Effects of an animal visitation intervention on the depression, loneliness, and quality of life of older people: A randomised controlled study

Chanellé Juanita Buckle

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Supervisor: Dr. Marieanna le Roux

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DECLARATION

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ABSTRACT

Older people—especially those living in residential facilities—comprise a vulnerable and oftentimes frail, but large and growing subset of the global population. Various age-related and socio-political, -economic, and -environmental factors place the quality of life of older people largely at stake, which warrants the development and implementation of low-cost, practical, and effective intervention strategies that foster the health of older people. One type of intervention that shows promise in addressing certain health needs of the older population is animal-assisted interventions. Animal-assisted intervention (AAI) is currently the most widely used term to describe any intervention that purposely incorporates animals as part of a therapeutic or generally beneficial process with humans.

The aim of the present study was to generate empirical evidence on the effect of a dog visitation intervention (a type of AAI) on the occurrence of depression and loneliness and the quality of life of older people residing in a residential facility. A randomised pretest-posttest control group design was implemented to achieve this aim.

Thirty-five consenting older people residing in a South African residential facility for the aged participated in the study. Participants were randomised into an experimental group (n = 17) and a control group (n = 18). Experimental group participants were subjected to a 10-week dog visitation intervention wherein they received weekly visits of about 60 minutes each from three registered visiting dogs and their individual owners (volunteers). Control group participants, on the other hand, did not receive the intervention and continued living their daily lives as usual.

Throughout the intervention the dog visitation sessions took place consistently on the same day and time each week. Experimental group participants gathered in the residential facility's large entry lounge during visits. The other residents of the facility were kindly denied access to this venue during that time. Volunteers took dog treats (e.g., biscuits) and toys (e.g., balls) along to visits, where experimental group participants were allowed to observe, talk to, hold, stroke, play with, and feed treats to the dogs.

All participants were assessed before (pretest) and after (posttest) the intervention using the Geriatric Depression Scale Short Form (GDS-SF), the UCLA Loneliness Scale Version 3 (UCLA LS-3), and the World Health Organisation Quality of Life-BREF (WHOQOL-BREF). At pretest measurement participants additionally completed a biographical and pet history survey. A *p*-value equal to or smaller than .05 was used to indicate significant results.

Analysis of the data revealed no significant differences between the experimental and control groups on the pretest and posttest scores of the GDS-SF and the UCLA LS-3. Reliability analyses of the WHOQOL-BREF subscales revealed unsatisfactory *α*-values and this measure was therefore not analysed any further. These findings and the limitations of the present study are discussed, and recommendations for further research are made.

Key words: Animal-assisted intervention; animal-assisted therapy; animal-assisted activities; animal visitation intervention; older people; residential facility; depression; loneliness; quality of life; randomised controlled study

OPSOMMING

Ouer mense—veral die wat woon in residensiële fasiliteite—verteenwoordig ’n kwesbare en dikwels brose, maar groot en groeiende subgroep van die wêreldbevolking. Verskeie ouderdomsverwante en sosio-politiese, -ekonomiese, en -omgewingsfaktore plaas die lewensgehalte van ouer mense grootliks op die spel. Die ontwikkeling en implementering van lae-koste, praktiese, en effektiewe intervensiestrategieë wat die gesondheid van ouer mense bevorder is daarom belangrik. Een soort intervensie wat belowend lyk om sekere gesondheidsbehoeftes van die ouer bevolking aan te spreek, is troeteldier-ondersteunde intervensies. Troeteldier-ondersteunde intervensie (TOI) is tans die term wat algemeen verwys na enige intervensie wat doelbewus gebruik maak van diere as deel van ’n terapeutiese of algemeen voordelige proses met mense.

Die doel van die huidige studie was om empirise bewyse voort te bring oor die effek van ’n intervensie met honde (’n soort TOI) op die voorkoms van depressie, eensaamheid en lewensgehalte van mense wat in ’n residensiële fasiliteit vir ouer mense woon. ’n Ewekansige voortoest-natoets kontrolegroepontwerp is geïmplementeer om hierdie doel te bereik.

Vyf en dertig ouer persone wat woon in ’n Suid-Afrikaanse residensiële fasiliteit vir ouer mense het ingestem om aan die studie deel te neem. Deelnemers is ewekansig verdeel in ’n eksperimentele groep (n = 17) en ’n kontrolegroep (n = 18). Die eksperimentele groep is blootgestel aan ’n 10-weke lange intervensie waarin hulle weekliks besoeke van ongeveer 60 minute elk van drie geregistreede besoekhonde en hul individuele eienaars (vrywilligers) ontvang het. Die

kontrolegroep het nie die intervensie ontvang nie en het voortgegaan met hul daaglikse lewens soos gewoonlik.

Deur die loop van die intervensie het die besoeke konsekwent op dieselfde dag en tyd elke week plaasgevind. Tydens besoeke het die eksperimentele groep vergader in die groot sitkamer van die fasiliteit. Tydens die duur van hierdie besoeke is ander inwoners van die fasiliteit vriendelik toegang tot die lokaal geweier. Vrywilligers het lekkernye (bv., beskuitjies) en speelgoed (bv., balle) vir hul honde saamgeneem na besoeke. Die eksperimentele groep is toegelaat om die honde waar te neem, met hulle te gesels, hulle te streel, met hulle te speel, en lekkernye aan hulle te voer tydens besoeke.

Alle deelnemers is voor (voortoets) en na (natoets) die intervensie onderwerp aan die Geriatriese Depressieskaal Verkorte Vorm (GDS-VV), die UCLA Eensaamheidskaal Weergawe 3 (UCLA ES-3), en die Wêreld Gesondheidsorganisasie se Lewensgehaltevraelys (WGOLG-BREF). Tydens voortoetsmeting het deelnemers ook ’n biografiese en troeteldier geskiedenis vraelys voltooi. ’n *P*-waarde kleiner as of gelyk aan .05 is gebruik as ’n indikasie van beduidende resultate.

Dataontledings het geen beduidende verskille opgelewer tussen die eksperimentele groep en kontrolegroep se voortoets- en natoetstellings op die GDS-VV en UCLA ES-3 nie. Betroubaarheidsanalises van die WGOLG-BREF het onbevredigende *α*-waardes opgelewer. Laasgenoemde skaal is daarom nie verder ontleed nie. Die resultate en die tekortkominge van die studie word bespreek, en aanbevelings vir verdere navorsing word gemaak.

Trefwoorde: Troeteldier-ondersteunde intervensie; troeteldier-ondersteunde terapie; troeteldier-ondersteunde aktiwiteite; troeteldierbesoekintervensie; ouer mense; residensiële fasiliteit; depressie; eensaamheid; lewensgehalte; ewekansige gekontrolleerde studie

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LIST OF ABBREVIATIONS

AAA	Animal-assisted activity
AAI	Animal-assisted intervention
AAT	Animal-assisted therapy
APA	American Psychological Association
ASPCA	American Society for the Prevention of Cruelty to Animals
AVMA	American Veterinary Medical Association
GDS-SF	Geriatric Depression Scale (Short Form)
HAI	Human-animal interaction
PAT	Pets as Therapy
StatsSA	Statistics South Africa
UCLA LS-3	UCLA Loneliness Scale (Version 3)
WHO	World Health Organisation
WHOQOL-BREF	World Health Organisation Quality of Life-BREF

CHAPTER 1

INTRODUCTION AND MOTIVATION

1.1. BACKGROUND

Even though growing old is an inevitable part of life for most people, it is an experience rarely greeted with eagerness. This is because old age is perhaps associated with vulnerability, infirmity, loss, and special needs more than any other stage of life (Statistics South Africa [StatsSA], 2013). Moreover, aging in South Africa may be unique considering the country's legacy of deprivation under the apartheid regime, soaring poverty rates, violence, and the current HIV and AIDS epidemic (Tomita & Burns, 2013). The present cluster of older people in South Africa conceivably represent the country's most historically deprived group in terms of adequate education, employment, and socio-economic opportunities (Makiwane & Kwizera, 2006; StatsSA, 2013). As a previously disadvantaged group, older people in South Africa constitute a primary and deserving target group for service delivery and assistance (StatsSA, 2013).

At the same time population aging is increasing in both developed and developing countries, which has implications for the health needs of the older population (Makiwane & Kwizera, 2006). Population aging is the process by which the age structure of a population changes. The number of older people (i.e., persons aged 60 years or older) increase due to declines in fertility and mortality rates (Joubert & Bradshaw, 2006). South Africa—including the Western Cape—is no exception to the global population aging trend (Haldenwang, 2008). Census data indicate an increase in the number of older people in the country from roughly 2.8 million in 1996 to an estimated 4.5 million in 2014. During the same period, the relative proportion

of older people to the total population respectively increased from about 7% to 8.4% (StatsSA, 2014).

Baun and Johnson (2010) maintain that while people are living longer and are healthier than in earlier centuries, an increased number of older people may spend at least a part of their lives alone, possibly due to the loss of loved ones. Furthermore, while population aging and increased life expectancy potentially cause elevations in chronic disease and disability rates among the older population (Joubert & Bradshaw, 2006), these trends may also extend the time periods during which older people have to live with their health afflictions. Subsequently, the ever-increasing older population expands the demand for health practitioners with expertise in older person physical and mental health care (American Psychological Association [APA] Office on Aging, 2005).

When the health of aging individuals (begin to) decline, these individuals may (inadvertently) necessitate personal assistance and/or care from others to manage these declines, lessen the impact that it may have on their quality of life, and continue normal daily living activities. Sometimes the individual's loved ones, such as spouses, family members, or friends assume the responsibility of caring for or assisting an older person who has declined abilities or ill health. However, this may not always be possible or preferred and the individual may subsequently move into a residential facility for the aged (Prinsloo, 2015). In a residential facility, around-the-clock supervision, assistance, and care are provided to residents by salaried staff. Chur-Hansen, Stern, and Winefield (2010) have noted that "most residents of long-term care facilities do not choose to live in such facilities, but are there because they can no longer look after themselves because of their often complex morbidities" (p.

144). Moreover, the migration of children and grandchildren, and limited financial resources are also reasons for the institutionalisation of older people (Roos & Malan, 2012).

It is therefore common for older people to become institutionalised despite the focus of current legislative frameworks on enabling older people to remain living in their homes within the community for as long as possible (Lombard & Kruger, 2009). Institutionalisation may disrupt vital elements of a person's life (Victor, 2012) and be experienced as distressing, traumatic, or depressing by older people (Berry et al., 2012; Cirulli, Borgi, Berry, Francia, & Alleva, 2011; Le Roux & Kemp, 2009). Institutionalisation is sometimes linked with poorer health among older people, where older people in residential facilities often "represent the frailest and most vulnerable" (Victor, 2012, p. 637) members of their age group. However, it is important to note that the possible association between poorer health and institutionalisation is reciprocal: While ill health and special needs may be preceding factors that lead to institutionalisation, institutionalisation-related factors per se may also have negative consequences for an individual's well-being (Prieto-Flores, Forjaz, Fernandez-Mayoralas, Rojo-Perez, & Martinez-Martin, 2011).

The crux of what has been said up till now is that older people—especially those in residential facilities—comprise a vulnerable and often frail, but large and growing subset of the global population. Various age-related and socio-political, -economic, and -environmental factors place the quality of life of older people largely at stake. This warrants the development and implementation of low-cost, practical, and effective intervention strategies that foster the health of older people (Berry et al., 2012). Atkins, Naismith, Luscombe, and Hickie (2013) noted that "programmes

directed at improving the mental health and quality of life (QOL) of older people are extremely important" (p. 250). While the healthcare sector works to address the healthcare needs of the older population in South Africa, non-profit and public benefit organisations can make valuable contributions to promoting the health of older people by providing substantive, health-promoting interventions.

In the past few decades a widespread notion that older people can "benefit from human-animal interaction because of declines in physical, social and cognitive ability commonly associated with aging" has emerged (Chur-Hansen et al., 2010, p. 144). Researchers have investigated the effect of positive interactions between older people and companion animals (especially dogs) on the health of older people (Phelps, Miltenberger, Jens, & Wadeson, 2008; Stern & Chur-Hansen, 2013). Animal-assisted interventions demonstrate promise in efforts to uplift the health status of older people, including those residing in residential facilities for the aged (Baun & Johnson, 2010). However, concerns have arisen in recent literature regarding the extent to which claims about the efficacy of animal-assisted interventions are supported by concrete empirical evidence. Previous research on the value of positive human-animal interactions have been plagued with an array of methodological weaknesses and have yielded contradictory findings (Chur-Hansen et al., 2010; Lutwack-Bloom, Wijewickrama, & Smith, 2005; Marino, 2012). There is also a noteworthy dearth of randomised controlled studies in the field. The following section provides a rationale for the present study.

1.2. RATIONALE

Older people in residential facilities represent a deserving target group for interventions that focus on bettering the health of these individuals' bodies, minds,

and spirits (Gallagher, 2006). Prior research revealed the remarkable physical and mental health advantages to various recipients of animal-assisted interventions (AAIs), including older people residing in residential facilities for the aged (Baun & Johnson, 2010; Friedmann, Son, & Tsai, 2010; Hart, 2010; Marcus, 2013).

However, recent years have witnessed the emergence of concerns about the extent of scientific support for the apparent beneficial effects of AAIs (Moretti et al., 2011; Serpell, 2010). There is a lack of or methodologically weak experimental research on the efficacy of AAIs and the current evidence-base of AAIs comprises too much equivocal data (Chur-Hansen et al., 2010; Lutwack-Bloom et al., 2005). Kruger and Serpell (2010) maintain that AAIs "are currently best described as a category of promising complementary practices that are still struggling to demonstrate their efficacy and validity" (p. 33). Moreover, there is a need to investigate the conditions under which AAI can be most helpful (Nimer & Lundahl, 2007). Lubbe and Scholtz (2013) are of opinion that AAI studies are few, especially in South Africa.

The above information warrants the present study, which employed an experimental investigation into the effects of a dog visitation intervention on depression, loneliness, and the quality of life of older people in a residential facility situated in the Western Cape, South Africa. The application of robust scientific methods was of the utmost importance in the present study. In this way the study may contribute to efforts aiming to answer questions about the empirical efficacy of AAIs, and in particular animal visitation interventions in residential facilities for the aged. Furthermore, this research may help to discover ways of improving the implementation and efficacy of animal visitation interventions in South African residential facilities.

1.3. RESEARCH QUESTION AND HYPOTHESES

The research question for this study was: *What is the effect of a dog visitation intervention on the depression, loneliness, and quality of life of older people in a residential facility?*

According to Bless, Higson-Smith, and Kagee (2006) hypotheses are specific tentative and testable answers to research questions. The purpose of quantitative research is to test hypotheses and ultimately accept or reject them based on empirical findings. The hypotheses of the present study were as follows:

Hypothesis 1

Human-animal interaction in the form of a dog visitation intervention is effective for significantly lowering depression scores of older people in a residential facility for the aged.

Hypothesis 2

Human-animal interaction in the form of a dog visitation intervention is effective for significantly lowering loneliness scores of older people in a residential facility for the aged.

Hypothesis 3

Human-animal interaction in the form of a dog visitation intervention is effective for significantly improving quality of life scores of older people in a residential facility for the aged.

1.4. AIMS AND OBJECTIVES

The overall aim of the present study was to generate empirical evidence on the effect of a dog visitation intervention on the occurrence of depression and loneliness and the quality of life of older people in a residential facility. In effect, this aim subsumes two central objectives of the present study.

Firstly, this study focused on generating scientifically robust, valid, and reliable research evidence through the implementation of a quantitative, experimental research design. As such, the study aimed for a high standard of experimental rigour and methodological soundness through the inclusion of a control group, rendering consistency, ensuring a semi-sufficient sample size, and carefully documenting and adhering to protocols.

Secondly, this study sought to determine the effects of a dog visitation intervention on the depression, loneliness, and quality of life scores of older people in a residential facility. To do this, a dog visitation intervention was implemented in a South African residential facility housing older people. The impact of the intervention on the participants' depression, loneliness, and quality of life was measured before and after the intervention using the Geriatric Depression Scale (Short Form), the UCLA Loneliness Scale (Version 3), and the World Health Organisation (WHO) Quality of Life-BREF.

The desired outcome of the study was that the participating older people would show improved depression, loneliness, and quality of life scores as a result of exposure to the dog visitation intervention in their residential facility. The prospect was that the intervention would provide participants with the opportunity to engage recreationally with the visiting dogs and to form bonds with them. The idea was that the

intervention would stimulate social intermingling among participants and thereby help them cope with some of the problems facing them as inhabitants of a residential facility for the aged.

Moreover, I kept in mind that the first objective of the study superimposes the second. In other words, while both the objectives of the study were of central importance in achieving the study aim, the implied boundaries and implications of the first objective determined the second objective.

1.5. DEFINITION AND CLARIFICATION OF KEY CONCEPTS

1.5.1. Companion animal

The term *companion animal* often appears in the literature as an interchangeable term for pet, where companion animals are referred to as "any non-human animal that shares its life with a human caregiver" (Chur-Hansen et al., 2010, p. 140). The American Society for the Prevention of Cruelty to Animals (ASPCA, 2015a) defines companion animals as "domesticated or domestic-bred animals whose physical, emotional, behavioural, and social needs can be readily met as companions in the home, or in close daily relationship with humans" ("Definition of companion animal", para. 1). The key idea is that a companion animal is domesticated and in a companion-like relationship with a human or humans. The ASPCA (2015b) goes on to classify animals such as dogs, cats, horses, rabbits, ferrets, birds, guinea pigs, some specific small mammals, small reptiles and fish, and domestic-bred farm animals as animals that are suitable as companion animals.

