime soon and start helping me with my work.**

\_\_\_\_\_  
**NAME**

\_\_\_\_\_  
**DATE**



asbury acres

Dear Resident:

I am writing to you regarding Cathy Hagmann. Cathy is a student working on her Doctoral degree. She needs our help to complete her studies. She has chosen Asbury Acres Retirement Center to be part of her studies. Her study title is on Pet Therapy. She will be coming to talk more about this with us. What she needs now is to know how many of you will participate in this study. I support this study and am a strong believer in animal-assisted therapy. I hope you each will consider being a part of this. This will be a considerable help to Ms. Hagmann and maybe even to the future knowledge of the Human/Animal bond and its importance. Attached is a personal letter from Ms. Hagmann. Please sign and return to me if you are interested. Thank you so much for your consideration.

Sincerely,

Cynthia Huffman  
Director of Resident Services

CH: vw

## **APPENDIX H**

**A Sample Packet Of The Forms And Instruments Used For The  
Pilot Study**

**INFORMED CONSENT FORM**  
**RIVEROAKS PLACE, AN ASSISTED LIVING COMMUNITY**  
**100 Fifth Avenue**  
**Lenoir City, TN 37772**

This pilot study is being conducted by Catherine E. Hagmann, MA, CHES, a Ph.D. candidate in The Department of Health, Leisure and Safety Sciences at The University of Tennessee Knoxville. The results of this pilot study will become a part of her dissertation which must be completed in order for her degree to be granted.

I understand that all records identifying the participants in this pilot study will be confidential and will be securely stored under the supervision of Dr. Bill C. Wallace in The Health, Leisure, and Safety Sciences Department of UTK. I also am aware that only the researcher, Catherine Hagmann, will have access to any information which identifies the participants by name.

I understand that the residents of Riveroaks will be asked to voluntarily participate in this pilot study and that their voluntary participation will be indicated by their signatures on a RESIDENT INFORMED CONSENT FORM. I also understand that the residents may withdraw at any time during the study without judgment. I also realize that it will be helpful if those residents who withdraw from this study prior to completing all forms and questionnaires would be willing to discuss the reason for their withdrawal with the researcher so that she can better prepare for her study at other assisted living communities. I also realize that the residents are under no obligation to discuss their withdrawal if such withdrawal from this pilot study occurs.

I understand that the residents will be given the following forms and questionnaires to sign and complete: a resident informed consent form, a permission to make future pictures and slides form, a resident information form for obtaining basic demographic information, The Beck Anxiety Inventory (BAI), The Beck Depression Inventory (BDI), and an Attitudes About Human and Animal Bonds Form. Although these forms and questionnaires are written at approximately a fifth grade reading level, I understand that the researcher or the Activities Director at Riveroaks may assist the residents who ask for help with reading.

I understand that I may contact the researcher whose name appears above and/or her Project Director, Dr. Bill C. Wallace at (423) 974-5041 if I have any questions about this research or about the rights of the participants.

I have read the above information and agree to voluntarily allow Cathy Hagmann to seek the Riveroaks residents' participation in this pilot study on January 30, 1997 from 11:00 a.m. until 12:00. My signature indicates that I understand the purpose for and the nature of this pilot study and that I agree to allow this pilot study to be conducted.

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

**RESIDENT INFORMED CONSENT FORM**

**RIVEROAKS PLACE**

**100 Fifth Avenue - Lenoir City, TN 37772**

**This pilot study is being conducted by Catherine E. Hagmann, MA, CHES, a Ph.D. candidate in The Department of Health, Leisure and Safety Sciences at The University of Tennessee Knoxville. The results of this pilot study will become a part of her dissertation which must be completed in order for her degree to be granted.**

**I understand that all records identifying the participants in this pilot study will be confidential and will be securely stored under the supervision of Dr. Bill C. Wallace in The Health, Leisure, and Safety Sciences Department of UTK. I also am aware that only the researcher, Catherine Hagmann, will have access to any information which identifies the participants by name.**

**I understand that as a resident of Riveroaks I am being asked to voluntarily participate in this pilot study and that my voluntary participation will be indicated by my signature on this form. I realize that my participation in this study will help Cathy find out if she can improve the study before she goes to any other assisted living communities.**

**I also understand that I may withdraw at any time during the study without judgment. I also realize that it will be helpful if any residents who withdraw from this study prior to completing all forms and questionnaires would be willing to discuss the reason for their withdrawal with the researcher so that she can better prepare for her study at other assisted living communities. I also realize that the residents are under no obligation to discuss their withdrawal if such withdrawal from this pilot study occurs.**