1.5.2. Human-animal bond

Human-animal bond refers to the kinship between humans and companion animals, which can be defined as:

> a mutually beneficial and dynamic relationship between people and animals that is influenced by behaviours considered essential to the health and well-being of both. The bond includes, but is not limited to emotional, psychological, and physical interactions of people, animals, and the environment. (American Veterinary Medical Association [AVMA], 2015, “Human-animal bond”, para. 1)

1.5.3. Human-animal interaction (HAI)

Van Heerden (2001) defines *human-animal interaction* in terms of the mutual and dynamic interactions between humans and animals that involve reciprocity and results in need fulfilment in both parties. In this thesis, readers should accept that the *animal* referred to in the term human-animal interaction is a companion animal (as opposed to a wild animal). There are different types of contexts in which humans and animals can interact, including contact, ownership, service animal programmes, and planned interventions or therapy (Wiggett, 2006).

Contact relates to the domestication of certain types of animals (e.g., wolves, dogs, cats and farm animals such as goats, sheep, cattle, pigs, ducks, and horses) that happened about 12 000 years ago (Wiggett, 2006). Contact refers to casual or by chance interactions with animals that happen outside the context of ownership, planned interventions, or service animal programmes.

Ownership of animals as pets (i.e., pet ownership) is another form of human-animal interaction that starts with a person or family acquiring a pet. Pet ownership typically involves a close daily relationship between a pet animal and its human owner, where the owner assumes responsibility for the pet's care (usually for the rest of its life). Furthermore, *service animal programmes* can be characterised by a trained animal (typically a dog) that is acquired by a person with a disability for the primary purpose of providing or assisting the aforementioned person with certain functions.

Planned interventions that involve human-animal interaction are known as *animal-assisted interventions* (see Section 1.5.4). In this thesis, the term human-animal interaction (HAI) will primarily refer to interactions between humans and animals that take place in the context of pet ownership and/or AAIs.

1.5.4. Animal-assisted intervention (AAI)

Many terms have been used to describe interventions that utilise animals as therapeutic entities, including *pet therapy*, *pet-facilitated therapy*, *four-footed therapy*, *animal-facilitated counselling*, *companion-animal therapy*, and *co-therapy with an animal* (LaJoie, 2003). Currently, animal-assisted intervention (AAI) is the most widely used term to describe any intervention that purposely incorporates animals as part of a therapeutic or generally beneficial process in relation to a human being.

According to the AVMA (as cited in Kamioka et al., 2014), AAIs can be classified into three categories, namely: (a) *animal-assisted therapy* (AAT) that utilises therapy animals, (b) *animal-assisted activity* (AAA) that utilises companion animals, and (c) *service animal programmes* that utilise service animals. In this thesis, the term AAI serves as an umbrella term for AAT and AAA.

1.5.5. Animal-assisted therapy and activity (AAT/AAA)

Pet Partners (as cited in Kruger & Serpell, 2010), a large therapy animal certification organisation in the USA, published the following widely cited definitions of AAT and AAA:

> Animal-assisted therapy is a goal directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. AAT is directed and/or delivered by a health/human service professional with specialised expertise, and within the scope of practice of his/her profession. Key features include: specified goals and objectives for each individual; and measured progress. (p. 34)
>
> Animal-assisted activity provides opportunities for motivational, educational, recreational, and/or therapeutic benefits to enhance quality of life. AAAs are delivered in a variety of environments by specially trained professionals, paraprofessionals, and/or volunteers, in association with animals that meet specific criteria. Key features include: absence of specific treatment goals; volunteers and treatment providers are not required to take detailed notes; visit content is spontaneous. (p. 34)

It is important to distinguish between AAT and AAA. While AAT utilises animals as adjuncts to other therapeutic techniques in goal-directed therapy programmes, AAAs utilise animals recreationally as positive diversionary tools and potential instigators of therapeutic change. AAAs should not be confused with therapy, even though it may have therapeutically beneficial effects. Kruger and Serpell (2010) note that

> the term animal-assisted therapy continues to be applied to an array of programmes that would not qualify as therapy in any scientific or medical sense of the word. . . . Just as we would not refer to a clown's visit to a paediatric hospital as clown-assisted therapy, the urge to call animal recreation and visitation programmes therapy should be resisted. (p. 34)

1.5.6. Animal visitation intervention

An *animal visitation intervention*, such as the one implemented in the present study, can be classified as an AAA as it typically involves a series of casual meet-and-greet visits by pets and their owners or handlers to residents or patients in various treatment or residential settings (Walsh, 2009). In these interventions visitation sessions are usually short (i.e., lasting not longer than an hour) and scheduled to take place regularly (e.g., weekly, fortnightly, or monthly). Moreover, animal visitation interventions mostly utilise dogs.

The typical dog visitation session in a residential facility for older people would involve an older person (or a group of older people) spending a few minutes holding, stroking, and/or playing with a trained and registered visiting dog while the dog's handler monitors it, tends to its needs, and answers questions about it (Marcus, 2013).

1.5.7. Pets as Therapy (PAT)

Pets as Therapy (PAT) is a registered non-profit and public benefit organisation in South Africa that organises therapeutic visits by pet owners who volunteer to take their pets (mostly dogs) to visit people in residential facilities, hospitals, residential

centres for disabled persons, care facilities, and special needs schools (see Appendix A). PAT-visits may provide companionship, support, pleasure, and stimulation to its recipients (Le Roux, 2013). The dogs that were used in this study were all pets of PAT volunteers.

1.5.8. Health

For the present study, Bircher's (2005) definition of *health* will apply: "a dynamic state of well-being characterised by a physical, mental and social potential, which satisfies the demands of life commensurate with age, culture, and personal responsibility" (p. 336).

1.5.9. Older person

There is no universal agreement on the specific chronological or official age at which a person becomes old (World Health Organisation [WHO], 2015). Age classification can be somewhat arbitrary and often varies between cultures, countries, and over time. In many instances, the definition of an old person is linked to the age at which a person retires and becomes eligible for pension (WHO, 2015).

In South Africa, according to the Social Assistance Amendment Act, No. 6 of 2008, the age at which a person becomes eligible for access to old-age grants is currently 60 years (StatsSA, 2013). In the United Nations, the numerical criterion of 60 years is generally used as the commencement of old age (WHO, 2015). However, some individuals who reside in residential facilities for the aged are slightly younger than 60 years. This was the case in the present study. The residential facility where the study took place usually offers accommodation to persons aged 55 years and older.

Thus, for the purposes of this study, older people are described in two ways. If an individual fits any one (or both) of these descriptions, he or she is considered an older person. Firstly, an older person is any individual aged 60 years or older. Secondly, an older person is any individual residing permanently in a residential facility for the aged. The terms “older people” and “older population” are used interchangeably in this thesis to refer to this group.

1.5.10. Residential (care) facility

According to the Older Persons Act, No. 13 of 2006, a *residential facility* is a “building or other structure used primarily for the purposes of providing accommodation and of providing a 24-hour service to older persons” (p. 4). Older people in residential facilities are often frail individuals who require special attention. Some older people living in these facilities suffer from dementia and related diseases (Older Persons Act, No. 13 of 2006).

The 24-hour service offered to residents in residential facilities refers to care, support, and supervision services. *Care* is described as “physical, social or material assistance to an older person” that includes “services aimed at promoting the quality of life and general well-being of an older person” (Older Persons Act, No. 13 of 2006, p.3). Other services that may be offered in a residential facility for older people include: public education on issues of aging; counselling services to residents and family; the provision of outreach programmes; respite care services; and sport and recreational activities (Older Persons Act, No. 13 of 2006).

In the present study “residents” or “institutionalised older people” will refer to individuals staying in a residential facility for the aged.

1.5.11. Depression

The present study did not aim to diagnose depression in participants in a formal manner. Rather, participants were assessed for the occurrence of certain symptoms of depression using a screening measure of depression, namely the Geriatric Depression Scale Short Form (GDS-SF). For the present study, depression is defined according to the items of the GDS-SF, which measure specific depression-related symptoms. *Depression* will thus include symptoms such as:

- not being satisfied with your life
- loss of interest or pleasure in daily activities
- feelings of emptiness (i.e., worthlessness) or helplessness
- feeling as if you are frequently in a negative mood
- feelings of unhappiness, boredom, or despair
- feeling hopeless or downcast
- feeling overwhelmed with problems
- fatigue or loss of energy
- experiencing problems with memory
- feeling that most people are better off than you are

1.5.12. Loneliness

Perlman and Peplau (1981) define loneliness as “the unpleasant experience that occurs when a person’s network of social relations is deficient in some important way, either quantitatively or qualitatively” (p. 31). More recent, yet similar, definitions of loneliness concur that loneliness is “a distressing feeling that accompanies the perception that one’s social needs are not being met by the quantity or quality of

one's social relationships" (Hawkley & Cacioppo, 2010, p. 218). Researchers have also equated loneliness with perceived (i.e., subjective) social isolation (Hawkley & Cacioppo, 2010).

An important distinction is between emotional and social loneliness (Victor, 2012). *Emotional loneliness* is related to the absence of an intimate or close emotional attachment (such as a partner or best friend), whereas *social loneliness* stems from an impoverished or absent broader and engaging social network (such as friends, colleagues, and people in the neighbourhood; De Jong Gierveld, Van Tilburg, & Dykstra, 2006; Weiss as cited in Prieto-Flores et al., 2011). Emotional loneliness is often associated with bereavement that arises when a partner relationship dissolves, and is characterised by feelings of emptiness, desolation, and abandonment. Social loneliness, on the other hand, is linked to the absence of a broader network of friends and acquaintances with mutual interests (De Jong Gierveld et al., 2006).

1.5.13. Quality of life

The term *quality* infers an interpretation of the degree of excellence of something, where a person might experience something as being good, high, mediocre, poor, or low. The World Health Organisation Quality of Life (WHOQOL) Group (1998) defines *quality of life* as:

> Individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. This definition reflects the view that quality of life refers to a subjective evaluation that is embedded in a cultural, social and environmental context. (pp. 551-552)

The WHOQOL Group's (1998) definition of quality of life gives recognition to this concept as individuals' subjective experiences of the degree of excellence of their lives that is rooted in their objective reality.

1.6. THESIS LAYOUT

The current chapter provided the background, rationale, research question and hypotheses, and aims and objectives of the study. Key concepts were also defined in this chapter. Chapter 2 concerns the various theories that are of relevance to the study. Theories that aim to explain the mechanisms at play during HAI, including the biophilia hypothesis and the social support hypothesis, are discussed.

Chapter 3 includes an extensive, yet not exhaustive, literature review about HAI, AAT and AAA, and the general psychological and physical health of older people. In Chapter 4, the methodology of the study is outlined and explained. Aspects relating to randomised controlled studies and the present study's research strategy and design, participants, measurement instruments, procedures, ethical considerations, and statistical analyses are covered.

The results of the study are reported in Chapter 5. The results are provided in subsections according to the outcomes of the three measurement instruments used in this study. The results of the study are discussed in Chapter 6, followed by an elaboration on the strengths and limitations of the study, as well as recommendations for future research.

1.7. CHAPTER SUMMARY

This chapter covered the background, rationale, research question and hypotheses, as well as the aims and objectives of the present study. Key concepts were defined

and a thesis layout was provided. Chapter 2 deals with theories of relevance to the study.

CHAPTER 2

THEORETICAL FRAMEWORK

2.1. INTRODUCTION

A theory is a set of interrelated propositions about observed regularities that aims to explain, predict, and understand phenomena—how it works and why it occurs. Theory "provides a backcloth and rationale for the research that is being conducted . . . it also provides a framework within which social phenomena can be understood and the research findings can be interpreted" (Bryman, 2012, p. 20).

The AAI literature proposes a considerable variety of theories aiming to explain and understand the underlying mechanisms of HAI that spur beneficial effects in human mental and physical health (Kruger & Serpell, 2010). Currently there is no unified, widespread, or empirically supported theory that explains this phenomenon, but some theories are more popular than others (Kruger & Serpell, 2010; O'Haire, 2010).

This chapter presents an overview of two of the most commonly cited theories found in the AAI literature that aims to explain how and why positive HAIs sometimes benefit human health. The theories cited below are the biophilia hypothesis and the social support hypothesis.

2.2. BIOPHILIA HYPOTHESIS

Arkow (as cited in Morrison, 2007) proposes that "some animals may induce, for some people, an immediate, physiologically calming state of relaxation simply by attracting and holding our attention" (p. 58). The idea that being in the presence of or interacting with animals can reduce anxiety and arousal in humans is popular in

the AAI literature (Kruger & Serpell, 2010). This phenomenon is often explained according to Wilson's *biophilia hypothesis*, which asserts that all humans have an innate, or genetically based, proclivity "to attend to, and be attracted by, other living organisms" (Kahn as cited in Kruger & Serpell, 2010, p. 37). The basis of biophilia is that, evolutionarily, humans enhance their chances of survival through attention to animals, because animal behaviour acts as an environmental cue signifying safety or danger (Wilson as cited in O'Haire, 2010).

Kruger and Serpell (2010) argue that, from a clinical standpoint, they cannot imagine a more convenient coupling of attributes: An animal can be regarded as a tool that engages and relaxes a clinical patient simultaneously. The presence of a calm and friendly dog in a therapeutic setting may thus, by retaining a patient's attention and moderating anxiety, promote or boost the therapeutic process (Le Roux, 2013).

Interestingly, research has shown that simply being in the presence of animals, without touching them, can have calming and anxiety-reducing effects in humans. Some studies have found that people demonstrate reductions in cardiovascular indicators of anxiety when in the presence of pet animals. For example, Allen, Blascovich, and Mendes (2002) found that, when in the presence of their pets rather than being alone, pet owners demonstrated lowered cardiovascular reactivity (heart rate and systolic and diastolic blood pressure) during the performance of a stressful task (mental arithmetic).

Friedmann, Katcher, Thomas, Lynch, and Messent (1983) measured the effect of the presence of a friendly dog on children's blood pressure while reading aloud and while resting. The authors found that children's blood pressures were lower during both resting and reading when in the presence of the dog. Moreover, simply

watching fish swimming in a small fish tank can also have relaxing effects, such as lowering viewers' blood pressure (Katcher, Friedmann, Beck, & Lynch, 1983). It is thus evident that viewing animals has an anxiety-reducing effect on people and that the presence of companion animals may impart a sense of safety in people. However, Kruger and Serpell (2010) point out that "there are no convincing data demonstrating that these effects are due to any innate attraction to animals" (p. 38). In fact, "any stimulus which is attractive or which concentrates the attention has a calming effect on the body" (Serpell as cited in Kruger & Serpell, 2010, p. 38), which suggests that "animals may be just one means to this end" (Kruger & Serpell, 2010, p. 38). As such, other interventions or activities that do not include animals might also effectively reduce anxiety and arousal in humans.

The biophilia hypothesis provides insightful explanations as to why some people report feeling calmer in the presence of companion animals. Yet, it can be concluded that this theory does not adequately explain how the presence of animals can reduce arousal and anxiety in humans. Researchers have therefore proposed other theories as well.

2.3. SOCIAL SUPPORT HYPOTHESIS

The social support hypothesis is one of the most commonly cited theories in the AAI literature regarding the underlying mechanisms that spur the benefits observed in and from AAIs. This section discusses the notion of *social support* and *social mediation* as major factors in successful AAIs. Social support is defined, followed by a discussion of the function and value of social support. Animals as social support are also discussed, including the social supportive role that animals can play in animal visitation interventions in residential facilities.

2.3.1. Defining social support

Social support is a generic concept that relates to positive interpersonal transactions and provisions that take place within social relationships (McNicholas & Collis, 2006). Cobb (1976) defined *social support* as a process whereby social relationships and interpersonal transactions afford "information leading the subject to believe that he is cared for and loved, esteemed, and a member of a network of mutual obligations" (p. 300). Furthermore, Cobb (as cited in McNicholas & Collis, 2006) proposed four components of social support, namely:

1. Emotional support, which relates to the conveyance of care and concern for a person, providing comfort, reassurance, and fostering a sense of belonging.
2. Esteem support, which relates to the conveyance of positive regard to a person, reaffirming said person's self-worth, self-esteem, confidence, and sense of competency.
3. Tangible, instrumental, or practical support, which refers to direct, practical assistance to handle a problem or task.
4. Informational support, which refers to advice, feedback, and information that assists a person with assessment of appropriate action.

2.3.2. Function and value of social support

The value of supportive relationships to human health and well-being has received much research attention over the past couple of decades. It is now well accepted that the social support derived from social relationships can exert significant beneficial effects on the physical and psychological health and well-being of people (Hale, Hannum, & Espelage, 2005; McNicholas & Collis, 2006).

According to Uchino, Cacioppo, and Kiecolt-Glaser (as cited in O'Haire, 2010) a lack of social support can render a person vulnerable to subsequent physical and psychological maladies. Cobb (1976) maintains that social support derived from social relationships can buffer people against the health consequences of life stress and protect those in crisis from pathological states such as anxiety and depression. Furthermore, social support can apparently protect aging and retired people from the consequences of aging and frailty (Cobb, 1976). Indeed, as Seeman, Lusignolo, Albert, and Berkman (2001) have illustrated, greater emotional support (a component of social support) is a predictor of better cognitive function among older adults. A meta-analysis by Holt-Lunstad, Smith, and Layton (2010) found that perceived social support may be associated with a lower risk of mortality. Other benefits from social support include accelerating recovery from illness (Cobb, 1976; Glass, Matchar, Belyea, & Feussner, 1993), reducing the amount of medication required to treat an illness (Cobb, 1976), and helping people adjust to major life-stresses such as bereavement (Littlewood as cited in McNicholas & Collis, 2006).

Researchers have equated a lacking or inadequate social network (which is an important social support resource) with loneliness and isolation (McNicholas & Collis, 2006). What is more, loneliness and isolation can be associated with an increased risk of physical and psychological morbidity (McNicholas & Collis, 2006), as well as an increased mortality risk (Shiovitz-Ezra & Ayalon, 2010). Lower reported social support has also been linked with increases in depression among older people (Newsom & Schulz, 1996).

2.3.3. Animals as social support

The social support theory proposes that the apparent therapeutic benefits derived from AAIs may be owing to the social supportive and/or social facilitative role(s) of companion animals (Kruger & Serpell, 2010; McNicholas & Collis, 2006; O'Haire, 2010). That is to say, companion animals can act as social support in and of themselves, and they can also serve as social catalysts or icebreakers that facilitate and encourage social interactions between humans.

As social support in and of themselves, companion animals (especially dogs) offer emotional and esteem support through their constant availability, unconditional love (Sable as cited in O'Haire, 2010) and attention-seeking, friendly, and noncritical nature. The zealous behaviours typically displayed by companion animals towards people (e.g., "the greeting rituals exhibited by dogs upon their owners' return to the house"; Wells, 2009, p. 531) create the impression that they care for us, are concerned about us, and have an overall positive regard for us. Such a display of unconditional acceptance may foster a sense of belonging in a person and reaffirm said person's self-worth, self-esteem, and confidence. Moreover, companion animals can offer tangible, instrumental, or practical support by, for example, acting as service animals. They can also offer informational support by acting as environmental cues that signify safety or danger.

On the other hand, companion animals are indirect providers of social support (McNicholas & Collis, 2006). They might enhance provisions of social support in that they often serve as social icebreakers or lubricants, facilitating interactions between people (Fine, 2011). McNicholas and Collis (2006) state that

> pets may be seen as *indirect* providers of social support, as they act as catalysts for human-human interactions in that they are able to provide access to a structural social network and in that relationships formed may lead to human relationships that may provide one or more elements of social support. (p. 54)

Kruger and Serpell (2010) give recognition to the value of the social catalysing role of companion animals in therapy. They argue that the presence of a companion animal in the therapeutic setting "may expedite the rapport-building process between patient and therapist" (p. 39). Researchers have suggested that patients may perceive their therapists as more trustworthy in the presence of animals, especially dogs (Schneider & Harley as cited in Beetz, Unväs-Moberg, Julius, & Kotrschal, 2012).

2.3.4. Animals as social support in animal visitation interventions

Animal visitation interventions, no matter the setting in which they are executed, are believed to allow for and prompt persons who are exposed to such interventions to interact and perhaps bond with animals and/or each other in a non-threatening and encouraging environment (Arluke, 2010). As such, the introduction of companion animals in residential facilities might instigate, bolster, and/or increase the social behaviour of residents (Bernstein, Friedmann, & Malaspina, 2000; Le Roux & Kemp, 2009; Richeson, 2003) by enabling them to have someone to talk to or something to talk about with other residents, and by improving residents' attention to their environment (Andreassen, Stenvold, & Rudmin, 2013).

In residential care settings for older people, an animal visitation intervention may thus blaze the trail for new and meaningful relationships to develop between residents. These newly formed relationships could subsequently become powerful sources of social support to the individuals concerned.

On the other hand, the behaviours displayed by visiting animals towards older people in residential settings may provide social support by bolstering these individuals' self-esteem and confidence. An enhancement in the quality and/or quantity of one's social interactions and increased social support could lessen depression (Winefield, Black, & Chur-Hansen, 2008) and reduce loneliness and social isolation (Fokkema, De Jong Gierveld, & Dykstra, 2012; Walsh, 2009). Healthy social interaction contributes to a sense of good health among older people who often experience declines in social support as a part of aging (O'Haire, 2010).

2.4. CHAPTER SUMMARY

Currently there is no single theory that explains all of the various aspects of HAI (Le Roux, 2013). This chapter dealt with theories that can explain the beneficial effects of HAI when considering institutionalised older people.

Chapter 3 presents a brief overview of the health profile of older people, followed by a discussion of the literature regarding AAIs. The specific focus is on animal visitation interventions and the impact it has on the health of older people.

CHAPTER 3

LITERATURE REVIEW

3.1. INTRODUCTION

The effect of an animal visitation intervention on the well-being of institutionalised older people is the focus of the present study. This chapter will therefore provide a brief overview of the health profile of older people. Common health issues among older people will be discussed, followed by a discussion about how factors such as loss, grief, diminished support networks, and institutionalisation may influence the health of older people.

The literature on HAI (i.e., pet ownership and AAI) will be reviewed. The history of AAI will be summarised briefly, followed by a delineation of the various beneficial effects of pet ownership and AAI. Criticisms and gaps in the evidence on HAI will also be discussed, including contradictory evidence on the beneficial effects of HAI. Elements of AAIs and guidelines for planning AAIs are provided. Organisations that administer AAIs in South Africa are discussed and the research on and uses of AAI in the country are delineated.

3.2. HEALTH PROFILE OF OLDER PEOPLE

3.2.1. Introduction

The effect of an animal visitation intervention on key psychological variables among older people specifically is the focus of the present study. This section will discuss aspects relating to older people's social, mental, and physical health. Specific attention will be awarded to discussing the occurrence of health problems among the

older population, including physical health problems and functional disability. The effects of loneliness, depression, and cognitive decline and dementia on older people's health are also discussed. Important factors that are associated with poor mental health in later life are mentioned and discussed.

Health problems among older people are caused by an interplay of various factors and the direction of causation between these factors and health problems are often not well understood because it can go both ways. Certain physical health problems, for example, may give rise to certain psychological health issues and vice versa—for example, deteriorating physical health has been identified as a risk factor for loneliness, but loneliness can also lead to deteriorations in physical health (Grenade & Boldy, 2008). Therefore, the health problems discussed in this section are discussed parallel to each other.

3.2.2. Health issues among older people and health-related consequences

3.2.2.1. Physical health issues and functional disability

A heightened vulnerability to disease and a decline in physical health and functioning invariably accompany aging (Prinsloo, 2015; StatsSA, 2013). Physical health issues or chronic conditions can result in functional disability, which can be defined as "difficulty performing activities of daily living and routine social activities" (Egede, 2004, p. 421). Functional disability is especially common among older people and these disabilities tend to intensify with age (Tomita & Burns, 2013). Functional disability can lead to functional dependence and may also be associated with depression (Egede, 2004).

Wu et al. (2015) examined common risk factors for chronic non-communicable diseases (NCDs) among persons aged 50 years and older in six low- and middle-income countries—China, Ghana, Mexico, India, Russia, and South Africa. South African participants (*N* = 3836) had the highest prevalence of hypertension (78%), obesity (45.2%), and low physical activity (59.7%). This is worrying, because these factors have all been identified as contributors to NCDs, and NCDs are a leading cause of morbidity and mortality in low- and middle-income countries (Miranda, Kinra, Casas, Davey Smith, & Ebrahim, 2008).

While being problems on their own, functional disability and physical illness can also have negative effects on the mental health of people. Functional disability and physical illness can bring about psychological distress, including diminishing an individual's body image and ability to cope with needs and goals (Tomita & Burns, 2013). Researchers have suggested that coping with physical health issues, such as age-associated diseases or bodily declines, in later life may result in depression and anxiety (APA Office on Aging, 2005). Eisses et al. (2004) found functional impairment to be a major risk indicator for symptoms of depression, with hearing impairment elevating this risk even further. Physical health problems**,** sensory impairments, and frailty among older people may also adversely affect their level of social participation and embeddedness by limiting the frequency and quality of their interactions with members of their social network (Fokkema et al., 2012; Grenade & Boldy, 2008). This, in turn, may precipitate loneliness. Fokkema et al. (2012) argue that "social integration and feeling socially well embedded in the context of one's community and family are important determinants of quality of life" (p. 202).

3.2.2.2. Loneliness and social isolation

Russell, Peplau, and Cutrona (1980) assert that loneliness is a distressing problem experienced by many people. The concept of loneliness has often been studied among the older population, because it can be associated with the aging process. There tends to be an increase in the prevalence of loneliness among older people (Grenade & Boldy, 2008; Prieto-Flores et al., 2011). In addition, Roos and Malan (2012) suggest that "older people are more prone to experience loneliness when living in residential care facilities" (p. 1).

Hawkley and Cacioppo (2010) acknowledge that there is a breadth of health outcomes that seem "susceptible to the influence of loneliness" and that "a perceived sense of social connectedness serves as a scaffold for the self—damage the scaffold and the rest of the self begins to crumble" (p. 219). Victor (2012) concurs that loneliness is a "debilitating condition" (p. 637) with adverse and severe consequences for our health.

Loneliness can adversely affect our physical health in various ways (Hawkley & Cacioppo, 2010; Ó Luanaigh & Lawlor, 2008; Russell et al., 1980) and it can predict increased rates of morbidity and mortality (Hawkley & Cacioppo, 2010). Some researchers have highlighted a link between the experience of loneliness and an individual's health status, where "loneliness can accelerate the breakdown of a person's health status because of its effect on the body's immune system, which, in turn, impacts on an individual's mental and physical health" (Roos & Malan, 2012, p. 1).

A longitudinal study by Caspi, Harrington, Moffit, Milne, and Poulton (2006) showed that chronic social isolation (i.e., loneliness) has a cumulative, dose-response

relationship to poor cardiovascular health in adulthood. That is, the greater the number of developmental periods at which participants were socially isolated (i.e., childhood, adolescence, young adulthood), the more cardiovascular health risks they had (i.e., overweight, higher systolic blood pressure, elevated total cholesterol and low high-density lipoprotein level, higher glycated haemoglobin concentration, and low maximum oxygen consumption) during adult life (Caspi et al., 2006). It has thus been suggested that loneliness effects accrue with age, contributing to, and accelerating, age-related physiological decline (Hawkley & Cacioppo, 2010).

Moreover, high frequency loneliness has been linked with elevated risk of incident coronary heart disease in women, even after controlling for the impact of depression, cardiovascular risk factors (i.e., hypertension, diabetes, cholesterol, blood pressure, body mass index), age, race, income, marital status, and education (Thurston & Kubzansky, 2009).

A longitudinal study by Luo, Hawkley, Waite, and Cacioppo (2012) confirmed that loneliness is associated with increased mortality among individuals aged 50 years and older. Loneliness appeared to increase mortality risk through mechanisms such as functional decline and decreased self-rated health (Luo et al., 2012). Shiovitz-Ezra and Ayalon (2010) found that loneliness is a substantial all-cause mortality risk among older people. Shiovitz-Ezra and Ayalon's study also revealed a slightly higher mortality risk among chronically lonely older people as compared to situationally lonely older people.

According to Roos and Malan (2012) "loneliness has significant implications for mental health" (p. 1). It can result in feelings of sadness, a sense of uselessness, and a diminished ability for social interaction (Booth as cited in Roos & Malan, 2012).

Some researchers have taken the liberty to describe loneliness as “an indicator” of quality of life (Prieto-Flores et al., 2011, p. 178).

Research indicates that loneliness can impair cognitive functioning, especially among older people. Wilson et al. (2007) conducted a longitudinal study that measured the associations between loneliness, cognitive function, and Alzheimer’s disease among a sample of older people initially free of dementia. Wilson et al.’s study demonstrated an inverse relationship between loneliness and baseline cognitive functioning. What is more, loneliness at baseline was linked with a more rapid decline in cognitive functioning over a 4-year follow-up period. Wilson et al.’s study additionally demonstrated that loneliness predicts the development of Alzheimer’s disease, with the risk of Alzheimer’s disease being more than twice as high for lonely participants as compared with non-lonely participants.

3.2.2.3. Depression

The experience of depression among older people is common (Gallegos-Carrillo et al., 2009), but researchers have noted that it is not particularly more prevalent among this population than among younger adults (Fiske, Wetherell, & Gatz, 2009). Nevertheless, late-life depression can have severe and devastating consequences for older people (Fiske et al., 2009) and it is often under-diagnosed and undertreated in this population group (Gallegos-Carrillo et al., 2009).

Studies have shown that higher levels of depression among older people in residential facilities can have a negative effect on these individuals’ quality of life (Marventano et al., 2015). Some of the devastating consequences that can be associated with late-life depression include premature mortality, an increased risk of both morbidity and suicide, physical disability, impaired social and cognitive

functioning, and greater self-neglect (Cirulli et al., 2011; Fiske et al., 2009; Penninx, Leveille, Ferrucci, Van Eijk, & Guralnik, 1999). Negative affective states in older people such as depression are linked to increased risk of coronary heart disease and type 2 diabetes (Cirulli et al., 2011).

The onset and intensification of medical illnesses are usually more common in later life, often precipitating the development of depression. Gallegos-Carrillo et al. (2009) acknowledge that chronic conditions often adversely affect mental health especially in the context of depression. It is not uncommon for older people with chronic diseases to experience depression as well. This relationship of co-occurrence places older people at higher risk for poor quality of life (Gallegos-Carrillo et al., 2009).

3.2.2.4. Cognitive decline and dementia

As people age, some degree of cognitive decline is inevitable. Older people are especially vulnerable to cognitive decline and dementia, which is characterised by a global impairment of intellect that manifests as difficulty with memory, attention, thinking, and comprehension (Sadock & Sadock, 2007). According to Prince, Guerchet, and Prina (2013) there were 44 million people with dementia worldwide in 2013. It is estimated that this number will rise to about 135 million by 2050 (Prince et al., 2013). Moreover, low- and middle-income countries (which include South Africa) appear to have the highest prevalence of dementia with 62% of people with dementia living in these countries (Prince et al., 2013).

There are various biological or vascular risk factors that have been linked to an increased risk of cognitive decline and dementia (Kloppenborg, Van den Berg, Kapelle, & Biessels, 2008), including hypertension (Bellew et al., 2004), diabetes

(Biessels, Staekenborg, Brunner, Brayne, & Scheltens, 2006), and obesity (Whitmer et al., 2008). Psychological risk factors for cognitive decline and dementia include depression (Panza et al., 2010) and social disengagement (Bassuk, Glass, & Berkman, 1999). In fact, a longitudinal study with 776 older people in Sweden examined the effect of social interaction and intellectual stimulation on the risk of developing dementia and found that mental and social stimulating activity may protect against dementia (Wang, Karp, Winblad, & Fratiglioni, 2002). Additionally, cognitive impairments potentially hamper social interactions and prompt social withdrawal, which can precipitate loneliness (Hawkley & Cacioppo, 2010). However, the converse is also true as loneliness can serve as a precursor to cognitive decline.

3.2.3. Important contributors to health problems in later life

3.2.3.1. Loss, grief, and diminished or inadequate social support

Roos and Malan (2012) state that

> loneliness is generally closely associated with aging as a consequence of multiple losses—loss of abilities, loss of and changes in personal relationships, loss of relationships with familiar environments, and changed contact with friends and relatives resulting in reduced relationships. (p. 1)

Life events such as loss and grieving the death of loved ones are commonly experienced by older people and such events may diminish their support structures (May as cited in StatsSA, 2013). Bereavement, loss, and physical separation from loved ones are associated with late-life depression, anxiety (APA Office on Aging, 2005), and loneliness (Banks & Banks, 2002; Grenade & Boldy, 2008).

Fratiglioni, Paillard-Borg, and Winblad (2004) suggest that a socially integrated lifestyle in later life can protect against the development of Alzheimer's disease and dementia. Golden, Conroy, and Lawlor (2009) demonstrated that increased social engagement in persons aged 65 years and older can be associated with a better quality of life and self-rated happiness, as well as lower prevalence of depression, generalised anxiety disorder, cognitive impairment, and physical disability. Even though Golden et al.'s study concerned community-dwelling older people, the study findings may be relevant to institutionalised older people as well.

Loneliness occurs when an individual's social network is deficient (Golden et al., 2009). Researchers have suggested that specific aspects related to people's social networks and support structures such as widowhood, never being married, and having no (living) children may contribute to loneliness (Grenade & Boldy, 2008). Widowhood has been linked with loneliness, possibly because women tend to live longer than men and may thus be more likely to suffer the loss of a spouse (Gow, Pattie, Whiteman, Whalley, & Deary, 2007).

3.2.3.2. Institutionalisation

Even though older people in general experience declines in health, it is said that institutionalised older people represent the most vulnerable cohort of this population (Victor, 2012). Berry et al. (2012) state that institutionalisation "can have serious implications for an individual's well-being because of the stress and loneliness caused by separation from the home environment, and a decline in physical and emotional health can consequently occur" (p. 143). Prieto-Flores et al. (2011) found that, in comparison with community-dwelling older people, institutionalised older people are more frequently functionally dependent, have a higher prevalence of

depression among them, report a poorer health status, and have more medical concerns. Jongenelis et al. (2004) have also noted that high levels of depression are evident in the aged-care sector.

Researchers have found that older people living in institutions are more likely to feel lonely than older people living in the community (Pinquart & Sorensen, 2001; Prieto-Flores et al., 2011). Banks and Banks (2002) also noted that loneliness is especially common in institutionalised older people. Victor (2012) suggests that loneliness among institutionalised older people is at least double that of older people living in the community.

Prieto-Flores et al. (2011) suggest that the experience of loneliness is not only more prevalent among institutionalised older people, but also more extensive in comparison to the experience of loneliness among older people living in the community. Indeed, Victor (2012) claims that "admission to a care home is, for most individuals, not a positive event and may confer enhanced vulnerability to loneliness especially as such a move disrupts other vital elements of an individual's established pattern of life" (p. 638). Institutionalisation may result in enhanced susceptibility to loneliness among older people (Banks & Banks, 2002; Fokkema et al., 2012; Prieto-Flores et al., 2011). It diminishes their support structures by reducing contact with significant others, family, and friends. Many social roles cease to exist (Antonelli, Rubini, & Fassone, 2000) and they are forced to leave familiar environments and cherished possessions behind (Antonelli et al., 2000).

In this section, the health profile of older people was briefly described and the health-related consequences of certain health issues were mentioned. The contribution of loss, grief, diminished support networks, and institutionalisation to poor health

among older people were briefly elaborated on. The following section will discuss HAI and AAI, including a discussion of animal visitation interventions with older people in residential facilities.