**I understand that I will be given the following forms and questionnaires to sign and complete: a resident informed consent form, a permission to make future pictures and slides form, a resident information form, The Beck Anxiety Inventory (BAI), The Beck Depression Inventory (BDI), and an Attitudes About Human and Animal Bonds Form. Although these forms and questionnaires are written at approximately a fifth grade reading level, I understand that the researcher or the Activities Director at Riveroaks may assist the residents who ask for help with reading.**

**I understand that I may contact the researcher whose name appears above and/or her Project Director, Dr. Bill C. Wallace at (423) 974-5041 if I have any questions about this research or about my rights as a participant.**

**I have read the above information and agree to voluntarily participate in this pilot study on January 30, 1997 from 11:00 a.m. until 12:00. My signature indicates that I understand the purpose for and the nature of this pilot study and that I agree to allow this pilot study to be conducted.**

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

## RESIDENT INFORMATION

### RIVEROAKS PLACE

Lenoir City, Tennessee

The information requested here is for research purposes only.  
Your individual responses will be held absolutely confidential.  
Your cooperation and thoroughness are appreciated.

Please check the appropriate response or place your answer  
in the space provided.

1. What is your gender? Female \_\_\_\_\_ Male \_\_\_\_\_
2. What is your age? \_\_\_\_\_
3. What is your race? \_\_\_\_\_
4. How long have you resided at Riveroaks? \_\_\_\_\_  
(months or years?)
5. What is your marital status?  
single \_\_\_\_\_  
married \_\_\_\_\_  
separated \_\_\_\_\_  
divorced \_\_\_\_\_  
widowed \_\_\_\_\_

THANK YOU!

**RIVEROAKS PLACE  
100 Fifth Avenue  
Lenoir City, Tennessee 37772**

**PERMISSION TO MAKE AND USE PICTURES AND SLIDES**

I agree to allow Cathy Hagmann to make my picture during a future visit at Riveroaks. I know that these pictures will be made into slides. I also realize that the slides will be used by Cathy during any future reports on the results of her pilot study at Riveroaks.

I know that I will not be paid now or in the future for allowing my picture to be made. I also know that the pictures will not be returned to me.

I agree to allow my name to be used when my pictures are being shown to people who are interested in the results of Cathy's study at Riveroaks.

---

SIGNATURE

---

DATE

If I do not want my name to be used when my picture is used I will sign on the line below. My signature on the line below means that I do not mind if my picture is made, but I simply do not want my name used when my pictures are shown during any report on this study. I also realize that the pictures or slides will not be returned to me.

---

SIGNATURE

---

DATE

NAME \_\_\_\_\_  
DATE \_\_\_\_\_

FORM C

### ATTITUDES ABOUT HUMAN & ANIMAL BONDS

INDICATE YOUR OPINION. FOR EXAMPLE, IF YOU LIKE VISITS FROM THE ANIMAL, YOU WOULD PLACE A CHECK IN THE BLANK, AS SHOWN IN THE EXAMPLE BELOW.

ANIMALS MAKE ME FEEL:

BETTER ☒ \_\_\_\_\_ WORSE

ANIMALS MAKE ME FEEL:

LOVED \_\_\_\_\_ UNLOVED

LONELY \_\_\_\_\_ SOCIABLE

SECURE \_\_\_\_\_ INSECURE

SAD \_\_\_\_\_ HAPPY

CALM \_\_\_\_\_ TENSE

DEPRESSED \_\_\_\_\_ ELATED

ACCEPTED \_\_\_\_\_ REJECTED

TIRE \_\_\_\_\_ ENERGETIC

IN CONTROL \_\_\_\_\_ POWERLESS

BORED \_\_\_\_\_ ENTERTAINED

RELAXED \_\_\_\_\_ ANXIOUS

WORTHLESS \_\_\_\_\_ IMPORTANT

TALKATIVE \_\_\_\_\_ QUIET

DEFENSIVE \_\_\_\_\_ COOPERATIVE



NAME \_\_\_\_\_ DATE \_\_\_\_\_

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by each symptom during the PAST WEEK, INCLUDING TODAY, by placing an X in the corresponding space in the column next to each symptom.