3.3. HUMAN-ANIMAL INTERACTION AND ANIMAL-ASSISTED INTERVENTIONS

Our unique kinship with animals dates back to prehistoric times when humans and animals began forming affectionate attachments with each other (Fine & Beck, 2010; O'Haire, 2010). According to Serpell (1996), wolves (the ancestor of the dog) were the first wild animal that transitioned to domestication about 12 000 years ago. The domestication of dogs are summarised by Odendaal (as cited in Wiggett, 2006) in four stages: (1) dogs were used as hunters and scavengers for food alongside humans; (2) humans began realising the indirect advantages of dogs and became tolerant of them; (3) humans began keeping dogs as pets and companions; and (4) humans began the selective breeding of dogs.

The strength of the human-animal relationship allowed companion animals to quickly transition into members of the family (Fine & Beck, 2010). In modern times, millions of people around the world own domesticated pets, typically as an emotional rather than economical resource (Serpell as cited in Cirulli et al., 2011; O'Haire, 2010). Moreover, pet owners spend large amounts of time, money, and energy on their pets (O'Haire, 2010).

In the 1970s, scientific enquiry into the human-animal relationship and the benefits of companion animals to human health began (Hosey & Melfi, 2014). Today, this research field receives increasing attention. The two areas of greatest emphasis in the current human-animal interaction literature are: (a) how humans benefit from

companion animal ownership and interaction with companion animals, and (b) animal-assisted interventions (AAIs; Hosey & Melfi, 2014).

3.3.1. History of animal-assisted interventions (AAIs)

The literature suggests that animals have been used in the treatment of physically and mentally handicapped persons for centuries (Morrison, 2007). One of the earliest documented instances in which animals were incorporated in the treatment plans of mentally ill persons took place in the 1790s at the York Retreat, a mental institution in England (Palley, O'Rourke, & Niemi, 2010). The institution stocked their internal courtyards and gardens with various small domestic animals (such as rabbits, sea-gulls, hawks, and poultry) and encouraged patients to walk through the gardens and interact with the animals freely (Palley et al., 2010; Serpell, 2010). Founders at the institution noticed that interacting with the animals had a positive impact on the social well-being of patients (Serpell, 2010).

By the nineteenth century, it was commonplace for institutional care facilities to stock their grounds with domestic or social animals (Serpell, 2010) "to create a more pleasing and less prison-like atmosphere" (Serpell, 2010, p. 25). However, the use of animals as treatment tools in hospital and care settings was soon displaced by the advent of scientific medicine in the early decades of the twentieth century (Serpell, 2010). It was only in 1944 that the first scientific article relating to the benefits of companion animal ownership, *The mental hygiene of owning a dog*, was published in a paper by sociologist James Bossad (Morrison, 2007).

In the 1960s and 1970s, ideas regarding the value of animals in therapeutic settings resurfaced when child psychotherapist Boris Levinson began incorporating his dog, Jingles, in the therapy plan of one of his adolescent patients (Serpell, 2010).

Levinson noticed that his patient seemed more at ease and less guarded during therapy when Jingles was present in the therapy room (Wiggett, 2006). Levinson therefore observed the positive influence that Jingles's presence during therapy had on his patient and went on to publish his findings in a paper, *The dog as a co-therapist* (1962). In this paper he also coined the term *pet-facilitated therapy* (Morrison, 2007; Serpell, 2010).

Following Levinson's pioneering work, several other advances occurred in the AAI field as people began to realise the benefits of HAI on human health. During the 1970s a "petmobile" programme was launched in Colorado. Animals were taken to residential facilities for visits with residents (Arkow as cited in Morrison, 2007). In the mid-1980s theories regarding the therapeutic benefits of animal companionship became more scientific, primarily because of a ground-breaking study by Friedmann, Katcher, Lynch, and Thomas (1980) that investigated the mortality rate of patients with coronary heart disease (Serpell, 2010). Friedmann et al. found that, one year after being discharged from a coronary care unit, mortality rates of pet owners were significantly lower than that of those who did not own a pet (1980).

Friedmann et al.'s (1980) study was one of the first to exemplify, in a serious and scientifically robust manner, the ability of companion animals to enhance human health. Today their study is regarded as the benchmark study that lead to the proliferation of research on the various health benefits of HAI and AAIs during the past 30 to 40 years (O'Haire, 2010). Moreover, the first organisations and centres devoted to the study of the human-animal bond were established during the 1970s and early 1980s, in at least five countries (Hines, 2003). Among these were Pet Partners (previously known as the Delta Foundation from 1977 to 1981 and the Delta

Society from 1981 to 2012), which today are America's "largest and most prestigious nonprofit registering handlers of multiple species as volunteer teams providing animal-assisted interactions" (Pet Partners, n.d., "About us", para. 1). Organisations in South Africa that are similar to Pet Partners will be discussed in Section 3.3.5. The research findings on the beneficial effects of HAI and AAI will be discussed in the following section.

3.3.2. Research findings on the beneficial effects of HAI and AAI

The idea that "pets are good for us" (Wells, 2009, p. 524) is by no means a new one. As the field of research around HAI has flourished in the past few decades, evidence supporting the notion that humans benefit from companion animals has become more established (Fine & Beck, 2010; Lubbe & Scholtz, 2013). Pet ownership, in particular, is linked with a variety of health benefits for humans, and studies have revealed that pet owners are healthier in comparison to those individuals who do not own pets (Wells, 2009).

The therapeutic potential of companion animals has also largely been observed in AAIs, which can be applied successfully in various populations and cultures where dogs are accepted (Le Roux, 2013). The range of benefits that AAIs may have for humans is vast and remarkable. Furthermore, research evidence shows that pleasant interactions with companion animals can improve our physiological, psychological, and social health (O'Haire, 2010; Walsh, 2009).

In the sections that follow, the possible benefits of HAI—whether it takes place in the context of pet ownership or planned interventions—are reviewed. Most of the evidence reported pertains to dogs in particular, because AAIs most typically utilise dogs (Marcus, 2013). Moreover, given that AAIs provide on the mark opportunities

for humans to interact with companion animals, the benefits of pet ownership reviewed below may be regarded as benefits that can potentially be (re)created by or extended to AAIs.

3.3.2.1. Physiological effects and physical health benefits

The presence of companion animals (mostly dogs) can have a definitive positive impact on the physical health of people (Le Roux, 2013). Because the physical health effects of companion animals are so vast, they are grouped below according to short-term effects and long-term effects. *Short-term physiological effects* refer to those effects lasting only a few seconds or minutes, whereas *long-term physical health benefits* refer to those benefits lasting weeks, months, or years (Wells, 2009).

As for the **short-term physiological effects** of exposure to companion animals, previous studies have repeatedly demonstrated the success of HAI at improving physiological indicators of stress in people (Friedmann et al., 2010). Odendaal (2000) and Odendaal and Meintjes (2003) found that it takes between 5 and 24 minutes of friendly interaction between humans and their own dogs or an unfamiliar dog for oxytocin[1] levels to increase and cortisol[2] levels to decrease in the human. The oxytocin levels of the dogs also increased after interaction with a human. Increased levels of oxytocin in humans during and after dog interactions have been reported in other studies as well (Handlin et al., 2011; Miller et al., 2009; Nagasawa, Kikusui, Onaka, & Ohta, 2008).

Cole, Gawlinski, Steers, and Kotlerman (2007) conducted an experiment wherein heart failure patients (*N* = 76) in a cardiac care unit were randomly assigned to three

[1] Oxytocin is a hormone that has calming effects (Le Roux, 2013).
[2] Cortisol is a stress hormone (Beetz et al., 2012).

groups: One group received a 12-minute visit from a volunteer with a dog; another group, received a 12-minute visit from a volunteer only; and the control group received the usual care. Compared with the volunteer-only group, the volunteer-dog group had significantly greater reductions in epinephrine and norepinephrine levels during and after the intervention. Moreover, the volunteer-dog group had significantly greater decreases in systolic pulmonary artery pressure and pulmonary capillary wedge pressure during and after the intervention when compared with the usual care group.

The stress-reducing effects of exposure to a companion animal were observed in cancer patients who received chemotherapy. Orlandi et al. (2007) found that patients receiving chemotherapy in a room with dogs present showed significant increases in arterial oxygen saturation. Patients receiving chemotherapy in a room with no dogs present experienced decreased arterial oxygen saturation.

Interacting with companion animals can also decrease a person's blood pressure and/or heart rate (Odendaal & Meintjes, 2003; Shiloh, Sorek, & Terkel, 2003; Wells, 2009). Jenkins (1986) compared the blood pressures of pet owners (N = 20) while they were petting their dogs to the blood pressures of the same pet owners while they were reading aloud. Results showed that pet owners had significantly lower blood pressures while petting their dogs than while reading aloud (Jenkins, 1986). Another study by Allen et al. (2002) measured the heart rates and blood pressures of subjects while exposed to anxiety-provoking situations in the presence of: (a) no one; (b) a pet or a friend; (c) a spouse; (d) a spouse and a pet or friend. Allen et al. found that the mere presence of a pet, and not the presence of a friend, lowered subjects' heart rates and blood pressures during the anxiety-provoking situations. In

a study by Katcher et al. (1983), participants had lower blood pressure responses to the stressor of reading aloud while viewing a fish-filled aquarium, relative to viewing an aquarium with no fish or looking at a blank wall.

Several studies reported the pain-relieving effects of companion animal interactions for children and adults in both inpatient and outpatient settings (Braun, Stangler, Narveson, & Pettingell, 2009; Marcus et al., 2012). Anecdotal evidence reported by Engelman (2013) also suggests the efficacy of AAI in reducing pain among palliative care patients. The patients reported that the presence of the dog in the hospital room lightened the atmosphere and created a sense of “home” and “normalcy” (Engelman, 2013, p. 66).

The **long-term physical health benefits** of HAI are somewhat more extensive than the short-term health benefits. Wells (2009) proclaims the prophylactic value of owning a companion animal by urging that pet ownership may buffer pet owners against the development of minor and major physical diseases. Animals with superior olfactory perceptive abilities, like dogs, may have the ability to detect certain types of physical ailments in humans such as cancer, epilepsy, hypoglycaemia, and seizures. They may also facilitate recovery from such severe illnesses (Marcus, 2013; Walsh, 2009; Wells, 2009). Researchers have reported that pet owners, in comparison with non-pet owners, tend to visit the doctor less (Headey, 1999), use less medication (Siegel, 1990), and have lower cholesterol levels (Anderson, Reid, & Jennings as cited in International Federation on Aging [IFA], 2014). For older people especially, pet ownership can be associated with fewer minor health problems, fewer visits to the doctor, and less healthcare expenditures (Friedmann & Tsai, 2006).

The cardiovascular health benefits of HAI are highlighted frequently in the literature (Frishman, Grattan, & Mamtani, 2005). Anderson, Reid, and Jennings (as cited in Wells, 2009) suggest that the risk factors for coronary heart disease may be markedly less for pet owners than for those individuals who do not own a pet, particularly in the case of males. Friedmann et al. (1980) investigated the mortality rate of patients with coronary heart disease and found that, one year after having had a heart attack, patients with pets had a significantly lower mortality rate than those without pets.

Researchers have aimed to explain the findings of Friedmann et al.'s (1980) study by suggesting that frequent interactions with animals may buffer pet owners against psychological risk factors such as stress. Walsh (2009) claims that companion animals provide stress-buffering effects in pleasurable interactions. Thus, because stress and anxiety are considered contributory factors for cardiovascular disease (Barker & Dawson, 1998), the reduction of stress in patients with this ailment may have improved their health and increased their likelihood of survival after having had a heart attack (Patronek & Glickman, 1993). Moreover, because depression is associated with a higher risk of symptomatic coronary artery disease, less mental depression among pet owners might decrease their risk of coronary artery disease (Frishman et al., 2005).

Interestingly, researchers have purported that owners of dogs, in particular, reap more benefits from pet ownership than owners of other pets (Siegel, 1990). Indeed, dog owners are more physically active than owners of other pets and people who do not own pets (Teodorowicz & Woźniewicz-Dobrzyńska, 2014; Wells, 2009). The long-term health benefits of physical fitness are well established (Wells, 2009) and

researchers have supposed that participating in physical activities with animals can improve muscle strength, control of fine motor skills (Nimer & Lundahl, 2007), use of wheelchairs, and balance when standing up (Dimitrijević, 2009). As such, the achievement of physical therapy goals in humans can be facilitated "by having a patient walk a dog, pet or brush a cat, or play fetch with a dog" (Nimer & Lundahl, 2007, p. 226).

3.3.2.2. Social and psychological benefits

Various researchers have investigated the effects of animal companionship on people's social and psychological health. It is apparent that HAI can hold several social and psychological benefits to people from a variety of populations; including older people, children, psychiatric patients, institutionalised people, and people with serious physical diseases. Animal companionship can lessen levels of depression, loneliness, and anxiety in humans through the provision of a steadfast source of unconditional and noncritical social support, and by enhancing our general well-being (Friedmann & Tsai, 2006). For humans, especially older people, animal companionship can maintain or ameliorate psychological health by bolstering an individual's self-esteem, feelings of self-sufficiency, competency, value, and worth (Walsh, 2009; Wells, 2009). Animal companionship can also promote a positive affective state, contributing to a greater sense of responsibility and self-respect, and increasing socialisation, motivation, and reality orientation (Stasi et al., 2004; Walsh, 2009).

The presence of a companion animal in an oncology day hospital effectively reduced depression in cancer patients while they were receiving chemotherapy (Orlandi et al., 2007). Older people with pets might experience less depression than those

without pets (Wells, 2009). Studies by Colombo, Buono, Smania, Raviola, and De Leo (2006) and Le Roux and Kemp (2009), demonstrated the ability of exposure to companion animals to significantly reduce levels of depression among older people in residential facilities. Colombo et al. assessed the effect of HAI on the experience of depression and perception of quality of life among cognitively unimpaired older people in residential care. Their study consisted of a 3-month trial period during which three groups of participants received either a canary (experimental group), a plant, or nothing. Whilst the group that received a plant seemed to have benefited from the study to some degree, it was evident that this group did not exhibit nearly as much beneficial outcomes as the experimental group at the end of the 3-month trial. The group that received a canary particularly improved on aspects related to depression and perception of quality of life (Colombo et al., 2006).

Apart from decreasing depression and improving quality of life, researchers have demonstrated that AAI can lessen loneliness among older people in residential care (Banks & Banks, 2002, 2005; Banks, Willoughby, & Banks, 2008; Vrbanac et al., 2013). Wells (2009) asserts that “the presence of an animal in an institutional setting can help to break the vicious cycles of loneliness that many people experience and encourage social interactions and communication” (p. 529). Banks and Banks (2002) found that one or three individual animal visitation sessions (that lasted 30 minutes each) per week significantly reduced loneliness levels among a sample of cognitively intact, non-psychiatric older people in residential care. Interestingly, one animal visitation session per week reduced loneliness just as much as three animal visitation sessions per week in Banks and Banks’ study. A few years later, Banks et al. (2008) compared the effectiveness of individually administered visits from a living dog and a robotic dog for reducing loneliness among older people in residential care.

They found that older people who received weekly 30-minute visits from either a living dog and its handler or a robotic dog for eight weeks were significantly less lonely at post-intervention than older people who did not receive live or robotic dog visits. Thus, both the living dog and the robotic dog were equally effective in significantly lowering loneliness levels in residents. This finding suggests that live animals are not always necessary in AAAs to produce therapeutic effects, and that simulations of animals may also be effective.

Research with dementia patients has yielded many positive results. Bernabei et al. (2013) reported that AAI can have positive influences on patients with dementia by lessening agitation, improving social interaction, and bettering coping ability. Likewise, Moretti et al. (2011) concluded that after receiving AAA, patients affected by dementia, depression, and psychosis exhibited improved cognitive functioning and less depression. A study by Nordgren and Engström (2014) demonstrated that AAI can significantly improve the quality of life of dementia patients.

Many researchers seem to postulate that the social facilitative or socialising roles of companion animals are responsible, to some degree at least, for the positive effects spurring from HAI (Lutwack-Bloom et al., 2005; McNicholas & Collis, 2006; Wells, 2009). AAIs in residential facilities seem to increase socialisation and social responsiveness among residents (Bernabei et al., 2013; Berry et al., 2012; Le Roux & Kemp, 2009; O'Haire, 2010). Le Roux and Kemp (2009) stated that interaction with a visiting animal in a residential facility "provides an opportunity for social interactions and discussions" (p.23) among residents, particularly regarding fond memories about pets they have owned throughout their lives. Banks and Banks (2002) noticed something similar in their study: "While visiting with the animal,

residents often spontaneously began to talk to the animal about past events with their pets" (p. 431). These ideas fit in well with the social support theory as discussed in Chapter 2.

A qualitative study by Wisdom, Saedi, and Green (2009) suggests the social supportive role that companion animals can play in people's recovery from serious mental illnesses. Wisdom et al. (2009) conducted interviews with 177 pet-owning individuals with serious mental illnesses (e.g., schizophrenia) and analysed perceptions of the role that pets play in recovery from serious mental illnesses. Themes extracted from the data suggests the perception that pets can assist individuals in their recovery from serious mental illness by

> (a) providing empathy and therapy; (b) providing connections that can assist in redeveloping social avenues; (c) serving as 'family' in the absence of or in addition to human family members; and (d) supporting self-efficacy and strengthening a sense of empowerment. (Wisdom et al., 2009, p. 430)

The information provided in this section clearly demonstrates the elaborate beneficial effects of companion animals on the physical health and the social and psychological well-being of people. The following section will deal with some criticisms and gaps in the current HAI evidence base.

3.3.3. Criticisms and gaps in the evidence on HAI

The increasing popularity of AAI is supported by the availability of tertiary learning opportunities through AAI certificate programmes, as well as various published books and articles on the topic (Palley et al., 2010). This growing literature base

largely concerns the therapeutic value or beneficial effects of HAI for the persons involved. In the remainder of this section, the term “pet effect” (Allen, 2003, p. 237) will be used to refer to the longstanding popular notion that HAI is beneficial for the persons involved (Chur-Hansen et al., 2010; Wells, 2009, p. 524) and that it can improve human longevity, physical health, and psychological well-being (Herzog, 2011). Researchers usually refer to the pet effect in terms of the benefits of pet ownership specifically. For the purposes of the present study it will be used with relation to the therapeutic value of AAI as well. This is because many of the comments made about research on the benefits of pet ownership are relevant to the current AAI literature (Marino, 2012).

Numerous researchers have pointed out that claims regarding the pet effect are inconclusive and should be viewed with caution (Chur-Hansen et al., 2010; Herzog, 2011). Such criticisms have largely been based on observations that there are pivotal gaps in the research evidence regarding the pet effect, and that previous research on the value of pet ownership and AAIs have been plagued with an array of methodological weaknesses (Chur-Hansen et al., 2010; Lutwack-Bloom et al., 2005; Marino, 2012). The remainder of this section will highlight some of the most prominent criticisms on and problems of previous research on the pet effect, with specific focus on AAI research.

3.3.3.1. Weak research designs and methodological problems

While the pet effect and AAI literature have a preponderance of studies with anecdotal, descriptive, cross-sectional, and case study research designs (Chur-Hansen et al., 2010), well-designed empirical studies in the area are sparse (Lutwack-Bloom et al., 2005). This is also the case in studies examining animal

visitation interventions in residential facilities for the aged (Lutwack-Bloom et al., 2005). It is argued that descriptive and case study research is "useful in generating hypotheses, but not in testing them" (Lutwack-Bloom et al., 2005, p. 143). Chur-Hansen et al. (2010) assert that these studies, even when they involve a longitudinal element, do not allow confident conclusions to be drawn about the health-promoting effects of HAI.

Additionally, researchers have suggested that the credibility of many experimental studies in the literature on HAI and AAI are weakened by methodological problems. Common methodological problems or limitations in research on HAI include

- an insufficient sample size,
- the absence of one or more control group or other treatment group (Lutwack-Bloom et al., 2005),
- contamination of the control or other treatment groups (Johnson, Odendaal, & Meadows, 2002; Lutwack-Bloom et al., 2005),
- not using randomisation when assigning participants to groups, and
- not specifying and/or documenting protocols.

Marino (2012) argues that methodological weaknesses in the AAI literature preclude a firm conclusion about the efficacy of AAIs. Thus, despite the ever-increasing body of literature on the subject, there are currently a number of researchers supporting the position that "the pet effect remains an uncorroborated hypothesis rather than an established fact" (Herzog, 2011, p. 237). Notwithstanding these criticisms, it is important to note that recent years have witnessed the emergence of more robust empirical studies on the pet effect and AAI. These studies ascribe some credibility to

claims about the pet effect and although they are somewhat sparse, they support claims about the pet effect nonetheless.

More research is yet needed to further substantiate and expand the empirical evidence base of AAI and the pet effect (Chur-Hansen et al., 2010; Herzog, 2011). Researchers have thus called for better-designed experiments—especially randomised controlled trials (Kazdin, 2010)—and more quantitative research on the value and mechanisms of HAI and AAIs (Johnson et al., 2002). These experiments should address methodological weaknesses and design problems that have hitherto been common in AAI and pet effect research.

3.3.3.2. Non-significant, contradictory, and negative evidence

Although a number of studies have demonstrated the positive effects of HAI and AAIs on human physical and mental health, research findings have not always been positive or significant. Certainly, this reality has contributed to claims about the current equivocal and contradictory nature of HAI and AAI research (Chur-Hansen et al., 2010; Herzog, 2011; IFA, 2014).

In contrast with the common belief that pets are undoubtedly “good for us” (Wells, 2009, p. 524), several studies have found pet ownership to have no effect or a negative effect on certain human health variables. For example, Parker et al. (2010) found that pet owners were more likely to die or be readmitted to the hospital after a heart attack than non-pet owners, while Parslow and Jorm (2003) found no evidence for a link between pet ownership and reduced cardiovascular risk. Moreover, a large-scale survey found that pet owners had higher body mass index scores and were more likely to have poorer self-perceived health than non-pet owners (Koivusilta & Ojanlatva, 2006). The research findings of these studies are in contrast

with others that have found pet ownership to be correlated with certain cardiovascular health benefits (e.g., Friedmann et al., 1980).

Some studies also suggest that AAT and AAA may have little or no impact on the mental and psychological health of people. For example, while the ability of an animal visitation intervention to reduce symptoms of depression among older people in a residential facility have been suggested by Le Roux and Kemp (2009), other studies did not find the same (Berry et al., 2012; Lutwack-Bloom et al., 2005). However, it should be noted that Le Roux and Kemp used the Beck Depression Inventory to measure depression in their study, while Berry et al. and Lutwack-Bloom et al. used the GDS-SF. In Le Roux and Kemp's study, the animal visitation intervention was not effective in reducing anxiety levels in participants. Parslow, Jorm, Christensen, Rodgers, and Jacomb (2005) even found that pet ownership was associated with more depression among older people.

The information provided in this section demonstrates that HAI does not always have uniform positive effects on people. This may be due to the differential application of AAIs, variation in the methodological designs of studies, or the weak research designs implemented in some studies (Phelps et al., 2008; Wells, 2009). More research that uses consistent methodologies are needed before firm conclusions can be drawn on the relationship between human health variables and HAI (Wells, 2009).

3.3.3.3. Benefits of AAIs may be due to the volunteers

Researchers have challenged the construct validity of AAI by questioning whether the apparent health improvements or therapeutic effects that stem from AAIs are due to the presence of the animal specifically, rather than due to the presence of the volunteer (Marino, 2012). In other words, because AAIs involves both the animal

and its human handler, “benefits achieved may result from the human-human interaction rather than the human-dog encounter” (Marcus, 2013, p. 322).

However, there are studies that have challenged this criticism by comparing the health effects of animal visits with the health effects of visits from humans alone (i.e., volunteer visits). Certain studies found that the benefits from animal visits exceed those from volunteer visits (Lutwack-Bloom et al., 2005). Lutwack-Bloom et al. (2005) argues that:

> Assuming for a moment, that in spite if this study and others like it, that it is, in fact, the visiting people who make the difference, and not the pets, it cannot be ignored that many of the volunteers involved with these pet visitation programmes do so largely because they can bring their pet. Would they go visit otherwise? We think not. (p. 155)

The typical characteristics of AAIs, as well as aspects that need to be considered when planning AAIs is discussed in the following section.

3.3.4. Elements of AAIs and guidelines for planning visitation interventions

AAIs can be distinguished from other forms of adjunctive therapies in that the essential “tools” in these interventions are living, interacting creatures. Mallon, Ross, Klee, and Ross (2010) maintain that this is an important element in the light of the unique organisational issues that need to be considered when animals are introduced into health or mental health settings. As such, AAIs necessitate careful planning and consideration of various issues related to the organisation or setting where the intervention will be held. Issues pertaining to intervention design, animal

selection, liability, supervision, and infection control are also of the utmost importance (AVMA, 2007; Mallon et al., 2010). These issues are now discussed.

3.3.4.1. Organisations or settings where AAIs are implemented

AAIs are conducted in various settings, including general hospitals, residential care facilities for the aged, hospice centres, rehabilitation centres, group homes for people with disabilities, institutions for psychiatric patients, and even correctional facilities (Lutwack-Bloom et al., 2005). As Mallon et al. (2010) claims, an important consideration when wanting to implement an AAA in an organisational setting is the amount of support that the innovation can amass on various levels. The Green Chimneys' Executive Council (Mallon et al., 2010) present the following questions as important considerations that need to be discerned before an AAA programme is implemented in an organisational setting:

- Is there administrative support for the idea?
- Does the idea have board support and will it need board approval?
- Does the innovation have staff that will support the idea?
- Will new staff have to be trained and hired?
- Has anyone asked the clients if they think this is a good idea?
- How will the innovation be funded, and what costs will be incurred throughout the process?
- What are the salient issues with respect to infection control?
- What are the issues with respect to safety and humane treatment of animals?
- What liability issues need to be considered?
- Is there family support for the programme?

- Do the clinical staff accept and support the programme?
- Are there measurable outcomes that will enable the organisation to document and evaluate the programme's effectiveness?
- How can this intervention be monitored for continuous quality improvements? (Mallon et al., 2010, p. 138)

3.3.4.2. Beneficiaries of AAIs

While AAI has been applied across various settings, the types of maladies and populations targeted have also been expansive (Marino, 2012). AAIs can be applied with "people of all ages" (Lutwack-Bloom et al., 2005, p. 138), including older people, adults, adolescents, and children (Nimer & Lundahl, 2007). Moreover, problems that have been frequently targeted by AAIs include psychiatric symptoms, pain, and physical or emotional suffering that may result from living with a serious or chronic illness (e.g., cardiovascular disease, cancer), physical disability, mental disability (e.g., Alzheimer's disease), and pervasive developmental disorders (Marcus, 2013). Researchers have also largely focussed on the value of AAIs for alleviating social and psychological suffering in terms of depression, anxiety, stress, and loneliness, while also improving quality of life.

3.3.4.3. Animal selection in AAIs

Various types of animals have been used in AAIs as therapeutic adjuncts (in AAT) or regular visitors (in AAAs). Decisions regarding animal selection and the number of animals to be used in AAIs are generally driven by determinants such as

- the physical setting and/or geographical location of the organisation (Mallon et al., 2010) and whether there are policies or restrictions in place as to the presence of animals;
- the characteristics, needs, and schedule of the target group (Johnson et al., 2002); and
- the type, breed, size, age, sex, and natural behaviour of the animal and whether it is fitting for the intended use of the animal (AVMA, 2007) or the desired outcomes or goals of the intervention.

For example, when the target population of the intervention is children, a researcher might prefer to not use “a docile elderly pooch” since it may become overwhelmed (Pets as Therapy [PAT], 2012, p. 2). Conversely, the same docile elderly pooch may be quite at ease in a frail care unit (PAT, 2012).

AAIs, including animal visitation interventions in residential facilities for the aged, are mostly undertaken with dogs (IFA, 2014; Lutwack-Bloom et al., 2005; Marcus, 2013). This is due to their domestication from a young age, trainability, accessibility, and predominantly friendly nature (IFA, 2014; Joanna Briggs Institute [JBI], 2011). Additionally, the human stress response results in chemical changes in an individual that can be detected by dogs through their powerful olfactory perceptive abilities. This may incline them to provide attention to individuals most in need of therapeutic contact (Marcus, 2013). People owning dogs appear to gain more general health advantages from pet ownership than people owning other types of pets, such as cats (Serpell, 1991).

Nevertheless, while dogs are most commonly used in AAIs, there are reports in the literature suggesting the beneficial effects of using other animals. These include

horses (this approach is called equine-facilitated psychotherapy, equine-assisted psychotherapy, or hippotherapy; Masini, 2010; Selby & Smith-Osborne, 2013), farm animals (Berget, Ekeberg, & Braastad, 2008; Pedersen, Martinsen, Berget, & Braastad, 2012), dolphins (Breitenbach, Stumpf, v. Fersen, & Ebert, 2009), cats (Pedersen et al., 2012), and other small animals such as birds (Colombo et al., 2006) or fish (Edwards & Beck, 2002). In residential care facilities for the aged, AAIs most commonly include dogs, cats, rabbits, small rodents, birds, and fish. These animals generally visit regularly, but some residential facilities prefer to acquire them as residential pets (Baun & Johnson, 2010).

An essential criterion for animals being included in AAIs is their suitability for and social ability to interact with strangers (Baun & Johnson, 2010; DiSalvo et al., 2005). Antisocial behaviours by the animal, provoked or not, during AAIs will result in the immediate disqualification of the animal from the intervention (DiSalvo et al., 2005). Animals should be properly trained, temperament-tested, and registered as a visiting or therapy animal at a therapy animal organisation (e.g., PAT) before they are enrolled in an AAI. The comfort and safety of the animal during transportation to and from intervention venues should also be considered. Finally, rather than using a variety of animals, Lutwack-Bloom et al. (2005) suggest using one type of animal or pet to the exclusion of other types of animals or pets in AAAs for the purpose of consistency.

3.3.4.4. Volunteers providing AAAs

AAAs are generally conducted by volunteers (Lutwack-Bloom et al., 2005), also referred to as *pet handlers* or just *handlers*. Volunteers in AAAs are those individuals who bring their pets to visit people in various settings. Volunteers have to

be members of a registered organisation that provides AAT and/or AAAs and are usually required to pay a small yearly membership fee that goes towards public liability insurance.

Volunteers are responsible for the health and hygiene of their pet(s). They have to ensure that their pet undergoes a complete examination by a veterinarian prior to its introduction in a facility (Baun & Johnson, 2010). Regular check-ups by a veterinarian are also important, as well as ensuring that the animal's immunizations are current and that preventative medications (e.g., heartworm pills) are administered appropriately (Baun & Johnson, 2010). Moreover, volunteers must ensure that their pets are properly groomed and that their toenails are well trimmed before they pay visits (Baun & Johnson, 2010).

During visits to a facility, volunteers, alongside their pets, have to

- maintain direct physical control of their pets (dogs are usually required to be on a leash; Baun & Johnson, 2010);
- circulate between participants in a composed manner;
- monitor their pet, tend to its needs, and answer questions participants may have about the pet (Marcus, 2013);
- ensure that participants handle the animals appropriately, since it is possible that cognitively impaired older people may be too forceful with the animals and they may act in surprising ways (Baun & Johnson, 2010);
- prevent their pets from entering undesignated areas (e.g., eating areas; Baun & Johnson, 2010); and
- be aware of and implement infection control protocols (Lefebvre et al., 2008; Marcus, 2013).

3.3.4.5. Liability, risks, and safety issues in AAIs

All AAIs involve certain inherent risks (Mallon et al., 2010). Researchers wishing to implement AAIs are responsible for taking cognisance of the potential risks associated with AAIs and then establish and supervise the implementation of safety measures. The AVMA (2007) highlights the following concerns related to AAIs:

- Programme participants may become possessive of animals, which can generate an **atmosphere of competition** rather than social cooperation.
- Certain participants may develop unrealistic expectations of the animal's behaviour towards them; **feelings of rejection** and/or a **lowered self-esteem** may result when the animal's behaviour does not match these unrealistic expectations.
- The death of an animal may result in feelings of **grief** and/or **guilt** in participants and staff.
- **Participants, staff, or volunteers** may suffer an **injury** (e.g., a dog may bite or unwittingly or intentionally scratch someone) due to inappropriate animal selection, handling, or poor supervision.
- **Animals** may be **abused** or accidentally **injured**.
- **Zoonotic infections** may be transmitted.
- Participants may suffer **allergic reactions** to the animals.

Most of the risks related to AAIs that are mentioned above can be avoided through careful planning and adherence to study protocols. An atmosphere of competition, feelings of rejection and/or a lowered self-esteem can probably be offset by either providing the intervention to individuals at a time, or by ensuring that animals afford more or less equal amounts of time and attention to participants when they are in

groups. The risk of injuries to participants, staff, or volunteers may be counteracted through the implementation of specially designed protocols. These could include the immediate suspension of visits if the animal should demonstrate a negative behavioural change since its last temperament-test, aggressive behaviour, or fearful behaviour during visits (Lefebvre et al., 2008). Volunteers should monitor their pets (AVMA, 2007) and afford them at least one or two short breaks away from participants during visiting sessions. Moreover, animals should be temperament-tested and registered as visiting animals before enrolment in the intervention (Baun & Johnson, 2010).

Physical injuries to humans and animals and/or the abuse of animals can be avoided through proper supervision. The purpose of supervision in AAIs is to protect the welfare of human participants and visiting animals (AVMA, 2007). A staff member employed at the facility being visited can be appointed the role of an *animal-visit liaison* (AVL) to assist with supervision of participants during visitation sessions (Lefebvre et al., 2008). The AVL and volunteers should ensure that participants handle the visiting animals appropriately.

An essential safety feature of AAIs is the implementation of infection control protocols that aim to prevent or minimise human exposure to zoonotic diseases. Lefebvre et al. (2008) published a collaborative document containing recommendations for minimising injuries and the transmission of infectious diseases from animals to humans. Examples of infection control protocols (Lefebvre et al.) that fall within the responsibility of volunteers include:

- taking their pets for regular veterinary examinations;

- practicing hand hygiene before and after visits and requesting that participants do so as well;
- preventing their pets from licking participants and staff during visits; and
- cleaning environmental surfaces after visits (however, upon mutual agreement, this responsibility may be passed to cleaning staff at the facility if they are available).

Finally, allergic reactions to animals can be prevented by excluding individuals who are allergic to the specific type of animal that will be used from participating in the intervention. Therefore an initial enquiry about the various allergies that potential participants might have is necessary.

Johnson et al. (2002) assert that, when published guidelines and protocols are adhered to, the risk of spreading zoonotic infections to people through AAI is minimal and outweighed by the benefits that can be derived from these programmes. Indeed, animal-related incidences in AAIs are almost non-existent (Johnson et al., 2002). In conclusion, AAIs can be “very safe and effective” when they are conducted in line with proper measures and policies (DiSalvo et al., 2005, p. 301). Most organisations that offer AAIs have public liability insurance that can be utilised for protection in case of incidents.