|                                           | NOT<br>AT<br>ALL | MILDLY<br>It did not<br>bother me much. | MODERATELY<br>It was very unpleasant,<br>but I could stand it. | SEVERELY<br>I could barely<br>stand it. |
|-------------------------------------------|------------------|-----------------------------------------|----------------------------------------------------------------|-----------------------------------------|
| 1. Numbness or tingling.                  |                  |                                         |                                                                |                                         |
| 2. Feeling hot.                           |                  |                                         |                                                                |                                         |
| 3. Wobbliness in legs.                    |                  |                                         |                                                                |                                         |
| 4. Unable to relax.                       |                  |                                         |                                                                |                                         |
| 5. Fear of the worst happening.           |                  |                                         |                                                                |                                         |
| 6. Dizzy or lightheaded.                  |                  |                                         |                                                                |                                         |
| 7. Heart pounding or racing.              |                  |                                         |                                                                |                                         |
| 8. Unsteady.                              |                  |                                         |                                                                |                                         |
| 9. Terrified.                             |                  |                                         |                                                                |                                         |
| 10. Nervous.                              |                  |                                         |                                                                |                                         |
| 11. Feelings of choking.                  |                  |                                         |                                                                |                                         |
| 12. Hands trembling.                      |                  |                                         |                                                                |                                         |
| 13. Shaky.                                |                  |                                         |                                                                |                                         |
| 14. Fear of losing control.               |                  |                                         |                                                                |                                         |
| 15. Difficulty breathing.                 |                  |                                         |                                                                |                                         |
| 16. Fear of dying.                        |                  |                                         |                                                                |                                         |
| 17. Scared.                               |                  |                                         |                                                                |                                         |
| 18. Indigestion or discomfort in abdomen. |                  |                                         |                                                                |                                         |
| 19. Faint.                                |                  |                                         |                                                                |                                         |
| 20. Face flushed.                         |                  |                                         |                                                                |                                         |
| 21. Sweating (not due to heat).           |                  |                                         |                                                                |                                         |

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17 A B C D E

09018425



Date: \_\_\_\_\_

Name: \_\_\_\_\_ Marital Status: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: \_\_\_\_\_

Occupation: \_\_\_\_\_ Education: \_\_\_\_\_

This questionnaire consists of 21 groups of statements. After reading each group of statements carefully, circle the number (0, 1, 2 or 3) next to the one statement in each group which best describes the way you have been feeling the past week, including today. If several statements within a group seem to apply equally well, circle each one. Be sure to read all the statements in each group before making your choice.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 0 I do not feel sad.<br/>1 I feel sad.<br/>2 I am sad all the time and I can't snap out of it.<br/>3 I am so sad or unhappy that I can't stand it.</p> <p>2 0 I am not particularly discouraged about the future.<br/>1 I feel discouraged about the future.<br/>2 I feel I have nothing to look forward to.<br/>3 I feel that the future is hopeless and that things cannot improve.</p> <p>3 0 I do not feel like a failure.<br/>1 I feel I have failed more than the average person.<br/>2 As I look back on my life, all I can see is a lot of failures.<br/>3 I feel I am a complete failure as a person.</p> <p>4 0 I get as much satisfaction out of things as I used to.<br/>1 I don't enjoy things the way I used to.<br/>2 I don't get real satisfaction out of anything anymore.<br/>3 I am dissatisfied or bored with everything.</p> <p>5 0 I don't feel particularly guilty.<br/>1 I feel guilty a good part of the time.<br/>2 I feel quite guilty most of the time.<br/>3 I feel guilty all of the time.</p> <p>6 0 I don't feel I am being punished.<br/>1 I feel I may be punished.<br/>2 I expect to be punished.<br/>3 I feel I am being punished.</p> <p>7 0 I don't feel disappointed in myself.<br/>1 I am disappointed in myself.<br/>2 I am disgusted with myself.<br/>3 I hate myself.</p> | <p>8 0 I don't feel I am any worse than anybody else.<br/>1 I am critical of myself for my weaknesses or mistakes.<br/>2 I blame myself all the time for my faults.<br/>3 I blame myself for everything bad that happens.</p> <p>9 0 I don't have any thoughts of killing myself.<br/>1 I have thoughts of killing myself, but I would not carry them out.<br/>2 I would like to kill myself.<br/>3 I would kill myself if I had the chance.</p> <p>10 0 I don't cry any more than usual.<br/>1 I cry more now than I used to.<br/>2 I cry all the time now.<br/>3 I used to be able to cry, but now I can't cry even though I want to.</p> <p>11 0 I am no more irritated now than I ever am.<br/>1 I get annoyed or irritated more easily than I used to.<br/>2 I feel irritated all the time now.<br/>3 I don't get irritated at all by the things that used to irritate me.</p> <p>12 0 I have not lost interest in other people.<br/>1 I am less interested in other people than I used to be.<br/>2 I have lost most of my interest in other people.<br/>3 I have lost all of my interest in other people.</p> <p>13 0 I make decisions about as well as I ever could.<br/>1 I put off making decisions more than I used to.<br/>2 I have greater difficulty in making decisions than before.<br/>3 I can't make decisions at all anymore.</p> |
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Subtotal Page 1