3.3.4.6. Animal visitation interventions with institutionalised older people

In residential facilities housing older people, strategies or interventions aimed at addressing mental health issues among residents are important, but information regarding such strategies or interventions is scarce (Grenade & Boldy, 2008). Animal-assisted visitation interventions in residential facilities have gained popularity

over the past years since this type of intervention is particularly feasible in such settings. These interventions can make valuable contributions to the health and well-being of residents (Baun & Johnson, 2010).

Baun and Johnson (2010) stated that

> The presence of pets in a setting such as a nursing home where one ordinarily does not expect to see them provides a source of distraction and novelty. . . . pets provide a source of affectionate physical contact that often is lacking in an institutional setting. (p. 296)

As such, many residential facilities house pets as permanent residents in the facility. However, this may not always be a good idea since resident pets often require added responsibilities for staff members of the facility (Baun & Johnson, 2010), and many of these facilities may be understaffed, leading to work-overload. Additionally, when a facility houses resident pets, the pets may become attached to particular residents at the facility. That may deprive other residents of the opportunity to reap the benefits associated with having a pet in the facility.

Given the above information, it is argued that animal visitation programmes in residential facilities for the aged pose a particularly appropriate alternative to acquiring resident pets in such facilities. The possibility of added responsibility to staff members when resident pets are kept in a facility is overcome by animal visitation interventions, as the pets involved in such interventions are merely visitors at the facility and they go home with their owners at the end of visits. Volunteers usually make sure that their pets spend more or less equal amounts of time with residents participating in the intervention, thereby allowing them equal opportunities to gain benefits from visits with the animals.

3.3.5. Organisations that provide AAIs in South Africa

3.3.5.1. Pets as Therapy (PAT)

Pets as Therapy (PAT), launched in South Africa in 2001, is a registered Not for Profit Organisation (NPO), as well as a registered Public Benefit Organisation (PBO). PAT organises therapeutic visits by pet owners who volunteer to take their pets (mostly dogs) to visit people in residential facilities, hospitals, residential care centres for disabled persons, care facilities, special needs schools, and various other establishments (PAT, 2012). PAT has branches in Cape Town, Helderberg, Hermanus, George, East London, Port Elizabeth, and Polokwane (Le Roux, 2013).

Volunteers who are interested in taking their cats or dogs on PAT visits are first required to apply at PAT by completing an application form. Thereafter, volunteers and their pets are evaluated and accepted for conducting PAT visits based on their performance during a range of assessments in line with the requirements of the Canine Good Citizenship Certificate (Le Roux, 2013). Proof that the animal is healthy, that vaccinations are up to date, and that there is a parasite control programme in place is also needed before volunteers and their pets can be registered for visits (PAT, 2012). After the evaluation, new volunteers, without their companion animals, attend two or three mentorship visits with experienced volunteers and their pets to gather a sense of what visitation sessions will be like. Usually, one of these mentorship visits is held with children and another one is held with older people (Le Roux, 2013). Volunteers and their pets are then deemed ready to start paying visits to an institution of their choice, which they select from a list of institutions already being visited by PAT (PAT, 2012).

PAT operates under a strict set of rules regarding the health and safety of the animals that pay visits. It is imperative that the animals are taken for regular check-ups and vaccinations and that they are bathed and brushed regularly (Le Roux, 2013). Volunteers are responsible for the safety of their pets during visits and when travelling to and from visitation venues. During visits it is expected that volunteers monitor their pets for any signs of behavioural changes, aggressiveness, restlessness, fatigue, or fear. If a visiting animal should exhibit any of these behaviours during visits, volunteers must take the animal outside for a break, and/or they must terminate the visiting session for that day.

Furthermore, volunteers each pay a yearly membership fee of which a certain portion goes to PAT's public liability insurance. Public liability insurance must be obtained for each institution that is visited by PAT (PAT, 2012). The present study utilised PAT volunteers and their dogs for delivering visitation sessions to residents at the participating facility. Permission was obtained from the vice chair of PAT to use their volunteers (see Appendix B). Visit PAT's website (www.pat.org.za) for additional information.

3.3.5.2. Paws for People Therapy Dogs

Paws for People Therapy Dogs is another NPO based in South Africa. They offer AAT/AAAs in the East Rand, West Rand, Pretoria, Johannesburg, Vanderbijlpark, Free State, Natal, and Cape Town (Paws for People Therapy Dogs, 2014). The organisation was founded in 1997 and, as can be gathered from their website (www.pawsforpeople.co.za), operates under much the same procedures as PAT. Visit the Paws for People Therapy Dogs website for more information.

3.3.5.3. Touch Our Pets – Therapy Dogs (TOP Dogs)

Touch Our Pets – Therapy Dogs (also known as TOP Dogs), launched in South Africa in 2008, is a registered NPO and PBO (Touch Our Pets – Therapy Dogs [TOP Dogs], n.d.). As can be gathered from their website (www.therapytopdogs.co.za), this organisation also operates under much the same regulations as PAT and provides AAA, AAT, and animal education programmes in the East Rand, Pretoria, and Johannesburg areas (TOP Dogs, n.d.). The animal education programmes provided by TOP Dogs involve teaching children in schools about the care and needs of dogs, as well as bite prevention and general interaction with dogs (TOP Dogs, n.d.). Visit the TOP Dogs website for more information.

This section discussed three organisations that provide AAIs in South Africa—Pets as Therapy, Paws for People Therapy Dogs, and Touch Our Pets – Therapy Dogs (TOP Dogs). Research and uses of AAI in South Africa will be discussed in the following section.

3.3.6. Research and uses of AAI in South Africa

A few researchers have conducted research on the uses and value of AAIs with South African samples. Odendaal (2000) and Odendaal and Meintjes (2003) were some of the first in South Africa to investigate the effects of HAI on neurophysiological parameters associated with blood pressure in humans. After positive interaction with dogs, humans showed significant increases in β-endorphins, oxytocin, prolactin, phenylacetic acid, and dopamine levels, as well as significant decreases in cortisol. Apart from the decrease in cortisol, the same neurophysiological effects that were present in the humans were seen in the dogs after positive interspecies interaction.

Sentoo (2003) conducted a mixed methods research project wherein animal-assisted play therapy was found to enhance the self-esteem of adolescents with special needs. A qualitative investigation by De Villiers (2004) found therapeutic horse riding to increase the awareness level of children with foetal alcohol syndrome. Furthermore, another qualitative investigation by Rinquest (2005) showed that animal-assisted play therapy in class can raise the awareness level of autistic children; which in turn can lead to increased sensory contact with the environment among these children.

Bronkhorst (2006) used a case study research design to investigate the value of equine-assisted therapy (EAT) on the aggressive behaviour of a young boy. She concluded that EAT was a viable technique for breaking the aggressive behaviour cycle of the boy. Helfer (2006) qualitatively investigated the psychosocial functioning of primary school children with physical disabilities involved in a therapeutic horse-riding programme. It was found that, even if the children struggled to reach developmental milestones, therapeutic horse-riding made a significant contribution in areas of social-participation, self-image, emotional control, confidence, discipline, and cognitive and educational stimulation. Likewise, Weideman (2007) found that a therapeutic horse-riding programme had similar positive therapeutic effects in adolescents with physical disabilities.

Scholtz (2010) used a case study approach to explore the value of AAT in the educational psychology field and found that AAT helped with the socialisation, communication, interaction, and participation of the child involved in AAT. Furthermore, a qualitative investigation by Coetzee (2012) found that eight weeks of dog visits to a Grade R class had great value in decreasing the aggressive

behaviours of the children. A phenomenological study by Van Heerden (2012) showed the potential of EAT to empower a child victim of sexual abuse, and assist with expressing emotions. In another qualitative study by Garland (2013) social workers were asked about their perception of EAT. The potential of EAT to empower people and to provide psychosocial support was demonstrated.

Hurwitz (2013) employed an EAT programme with adolescents removed from their families and placed in residential care. In this qualitative study, participants experienced various learning and development opportunities, and were able to establish connections, which resulted in improved psychological, social, and physical well-being. Thompson (2013) conducted interviews with trained mental health professionals who had offered AAT to children and, based on her findings, made recommendations for best practice in AAT with children in the Western Cape.

Apart from the studies by Odendaal (2000), Odendaal and Meintjes (2003), and Sentoo (2003), none of the South African investigations mentioned thus far in this section employed quantitative methods. Researchers that have recently conducted empirical studies in the field of AAI in South Africa are Le Roux and Kemp (2009), Le Roux (2013), and Boshoff (2014).

In their randomised controlled study, Le Roux and Kemp (2009) found that six weekly visits from a volunteer with a dog in a residential facility for the aged can significantly reduce depression in experimental group participants. However, the volunteer-dog visits did not effectively reduce anxiety levels among participants.

In 2013 Le Roux conducted a study to determine the effect of an animal-assisted reading programme on the reading skills of Grade 3 learners in an Afrikaans medium primary school in the Western Cape. Children identified as unskilled readers (*N* =

102) were randomly assigned to one of four groups. Children in the dog group read to a dog with a PAT volunteer. Children in the adult group read to a facilitator. Children in the teddy bear group read to a teddy bear with an adult present. Children in the control group continued with their normal school activities. The reading sessions were held once a week for 10 weeks. Le Roux found that the word recognition and reading comprehension of the children in the dog group improved significantly in comparison to the other three groups.

Finally, Boshoff (2014) investigated the effect of an EAT programme on the psychological well-being of boys in a school of industry. The study included experimental and control groups. Results showed that the EAT programme (which consisted of eight sessions) significantly improved the boys' well-being, problem-focused coping, emotion-focussed coping, and dysfunctional coping.

The above discussion mentions most of the studies on AAI that have been conducted in South Africa until now. It is clear that there is a dearth of empirical studies on the topic of AAI in the country.

3.4. CHAPTER SUMMARY

This chapter reviewed the health profile of older people as well as the literature regarding HAI and AAI. The suitability of animal visitation interventions for institutionalised older people were explained. In the following chapter the methodology of the present study will be discussed.

CHAPTER 4

METHODOLOGY

4.1. INTRODUCTION

The aim of the present study was to determine the effect of a dog visitation intervention on the depression, loneliness, and quality of life of people staying in a residential facility for the aged. At the same time, the aim was to conduct an experimental study of high scientific standard to generate robust empirical data on the effects of the intervention on the key variables within the target group. To do this, a high standard of experimental rigour was applied. Methodological soundness was aimed for by including a control group, rendering consistency, ensuring a sufficient sample size, and carefully documenting and adhering to protocols.

In this chapter, basic methodological standards and practices of randomised controlled studies are discussed. The research design, participants, measurement instruments, procedures, and statistical analyses of the present study will also be discussed.

4.2. RANDOMISED CONTROLLED STUDIES: BASIC METHODOLOGICAL STANDARDS AND PRACTICES

Very few studies in the AAI literature sufficiently adhere to the standards of experimental research. As such, numerous researchers have questioned the extent to which claims about the efficacy of AAIs are empirically supported (Chur-Hansen et al., 2010; Lutwack-Bloom et al., 2005). According to Herzog (2011), the notion that HAI can improve human health and psychological well-being, is currently an "uncorroborated hypothesis rather than an established fact" (p. 237).

Kazdin (2010) argues there are many methodological practices in AAI research that prevent researchers from drawing firm conclusions about the effects of AAI on human health. Prior studies have largely been anecdotal, relied on case reports, had small sample sizes, or were characterised by too much variation in, or weak, methodological designs (Andreassen et al., 2013; Kazdin, 2010; Lutwack-Bloom et al., 2005). To draw conclusions about the effectiveness of AAI for improving human health, more randomised controlled studies are needed in the field (Chur-Hansen et al., 2010).

A randomised controlled study (also referred to as a randomised controlled trial or RCT) is a scientific experiment where the study subjects are randomly allocated to one or other of the different study groups or treatment conditions; there is usually at least one experimental or treatment group and at least one control or no treatment group. Randomised controlled studies are generally used to test the efficacy or effectiveness of certain medical or psychological interventions. These studies can be characterised by the methodological standards outlined below.

- Specification of the *sample* and *eligibility criteria* for participation (Kazdin, 2010): The clinical and demographic characteristics of those who are eligible to be enrolled in the study are described.
- *Inclusion of a control group:* At least one experimental group and one control group are necessary in a randomised controlled study. The experimental group receives the experimental treatment or intervention while the control group does not (Bryman, 2012). The purpose of including a control group is to allow for the comparison of “treated” participants with “non-treated” participants (Bless et al., 2006).

- *Randomisation:* This refers to the random allocation of participants to any one of the study groups or conditions. Randomisation ensures each participant a known and equal chance of being assigned to any given group of the study (Bless et al., 2006). Most experimental studies utilise randomisation as a means of ensuring that groups are equal before the intervention begins (Bless et al., 2006). When the experimental and control groups of a study are equivalent at pretest measurement, the researcher can be reasonably sure that any differences between the groups at posttest measurement is due to the effects of the intervention and nothing else (Bless et al., 2006).
- Use of *treatment manuals* (Kazdin, 2010): Researchers provide detailed information as to the procedures implemented in the study and specifically on how the intervention was conducted. Such a specification of protocols will permit replication of the study or intervention by other researchers.

Kazdin (2010) additionally highlights the following methodological practices that should be adhered to when conducting AAI research:

- Use of multiple outcome measures with multiple assessment methods (e.g., self-report, parent report, direct observation) and measures of multiple domains of functioning (e.g., symptoms, prosocial functioning).
- Evaluation of the clinical significance of change; i.e., whether the changes at the end of treatment make a difference in returning individuals to adaptive functioning.
- Evaluation of follow-up weeks, months, or years after post-treatment assessment. (Kazdin, 2010, p. 521)

Kazdin (2010) recommends including more than one animal and volunteer in an AAI, so that researchers can conclude whether changes in participants over time are due to the intervention and not the specific animal that was used. A sufficient sample size is also important to achieve statistical power.

The present study implemented most of the methodological standards of randomised controlled studies described in this section. These methodological standards include: specifying the sample characteristics, including a control group, using randomisation to assign participants to groups, and providing a detailed account of the procedures implemented in the study and intervention. In addition, more than one animal and volunteer were used. The research strategy and design of the present study will be discussed in the following section.

4.3. RESEARCH STRATEGY AND DESIGN

According to Bryman (2012), a research strategy concerns the general orientation to conducting social research. The present study implemented a quantitative research strategy where emphasis was placed on quantification in the collection and analysis of data and the testing of specific hypotheses. Implementing a quantitative research strategy in the current investigation allowed me to explain, based on concrete numerical evidence, the influences that a dog visitation intervention may have on the depression, loneliness, and quality of life of older people in a residential facility.

A research design provides a framework for data collection and analysis (Bryman, 2012) and relates directly to testing hypotheses (Bless et al., 2006). It delineates the steps that should be taken to test hypotheses and ultimately answer the research question. The present study utilised a classic experimental design, namely a randomised pretest-posttest control group design.

The aim of the study was to determine the effects of a dog visitation intervention on the depression, loneliness, and quality of life of older people residing in a residential facility in South Africa. One experimental and one control group were involved in the study. The experimental group was subjected to a dog visitation intervention while the control group continued living their day-to-day lives as usual. The procedures of the dog visitation intervention are discussed more elaborately in Section 4.6.4.

All participants completed the measures of the study over two assessment times—once before the intervention started (pretest measurement) and once after the intervention concluded (posttest measurement). A flow chart of the randomised control process applied in this study is provided in Figure 4.1.

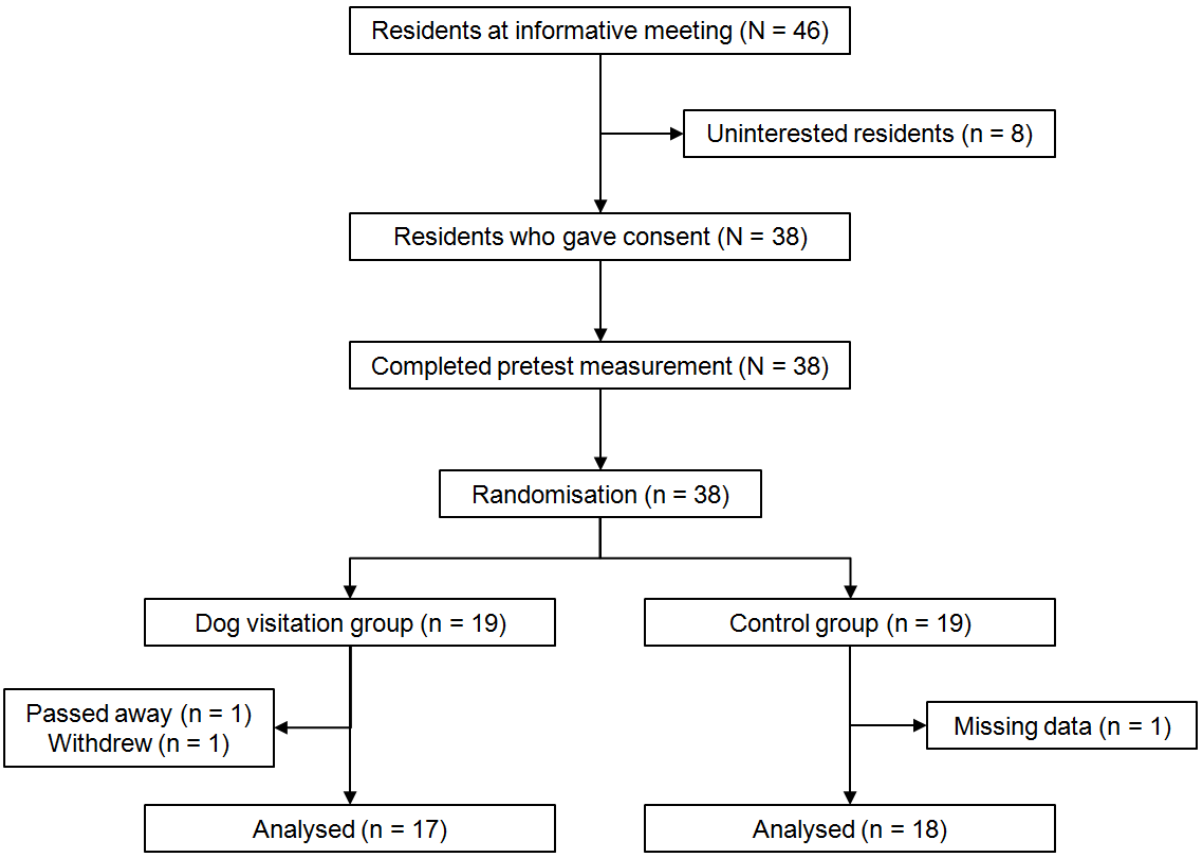

Figure 4.1. Flow chart of randomised control process and participant progress.

4.4. PARTICIPANTS

4.4.1. Introduction

According to Census 2011, the greater Stellenbosch population consist of 155 733 people, where 15.9% of the population are 50 years or older and 4.9% of the population are 65 years or older (StatsSA, n.d.). Fifty-two per cent of the population is coloured (StatsSA, n.d.).

The residential facility where the study took place is situated in Cloetesville, Stellenbosch. According to Stellenbosch Municipality (2008), the Cloetesville community is mostly poor. The community consist mostly of coloured Afrikaans-speaking persons. The residential facility is owned, funded, and endorsed by the Department of Social Development of the Western Cape and can be categorised as an accommodation facility for older people. The facility mostly house persons who are faced with financial limitations, who are probably dependent on pension and/or social welfare grants as a primary source of income. Moreover, the facility offers accommodation to single people and couples aged 55 years and older. Residents stay in shared rooms with other residents or they can rent a private flat. The facility offers frail care and full-time medical supervision to all residents.

4.4.2. Recruitment

All residents at the facility were invited to attend an informative meeting, held in the dining room at the facility, regarding the study. At that time the facility housed 79 residents. However, not all the residents attended the informative meeting. Some of them did not respond to the invitation whilst others were bedridden.

I considered it best to exclude bedridden residents from participation in the study, since these residents would not have been able to attend the dog visitation sessions if they had been assigned to the experimental group. I aimed to follow a standardised procedure throughout, which meant that it would not have been possible for the dogs to visit bedridden residents individually. Allowing the latter would have compromised the group format of the visitation intervention. The visits were delivered in group format to maximise the potential of social interaction between participants.

Residents who attended the informative meeting were notified and enlightened about the study and the procedures. I presented all the information regarding the study in Afrikaans and English. Informed consent forms were then distributed to every resident at the meeting. I noticed much confusion among residents as to what the forms were for and thus had to repeat the information regarding the study. Many of the residents could not read or write because of illiteracy, poor vision, or the loss of fine motor abilities. Those residents were assisted with the task of completing consent forms. No attempts were made to persuade uninterested attendees at the informative meeting to participate in the study.

4.4.3. Description of participants

The mean age of participants were 73.94 years (*SD* = 10.47) and their ages ranged from 53 to 97 years. The biographical and pet history information of participants is presented in Table 4.1.

Table 4.1

Biographical and Pet History Information of Participants (N = 35)

Variable		f	%
Sex	Male	17	48.57
	Female	18	51.43
Age	50-54	1	2.86
	55-59	2	5.71
	60-64	6	17.14
	65-69	5	14.29
	70-74	3	8.57
	75-79	5	14.29
	80-84	9	25.71
	85-89	2	5.71
	90+	2	5.71
Language preference	Afrikaans	30	86.11
	English	5	13.89
Adequate hearing	Yes	24	69.44
	No	11	30.56
Adequate vision	Yes	23	66.67
	No	12	33.33
Wheelchair dependent	Yes	9	25.71
	No	26	74.29
Walking aid dependent	Yes	4	11.43
	No	31	88.57
Likes dogs	Yes	35	100.00
	No	0	0.00
Allergic to dogs	Yes	0	0.00
	No	35	100.00
Past pets	None	4	11.43
	Dog(s)	29	82.86
	Cat(s)	15	42.86
	Bird(s)	7	20.00
	Fish	4	11.43
	Chicken(s)	2	5.71

Attachment to past pets	Very	22	62.86
	Not very / Somewhat	6	17.14
	Don't know	3	8.57

Note: f = frequency

4.5. MEASUREMENT INSTRUMENTS

Almost all the participants in the present study could not physically complete the measures themselves. That was due to their being illiterate, having inadequate vision, and/or not having the fine motor capabilities necessary for writing. Therefore, the measures were interviewer-administered. Interviewers (seven research assistants and I) helped individual participants separately with the completion of measures during pretest and posttest measurement by reading the instructions and items of each measure aloud and filling out participants' replies along the way. All interviewers were capable individuals with tertiary education backgrounds. I also trained the interviewers in the measures that were applied in this study before the commencement of data collection.

4.5.1. Biographical and Pet History Survey

At the pretest measurement phase only, participants completed a biographical and pet history survey, which I developed myself. This survey (see Appendix C) acquired the basic biographical information of participants and solicited information regarding their liking of animals and history with pets.

4.5.2. Geriatric Depression Scale (Short Form)

The original Geriatric Depression Scale (GDS), a 30-item questionnaire, was designed by Yesavage et al. in 1983 as a standardised screening instrument to measure depression in older people. Yesavage et al. (1983) substantiated their

development of the GDS by arguing that depression manifests differently across age groups and therefore a tool was needed to measure the unique presentation of depression among older people. The GDS was designed to be used with healthy, medically ill, as well as cognitively impaired older people (Greenberg, 2012). Furthermore, the GDS is a valuable tool for evaluating the clinical severity of depression, as well as for monitoring treatment (Lutwack-Bloom et al., 2005).

The GDS Short Form (GDS-SF), developed in 1986, is a 15-item shortened version that retained only the most discriminating items of the original 30-item GDS. The GDS-SF aims to detect depression in older populations by asking participants to respond to items (e.g., “Do you feel happy most of the time?”) and by then answering either *yes* or *no* with reference to how they felt over the past week (Greenberg, 2012). Of the 15 items included in the GDS-SF, 10 items indicate the presence of depression when answered *yes*, while the remaining items indicate depression when answered *no*. A total score of 0–4 on the GDS-SF is considered normal whereas scores of 5 or more may indicate mild depression, 9 or more indicate moderate depression, and 12 or more indicate severe depression (Greenberg, 2012).

Since its development, the GDS-SF has been tested and extensively used with the older population, including older people residing in residential facilities. Validation studies have concluded that both the original GDS and the GDS-SF are reliable and successful in detecting depression. These measures have a high correlation of .84 ($p < .001$; Sheikh & Yesavage, 1986). However, researchers have noted that the GDS should not be regarded as a substitute for a proper diagnostic interview by a mental health professional, because it has limitations such as not assessing for suicidality (Greenberg, 2012). Greenberg (2012) maintains that the GDS-SF is a

screening tool that can be used to monitor depression over time or when baseline scores are compared to subsequent measurements (see Appendix D).

4.5.3. UCLA Loneliness Scale Version 3

The UCLA Loneliness Scale Version 3 (UCLA LS-3), which was developed by Russell (1996), is a simplified version of the original UCLA Loneliness Scale first designed by Russell, Peplau, and Ferguson (1978). The UCLA LS-3 is a 20-item scale measuring subjective feelings of loneliness and social isolation. In each item participants are asked how often they experience certain feelings that relate to loneliness (e.g., "How often do you feel alone?"). They are given the response options *never*, *sometimes*, *rarely*, and *always* next to each item.

When the UCLA LS-3 is scored, *never* is awarded 1, *rarely* is awarded 2, *sometimes* is awarded 3, and *always* is awarded 4. However, items 1, 5, 6, 9, 10, 15, 16, 19, and 20 are reverse scored. When the scores of each item are added up, a higher score will indicate greater degrees of loneliness (Russell, 1996). Victor (2012) notes that "the UCLA scale is a continuous score", which makes "determining the point that distinguishes lonely from non-lonely . . . problematic" (p. 640). Therefore, Victor (2012) proposes that scores of 21–40 indicate mild loneliness, while scores between 41 and 60 indicate moderate loneliness, and scores above 61 indicate severe loneliness.

The UCLA LS-3 has been used among institutionalised older populations frequently (Banks et al., 2008; Chiang et al., 2010; Tsai & Tsai, 2011; Tse, 2010; Winningham & Pike, 2007). An evaluation of the psychometric properties of the UCLA LS-3 by Russell (1996) indicated that the measure's internal consistency is high with an *α*-

coefficient ranging from .89 to .94. Russell (1996) also found that the measure has a test-retest reliability of .73 over a 1-year period (see Appendix E).

4.5.4. World Health Organisation Quality of Life BREF

The WHOQOL-BREF is a 26-item abbreviated version of the WHOQOL-100 assessment (Skevington, Lotfy, & O'Connell, 2004). It generates scores for four domains associated with quality of life, including: physical health, psychological health, social relationships, and environment (Skevington et al., 2004). This assessment asks participants to rate certain feelings on a 5-point Likert scale, where 5 usually indicates answers such as *very good*, *very satisfied*, *extremely*, *completely*, or *always* and 1 usually indicates answers such as *very poor*, *very dissatisfied*, *not at all*, or *never*. The opposite is true for items 3, 4, and 26. For these items, 5 indicates answers such as *not at all* or *never* and 1 indicates answers such as *an extreme amount* or *always.*

In the WHOQOL-BREF the response options *not at all*, *a little*, *a moderate amount*, *very much*, and *an extreme amount* are given next to both of the following items: "To what extent do you feel that physical pain prevents you from doing what you need to do?" (item 3), and "How much do you enjoy life?" (item 5). The response *not at all* will be awarded 5 points when provided in relation to the former item and 1 point when provided in relation to the latter.

As such, a higher score on the WHOQOL-BREF will indicate a higher perception of quality of life. Likewise, a higher score on a specific subscale of this measure will indicate a higher perception of quality of life in relation to the specific domain measured by the subscale. In an evaluation of the psychometric properties of the WHOQOL-BREF, the WHOQOL group (Skevington et al., 2004) reported that this

measure has excellent properties of reliability as reflected in all four of its domains (physical: α = .82; psychological; α = .81; social: α = .68; environment: α = .80) and that it performs well in preliminary tests of validity (see Appendix F).

The physical health, psychological health, environment, and social relationships subscales of the WHOQOL-BREF consist of 7, 6, 8, and 3 items respectively, which are given in a varied order. See Appendix G for a table that delineates the themes addressed by the individual WHOQOL-BREF subscales. In addition to the 24 subscale items on the WHOQOL-BREF, two introductory items are posed asking subjects to rate their quality of life and their satisfaction with their health (Skevington et al., 2004).

4.6. PROCEDURES

4.6.1. Permissions from relevant authorities

Permission and clearance to conduct the study was obtained from the Department of Psychology, Stellenbosch University, and the Research and Animal Ethics Committees (REC & AEC) of Stellenbosch University (see Appendices H & I). Further permission was obtained from the vice-chair of PAT's Executive Committee, Bronwynn Douglas, to use PAT volunteers in the study (see Appendix B). PAT volunteers also had to sign a document stipulating their permission for their dogs to participate in the intervention (see Appendix J).

The Head of the participating residential facility provided verbal and written consent for conducting the study at the facility (see Appendix K). Permission was granted by means of personal correspondence with the Head of the facility which included emails and an informal meeting attended by the Head of the facility, my research

supervisor, and me. Documents that were sent to the Head of the facility included an introductory letter, an information sheet about PAT and AAI, and a list of frequently asked questions about PAT (see Appendices L, M, & A). These documents, in conjunction with the meeting, primarily notified the Head of the facility about my interest in conducting, the topic, aims, and the major processes of the study. A copy of my final thesis will be sent to the Head of the residential facility.

4.6.2. Informed consent

In an informative meeting held with residents of the participating facility, I described the study, its purposes, methods, risks, and benefits to attendees. At the end of this meeting residents were handed a consent form (see Appendix N). All residents who longed to partake in the study were required to provide consent for participation by completing this form. Because many residents who attended the aforementioned meeting could not read, the content of the consent form was first verbally explained before participants were asked to sign. Participants who lacked the fine motor capabilities needed to make their signature on the consent form were asked to make a cross instead. If a participant still had trouble, the researcher or a research assistant gave him or her hand-over-hand assistance with making the cross.

4.6.3. Data collection and randomisation

Pretest measurement took place before participants were allocated to groups and the dog visitation intervention commenced. During this time of measurement participants completed all four of the measures outlined in Section 4.5 of this thesis.

After the pretest measurement, Research Randomizer[3] was used to create two equivalent groups of participants; one of which became the experimental group and the other the control group. The group that received the dog visitation intervention was the experimental group, while the group that did not receive the dog visitation intervention was the control group.

Randomisation was followed by the commencement of the dog visitation intervention with experimental group participants. Posttest measurement took place within the week directly after the conclusion of the dog visitation intervention. All participants were assessed using the same set of measures that were used during pretest measurement (except for the Biographical and Pet History Survey). Participants were again assisted with the completion of measures as they were during pretest measurement.

4.6.4. Dog visitation intervention

Dog visitation interventions usually last a few weeks or months (e.g., Le Roux & Kemp, 2009; Moretti et al., 2011), but there are reports in the literature of some that lasted a year or longer (e.g., Crowley-Robinson, Fenwick, & Blackshaw, 1996; Kawamura, Niiyama, & Niiyama, 2007). In the present study, the experimental group was subjected to a dog visitation intervention that lasted 10 consecutive weeks. Visits took place once a week on Friday mornings between 9 and 10 a.m., and lasted between 45 minutes to one hour each. The visits were intentionally scheduled to take place in the mornings, since it was presumed that participants would be more

[3] Research Randomizer is a free computer-based random number generator that is available online for researchers, students, and others to generate sets of random numbers. The present study utilised Version 4 of the software, which was developed by Urbaniak and Plous (2013). More information regarding the software is available on the Research Randomizer website (www.randomizer.org).

willing to participate in activities at that time of day, rather than in the afternoons (Berry et al., 2012).

Experimental group participants gathered in a separate lounge in the facility, which was made available for visitation sessions. The doors to the lounge were kept closed during visits to prevent other residents and control group participants from entering the lounge and seeing the dogs. Lutwack-Bloom et al. (2005) argue that it is imperative during control group studies involving animal visitation sessions that control group participants do not see the visiting dogs or interact with them at all. In the present study, some control group participants inadvertently and unavoidably saw the dogs and volunteers very briefly when they entered and exited the facility. However, the dogs and volunteers did not interact with any residents when entering and exiting the facility.

During visits two or three dogs at a time, each accompanied by their individual owners, visited the experimental group participants. The dogs were leashed and wore their PAT scarves throughout all the visiting sessions. I was not personally involved as a volunteer, but I attended the visits to make sure that it was conducted in line with protocols and that everything went according to plan. The volunteers and I each wore our PAT t-shirts to the visits. I introduced the dogs and their owners to the participants at the beginning of each visit.

Participants sat in a large circle while the dog-and-volunteer teams approached them individually. The volunteers were asked beforehand to only converse with participants when the participants initiated the conversation themselves, and to keep the focus of conversations on the dogs. The volunteers ensured that their dogs did not approach participants who indicated that they were afraid of the dogs or

uncomfortable with the dogs being too close. Participants were allowed to observe, talk to, brush, hold, stroke, play with, and feed treats to the dogs during visits. Furthermore, volunteers were required to each bring a water bowl, blanket, plastic gloves, and a plastic bag to the visits. Optional extras included doggy treats, toys (e.g., a ball), and a brush.

4.7. ADDITIONAL INFORMATION ABOUT THE STUDY AND INTERVENTION

This section provides additional information regarding the volunteers and dogs that were used in the dog visitation intervention. Safety aspects considered before and during the study are also discussed.

4.7.1. Volunteers

PAT volunteers with their dogs were used in the visitation intervention. The volunteers with their dogs have all previously been involved in other PAT projects and have already visited at other residential facilities. Thus, the dogs and volunteers were all familiar with PAT conduct before the commencement of the study and it has already been assured that they meet PAT requirements. Nevertheless, I initially briefed the volunteers about the procedures of the intervention and handed each of them a document regarding the protocols of the visitation sessions (see Appendix O). The volunteers were also required to sign a document stipulating that they agree to have their dogs participate in the intervention and that they take full responsibility for the safety and transportation of their dogs during the intervention.

During the intervention and visits, volunteers acted as visitors bringing their pets along to meet and interact with participants. Volunteers were responsible for ensuring that the intervention protocols were met. This included their responsibility

to ensure that infection control protocols were followed to circumvent spread of infection and to monitor their dogs during the visits for any signs of needing to relieve themselves, discomfort, irritability, aggressiveness, stress, anxiety, and/or fatigue (Lefebvre et al., 2008). If they detected any signs of the latter in their dogs, the volunteers escorted their dogs outside the facility for a short break or, if they deemed it necessary, they terminated the visit for that day. None of the dogs displayed irritability or aggressiveness during any of the visits.

Some participants experienced physical difficulty with touching the dogs, because of physical impairments such as being in a wheelchair and/or not having full function of their arms and/or hands. Hence, volunteers took their dogs to participants and if participants gave their consent, they put their dogs on participants' laps and helped them to caress the dogs.

4.7.2. Dogs

Visiting dogs must meet specified requirements before they are declared as suitable to be enrolled in a visitation programme. The dogs used in the present study were all suitable, according to PAT standards, to participate in visitation programmes. PAT utilises the services of Yolande Ginsberg (PAT volunteer and owner of Cape Canine, a registered therapy animal behavioural assessment agency based in Durbanville, Cape Town) to have all their visiting animals assessed before enrolment in visitation programmes. Table 4.2 provides information as to visiting dog requirements and the criteria that are considered during the behavioural assessment of visiting dogs.