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>14    0    I don't feel I look any worse than I used to.<br/>             1    I am worried that I am looking old or unattractive.<br/>             2    I feel that there are permanent changes in my appearance that make me look unattractive.<br/>             3    I believe that I look ugly.</p> <p>15    0    I can work about as well as before.<br/>             1    It takes an extra effort to get started at doing something.<br/>             2    I have to push myself very hard to do anything.<br/>             3    I can't do any work at all.</p> <p>16    0    I can sleep as well as usual.<br/>             1    I don't sleep as well as I used to.<br/>             2    I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.<br/>             3    I wake up several hours earlier than I used to and cannot get back to sleep.</p> <p>17    0    I don't get more tired than usual.<br/>             1    I get tired more easily than I used to.<br/>             2    I get tired from doing almost anything.<br/>             3    I am too tired to do anything.</p> <p>18    0    My appetite is no worse than usual.<br/>             1    My appetite is not as good as it used to be.<br/>             2    My appetite is much worse now.<br/>             3    I have no appetite at all anymore.</p> | <p>18    0    I haven't lost much weight, if any, lately.<br/>             1    I have lost more than 5 pounds.<br/>             2    I have lost more than 10 pounds.<br/>             3    I have lost more than 15 pounds.</p> <p>      I am purposely trying to lose weight by eating less. Yes _____ No _____</p> <p>20    0    I am no more worried about my health than usual.<br/>             1    I am worried about physical problems such as aches and pains; or upset stomach; or constipation.<br/>             2    I am very worried about physical problems and it's hard to think of much else.<br/>             3    I am so worried about my physical problems that I cannot think about anything else.</p> <p>21    0    I have not noticed any recent change in my interest in sex.<br/>             1    I am less interested in sex than I used to be.<br/>             2    I am much less interested in sex now.<br/>             3    I have lost interest in sex completely.</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

\_\_\_\_\_ Subtotal Page 2

\_\_\_\_\_ Subtotal Page 1

\_\_\_\_\_ Total Score

## **APPENDIX I**

### **Scores On Form A**

A Histogram Of The Scores On Form A

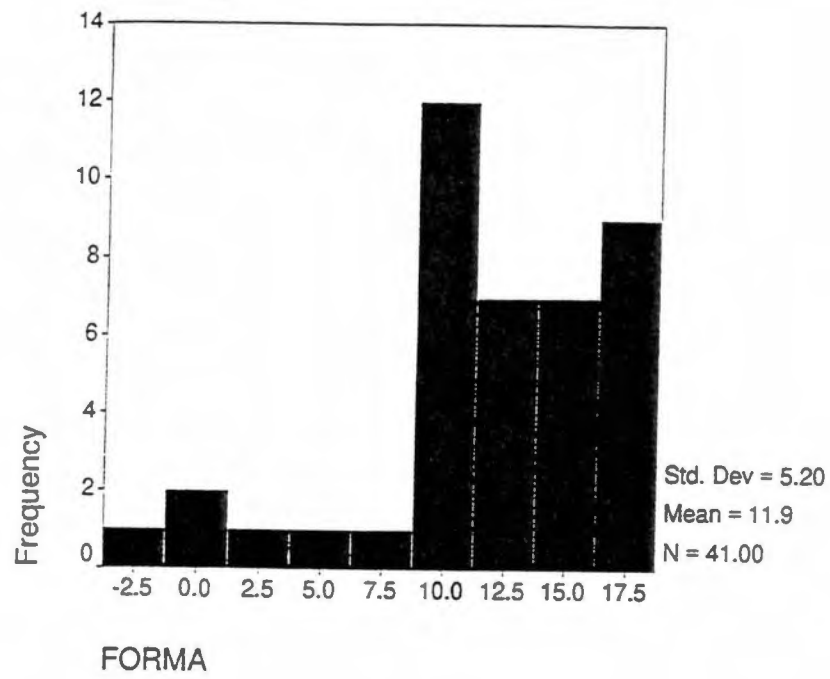
A Normal Q-Q Plot Of Form A, N=41

A Detrended Normal Q-Q Plot Of Form A, N=41

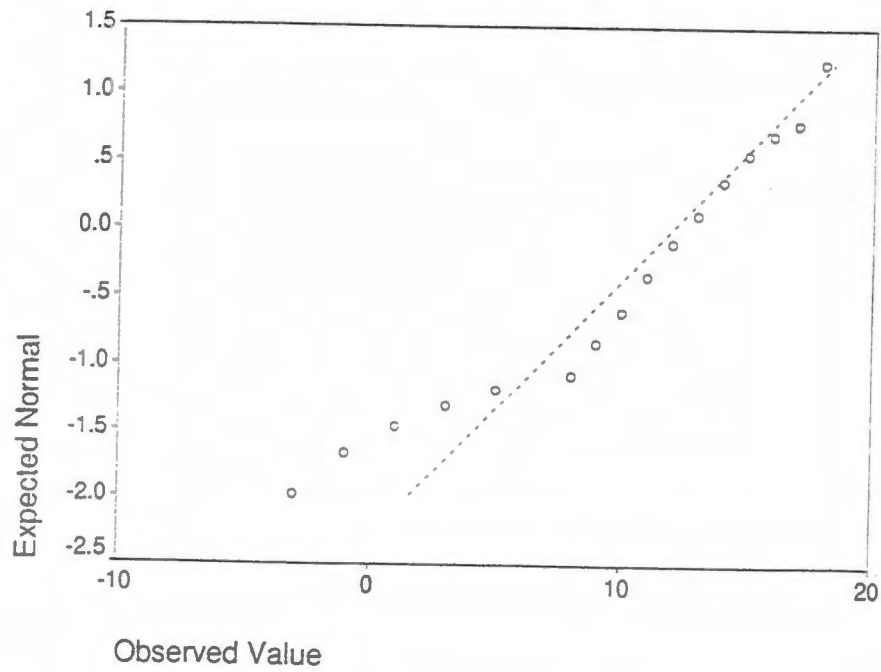
### Pretest Scores From The Original Experimental Group, N=41

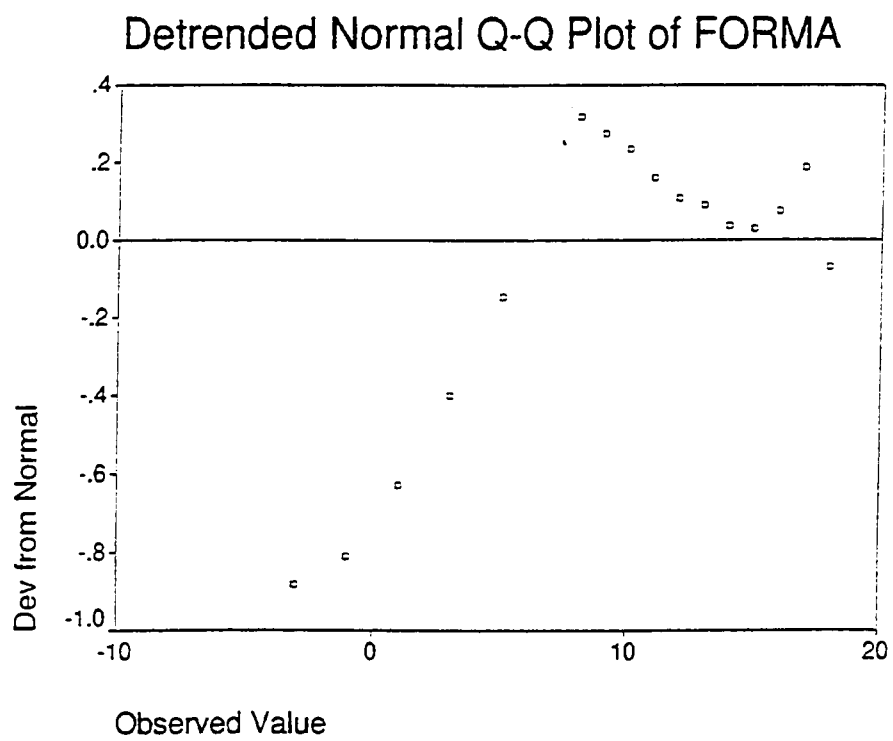
| Gender                                                     | Form A | Form B | BAI | BDI |
|------------------------------------------------------------|--------|--------|-----|-----|
| F                                                          | +12    | +29    | 1   | 1   |
| F                                                          | +5     | +37    | 5   | 13  |
| F                                                          | +16    | +23    | 16  | 13  |
| F                                                          | +11    | +11    | 5   | 19  |
| F                                                          | +9     | +3     | 28  | 8   |
| F                                                          | +8     | +20    | 10  | 9   |
| M                                                          | +12    | +23    | 9   | 6   |
| F                                                          | +18    | +42    | 12  | 8   |
| F                                                          | +18    | +32    | 5   | 4   |
| F                                                          | +15    | +15    | 0   | 9   |
| F                                                          | +9     | +36    | 0   | 0   |
| F                                                          | +18    | +38    | 3   | 13  |
| F                                                          | +11    | +33    | 19  | 5   |
| F                                                          | +14    | +23    | 7   | 18  |
| F                                                          | +18    | +42    | 0   | 0   |
| F                                                          | +13    | +24    | 1   | 4   |
| F                                                          | +18    | +26    | 2   | 19  |
| F                                                          | +13    | +24    | 17  | 6   |
| F                                                          | +17    | +36    | 10  | 4   |
| F                                                          | +18    | +27    | 2   | 6   |
| M                                                          | +18    | +39    | 7   | 10  |
| F                                                          | +14    | +42    | 2   | 0   |
| F                                                          | +11    | +32    | 0   | 4   |
| F                                                          | +15    | +27    | 3   | 10  |
| M                                                          | +11    | +34    | 3   | 5   |
| F                                                          | +10    | +32    | 5   | 6   |
| M                                                          | +13    | +40    | 0   | 0   |
| F                                                          | +11    | +40    | 41  | 8   |
| F                                                          | +13    | +34    | 13  | 9   |
| M                                                          | +13    | +19    | 18  | 9   |
| M                                                          | +11    | +21    | 17  | 8   |
| F                                                          | +10    | +14    | 16  | 12  |
| F                                                          | +1     | +34    | 18  | 6   |
| F                                                          | +9     | +24    | 9   | 17  |
| F                                                          | +15    | +3     | 2   | 9   |
| F                                                          | +14    | +37    | 4   | 7   |
| F                                                          | -3     | +22    | 20  | 13  |
| F                                                          | +9     | +31    | 3   | 2   |
| F                                                          | +18    | +42    | 2   | 7   |
| F                                                          | +3     | +36    | 11  | 10  |
| F                                                          | -1     | +13    | 10  | 2   |
| Maximum Possible Score                                     |        |        |     |     |
| Form A (Attitudes About Human And Animal Bonds) = - Or +42 |        |        |     |     |
| Form B (Attitudes About Human And Animal Bonds) = - Or +42 |        |        |     |     |
| Beck Anxiety Inventory (BAI) = 63                          |        |        |     |     |
| Beck Depression Inventory (BDI) = 63                       |        |        |     |     |

### Histogram



### Normal Q-Q Plot of FORMA





**APPENDIX J**  
A Sample Of The Beck Anxiety Inventory (BAI)



## **APPENDIX K**

### **A Sample Of The Beck Depression Inventory (BDI)**



## VITA

Catherine Smith Hagmann was born in Mountain City, Tennessee on September 4, 1950. She attended schools in the Johnson County Public School System, where she graduated from Johnson County High School in May, 1968. In 1978 she entered Converse College in Spartanburg, South Carolina as a transfer student from Spartanburg's Regional Campus of The University of South Carolina. Converse College granted her Bachelor of Arts in Biology with a related field of Secondary Education in May, 1980. She was issued a professional license from The State of Tennessee Department of Education in the endorsed areas of General Science, Biology, and Chemistry on October 29, 1980. After teaching Earth-space Science at the Middle School level for a year, she entered the Master's program in Biology-Education at Appalachian State University in Boone, North Carolina, where she taught General Biology laboratories as a Graduate Teaching Assistant. In May of 1982, she officially received the Master of Arts degree from ASU. After teaching biology at the Community College level, she entered the Doctor of Philosophy program in Human Ecology at The University of Tennessee, Knoxville in June, 1994. The doctoral degree will be received in December, 1997.

Catherine is married to Hal W. Campbell, Jr. They reside in Knoxville, Tennessee. She has one stepdaughter, Priscilla Campbell-Young, and two stepgrandsons, Austin and Christian Young.