All four the PAT volunteers as well as their dogs that were used in the intervention were female. The dogs were two large dogs (i.e., a flat coated retriever named

Sambuca and a golden retriever named Juno) and two small dogs (i.e., a miniature schnauzer named Lexi and a toy poodle named Lacy). Pictures of the dogs are provided in Appendix P.

Table 4.2

Visiting Dog Requirements

A visiting dog must
• be willing to interact with and enjoy physical contact with people;
• be emotionally mature;
• have good impulse control and manners around people (i.e., the dog must not jump up on people and display no mouthing or excessive barking);
• be clean and declared healthy by a veterinarian (proof of vaccinations and deworming, along with a veterinary certificate stating that the animal is fit and healthy, is to be provided at assessment);
• be on a parasite (i.e., flea, tick, or worm) control programme;
• be comfortable with wearing a collar or harness;
• be able to walk in a calm and controlled manner on a leash;
• have good rapport with its owner (Y. Ginsberg, personal communication, March, 5, 2014).

4.7.3. Safety aspects

Only registered and approved dogs from PAT were used in the study. The dogs had already met the requirements of PAT before the study. Residents at the facility who claimed to be afraid of dogs were given the opportunity to decide whether they wanted to partake in the study. Only residents who gave their consent for participation were allowed to partake in the study.

The researcher and staff members employed at the facility were always present during visitation sessions to supervise and ensure the safety of everyone involved in the intervention (i.e., participants, PAT volunteers, and the dogs). Volunteers did not

allow their dogs to lick participants in their faces and, even though the dogs were always properly groomed for visits, participants were encouraged to wash their hands after touching the dogs. Volunteers were permitted to take their dogs outside the facility for short breaks during visits. The purpose of these breaks was to ensure that the dogs did not become too tired during visits, and become uncomfortable and irritable. The dogs were kept on their leashes the entire time during visits.

I took cognisance of the fact that participants could be exposed to some risks through participation in the research. Possible risks of participation and preventative strategies that were incorporated to minimise the impact of or eliminate these risks, are presented in Table 4.3.

Table 4.3

Potential Risks of Participation and Preventative Strategies

Potential Risk	Preventative Strategy
Psychological discomfort due to the completion of measures.	Measures were carefully selected to ensure that they are suitable for use with older people and that they are as non-distressing as possible.
Experimental group participants become possessive of the dogs, which generates an atmosphere of competition (AVMA, 2007).	Three dogs were present during visits and the dogs and volunteers rotated between participants during visits. PAT volunteers made sure that their dogs spend more or less equal amounts of time with individual participants.
Physical injuries and the risk of contracting a zoonotic infection (AVMA, 2007).	All dogs were registered PAT visiting dogs. PAT volunteers were required to adhere to a specified set of protocols (Appendix O) during visitation sessions, which aimed to eliminate physical or health risks and ensure the safety of participants throughout the visitation intervention. I (the researcher) was present during visitation sessions to ensure that the intervention protocols were implemented appropriately.
Allergic reactions towards dogs (AVMA, 2007).	A query-item asking if residents have any allergies to dogs was included in the Biographical and Pet History Survey, which residents completed at the beginning of the study. If a resident answered *yes* to this question, he or she was kindly denied participation. No residents indicated that they are allergic to dogs. The dogs were kept away from non-participating residents.

4.8. ETHICAL CONSIDERATIONS

Ethical clearance to conduct the study was obtained from the Research and Animal Ethics Committees (REC & AEC) of Stellenbosch University (see Appendices H & I).

The study was conducted in deliberation of the fact that research with older people can hold unique challenges and require a special consideration of ethical issues. Principles of ethical research guided all research practices and of foremost concern was participants' safety. Thus, the research was conducted whilst holding values of beneficence and non-maleficence, autonomy, justice, fidelity, and respect for participants' rights and dignity in mind (Bless et al., 2006).

The research intended to contribute to the well-being of participants. It is hoped that all participants ultimately benefited from participation in some way. It was not intended that any participants be harmed by participating in the study (Bless et al., 2006). Even though referral information to a counselling service was provided in the informed consent form distributed to participants at the beginning of the research, I am not aware of any participant who felt the need to utilise these services after participation. Thus, I suppose no participant or staff member at the facility suffered any psychological, emotional, or physical harm as a consequence of the research project (Bless et al., 2006).

Furthermore, participation was voluntary, which means that all residents at the participating facility were granted an informed and autonomous opportunity to decide whether they wanted to partake in the research. All residents who longed to partake in the study were required to provide consent for participation by completing the informed consent form (Appendix N). No participants were forced or bribed to participate and they were not remunerated in exchange for their willingness to partake. Additionally, participants were assured of their right to discontinue their participation in the study at any time, and that their withdrawal from the study will not bear any consequences to them or anyone else.

Participants were also assured that any sensitive and personal information disclosed by them or about them during the course of the study will be kept confidential and secure. The research data was safely stored in a password protected folder on my personal computer. Hardcopies of the data are kept safely at my personal residence. Thus, unauthorised access to the research data is prevented to the best of my ability. The names of the participants were—and will not be—disclosed to anyone not involved in the research or in any writings about the research findings. Participants, the Head of the residential facility, and the volunteers gave their permission for photos to be taken during the visits and for these photos to be used in this thesis. Subsequent to the completion of posttest measurements, each participant was sincerely thanked for their participation in the research. Experimental group participants also received a printed photo of themselves with one of the dogs.

4.9. VISITATION SESSION WITH CONTROL GROUP PARTICIPANTS

After the completion of the dog visitation intervention and posttest measurement, the volunteers and their dogs went back to the residential facility for a visit with control group participants. Some experimental group participants, out of habit, attended this visitation session too, but volunteers focused on giving control group participants the opportunity to interact with the dogs.

4.10. STATISTICAL ANALYSES

I scored all the measures completed in the study and entered the data into Microsoft Excel. Professor Kidd, a statistician currently employed at the Centre for Statistical Consultation at Stellenbosch University, analysed the data. *Statistica*, a statistical analysis software package, was used to perform analyses.

For each of the measures used in the present study, separate pretest and posttest reliability analyses were done. After that, mixed-model repeated measures ANOVA's were carried out for all the measures. Least Significant Difference (LSD) tests were used to conduct post hoc analyses (Field, 2009).

4.11. CHAPTER SUMMARY

In Chapter 4 the methodology, participants, measures, procedures, visitation intervention, ethical considerations, and statistical analyses of the present study were discussed. In Chapter 5 the results of the study will be reported.

CHAPTER 5

RESULTS

5.1. INTRODUCTION

This study aimed to address the following research question: What is the effect of a dog visitation intervention on the depression, loneliness, and quality of life of older people in a residential facility? The focus of the study was on the provision of a dog visitation intervention to older people residing in a residential facility and measuring (by means of a randomised pretest-posttest control group design) the influences that this intervention had on participants' depression, loneliness, and quality of life. Participants' depression, loneliness, and quality of life were measured using the Geriatric Depression Scale Short Form (GDS-SF), the third version of the UCLA Loneliness Scale (UCLA LS-3), and the World Health Organisation Quality of Life-BREF (WHOQOL-BREF). The hypotheses of the study were as follows:

Hypothesis 1

HAI in the form of a dog visitation intervention is effective for significantly lowering depression scores of older people in a residential facility for the aged.

Hypothesis 2

HAI in the form of a dog visitation intervention is effective for significantly lowering loneliness scores of older people in a residential facility for the aged.

Hypothesis 3

HAI in the form of a dog visitation intervention is effective for significantly improving quality of life scores of older people in a residential facility for the aged.

Participants (N = 35) were randomly allocated to one of two groups, an experimental group (n = 17) and a control group (n = 18). Participants in the experimental group received a 10-week dog visitation intervention between pre- and posttest measurements, whilst participants in the control group continued living their daily lives as usual. The results of this study are reported in this chapter using a p-value equal to or smaller than .05 to indicate significant results.

5.2. HYPOTHESIS 1: GERIATRIC DEPRESSION SCALE SHORT FORM

5.2.1. Introduction

Participants completed the GDS-SF at the pretest measurement phase and again at the posttest measurement phase, which took place during the week after the intervention concluded. The GDS-SF is a 15-item questionnaire, which aims to measure the occurrence of depression among older people (Greenberg, 2012).

5.2.2. Reliability of the GDS-SF

For a scale to be deemed reliable, a Cronbach's α of .7 or higher is needed. Values substantially lower than .7 will indicate an unreliable scale (Field, 2009). However, in cases where a scale measures a psychological construct, values below .7 for Cronbach's α can be expected, because of the diversity of the constructs being measured (Kline as cited in Field, 2009). In this study, the pretest reliability of the GDS-SF was somewhat lower than desired with Cronbach's α = .67. However, the posttest reliability of the GDS-SF was satisfactory with α = .75.

5.2.3. Results of the GDS-SF

To measure differences between the experimental group (dog visitation) and control group on the GDS-SF, a mixed-model repeated measures analysis of variance (ANOVA) was done. The means and standard deviations for each of the two groups and the measures over time for the GDS-SF are presented in Table 5.1. No statistically significant differences were found between the experimental group and control group at the pretest measurement phase ($p > .05$). This indicates that both groups were at similar levels on this key variable before the intervention commenced.

Table 5.1

Means (M), Standard Deviations (SD), and Confidence Intervals of the GDS-SF: Group and Time (N = 35)

Group	Time	*M*	*SD*	Confidence Interval	
Experimental (*n* = 17)	Pre	4.82	2.65	3.46	6.19
	Post	5.18	3.17	3.55	6.80
Control (*n* = 18)	Pre	5.11	2.30	3.97	6.25
	Post	4.61	2.20	3.52	5.71

Note: GDS-SF = Geriatric Depression Scale Short Form

The results of the mixed-model repeated measures ANOVA for the GDS-SF is presented in Table 5.2.

Table 5.2

Results of the Mixed-Model Repeated Measures ANOVA: GDS-SF (N = 35)

Effect	*df*	*F*	*p*
Group	1, 31	0.03	.86
Sex	1, 31	0.06	.80
Time	1, 31	0.02	.89
Group * Sex	1, 31	0.06	.80
Group * Time	1, 31	0.82	.37
Sex * Time	1, 31	0.45	.51
Group * Sex * Time	1, 31	0.14	.71

Note: GDS-SF = Geriatric Depression Scale Short Form

According to Table 5.2, no statistically significant main effects were found for group, sex, or time. Furthermore, no statistically significant interaction-effects were found between group and sex, group and time, sex and time, and group and sex and time. No post hoc comparisons were needed.

5.3. HYPOTHESIS 2: UCLA LONELINESS SCALE VERSION 3

5.3.1. Introduction

Participants completed the UCLA LS-3 at the pretest measurement phase and again at the posttest measurement phase. The UCLA LS-3 is a 20-item scale measuring subjective feelings of loneliness and social isolation (Russell, 1996).

5.3.2. Reliability of the UCLA LS-3

The UCLA LS-3 had high reliabilities at the pretest (Cronbach's α = .79) and posttest (Cronbach's α = .88) measurement phases.

5.3.3. Results of the UCLA LS-3

To measure differences between the experimental group (dog visitation) and control group for the UCLA LS-3, a mixed-model repeated measures ANOVA was done. The means and standard deviations for each of the two groups and the measures over time for the UCLA LS-3 are presented in Table 5.3. No statistically significant differences were found between the experimental group and control group at the pretest measurement phase ($p > .05$), which indicates that both groups were at similar levels on this key variable at the beginning of the study.

Table 5.3

Means (M), Standard Deviations (SD), and Confidence Intervals of the UCLA LS-3: Group and Time (N = 35)

Group	Time	*n*	*M*	*SD*	Confidence Interval	
Experimental	Pre	17	41.35	11.11	35.64	47.06
	Post	16	41.50	14.00	34.04	48.96
Control	Pre	18	43.06	7.04	39.55	46.56
	Post	18	42.17	8.49	37.94	46.39

Note: UCLA LS-3 = UCLA Loneliness Scale Version 3

The results of the mixed-model repeated measures ANOVA for the UCLA LS-3 is presented in Table 5.4.

Table 5.4

Results of the Mixed-Model Repeated Measures ANOVA: UCLA LS-3 (N = 35)

Effect	*df*	*F*	*p*
Group	1, 31	0.08	.76
Sex	1, 31	3.96	.055
Time	1, 30	0.02	.88
Group * Sex	1, 31	0.13	.73
Group * Time	1, 30	0.24	.63
Sex * Time	1, 30	1.27	.27
Group * Sex * Time	1, 30	1.10	.30

Note: UCLA LS-3 = UCLA Loneliness Scale Version 3

From Table 5.4 it is evident that there was a marginally significant main effect for sex (F [1, 31] = 3.96, p = .055). The mean UCLA LS-3 score for males were 45.26 (SD = 11.34), whereas the mean UCLA LS-3 score for females were 38.91 (SD = 7.81). This indicates that females tended to have lower UCLA LS-3 scores than males.

No other significant main effects (i.e., group, time) or interaction-effects (i.e., group and sex, group and time, sex and time, group and sex and time) were found for the UCLA LS-3. No post hoc comparisons were needed.

5.4. HYPOTHESIS 3: WHO QUALITY OF LIFE-BREF

5.4.1. Introduction

Participants completed the WHOQOL-BREF at the pretest and posttest measurement phases. The WHOQOL-BREF is a 26-item scale that generates scores for four domains associated with quality of life—physical health, psychological health, environment, and social relationships (Skevington et al., 2004).

5.4.2. Reliability of the WHOQOL-BREF

The reliabilities of the WHOQOL-BREF physical health, psychological health, environment, and social relationships subscales are presented in Table 5.5.

Table 5.5

Pretest and Posttest Reliabilities of the WHOQOL-BREF Subscales

		Chronbach's *α*	
WHOQOL-BREF Subscale	No. of items	Pretest	Posttest
Physical health	7	.32	.60
Psychological health	6	.47	.48
Environment	8	.61	.64
Social relationships	3	.12	.60

Note: WHOQOL-BREF = World Health Organisation Quality of Life BREF

It is somewhat concerning that all the WHOQOL-BREF subscales had low reliabilities at pretest and posttest measurement. The low reliabilities of the subscales may have been due to the small number of items on each of these subscales. Cortina (as cited in Field, 2009) noted that the value of *α* grows as the number of items on a scale increases.

From Table 5.5 it is evident that the reliabilities of the WHOQOL-BREF subscales increased from pretest to posttest measurement. It is not clear why there is such a great difference in the pretest and posttest reliabilities of the WHOQOL-BREF subscales. Despite the increase in the reliabilities of the WHOQOL-BREF subscales from pretest to posttest, it was decided that the reliability values for the subscales were unsatisfactory (Field, 2009). Any results obtained from statistical analyses performed for this measure would thus not have credibility. As such, further statistical analyses were not conducted for this measure.

5.5. CHAPTER SUMMARY

The pre- and posttest reliability values for the GDS-SF, the UCLA LS-3, and the WHOQOL-BREF subscales were reported in this chapter. The reliability values for the GDS-SF and UCLA LS-3 were deemed sufficient for further analyses of the data for these measures. The results for these measures were thus reported. The reliabilities for the WHOQOL-BREF subscales were not satisfactory and further results for this measure were not reported.

In Chapter 6 a discussion of the results of the study is presented. Possible clarifications of results, limitations and shortcomings of the study are discussed, and suggestions for future research are made.

CHAPTER 6

DISCUSSION

6.1. INTRODUCTION

In Chapter 5, the results of the study were reported for the GDS-SF and the UCLA LS-3. Chapter 6 consists of a summary of the study and a discussion of the findings, strengths, and limitations of the study. Recommendations for future research are offered, followed by a conclusion.

6.2. SUMMARY OF THE STUDY

Recent years have witnessed a proliferation in the use of companion animals in planned interventions and therapies (Maujean, Pepping, & Kendall, 2015). AAIs show promise in improving the health and well-being of people, both physically and psychologically (Moretti et al., 2011; Wells, 2009). Researchers have particularly recognised AAAs as a potential approach to enhance the mental well-being of older people in residential facilities. However, robust empirical evidence on the actual health-promoting effects of AAAs are sparse (Lutwack-Bloom et al., 2005) and researchers have called for more randomised controlled studies in the field (Chur-Hansen et al., 2010; Kazdin, 2010). Furthermore, very little AAI research have been conducted with South African samples.

The present study implemented a pretest-posttest control group design to explore the effect of a dog visitation intervention on the depression, loneliness, and quality of life of institutionalised older people. Common methodological weaknesses of prior AAI research were addressed and scientifically robust research evidence was generated with a randomised controlled research design.

Thirty-five consenting older people residing in a South African residential facility participated in the study. Participants were randomised into an experimental group (*n* = 17) and a control group (*n* = 18). Experimental group participants were subjected to a 10-week dog visitation intervention during which they received weekly visits of about 60 minutes each from three PAT visiting dogs and their individual owners (PAT volunteers). Control group participants, on the other hand, did not receive the intervention and continued living their daily lives as usual.

Throughout the intervention, dog visitation sessions took place consistently on the same day and time each week. Experimental group participants gathered in the residential facility's large entry lounge during visits. The other residents of the facility were kindly denied access to this venue during that time. Volunteers took dog treats and toys along to visits, where experimental group participants were allowed to observe, talk to, hold, stroke, play with, and feed treats to the dogs.

All participants were assessed before (pretest) and after (posttest) the intervention using the Geriatric Depression Scale Short Form (GDS-SF), the UCLA Loneliness Scale Version 3 (UCLA LS-3), and the World Health Organisation Quality of Life-BREF (WHOQOL-BREF). At pretest measurement participants additionally completed a biographical and pet history survey. A professional statistician from the university analysed the data using *Statistica* and the main statistical tests were mixed-model repeated measures ANOVA's and LSD tests. A *p*-value equal to or smaller than .05 was used to indicate significant results.

Analysis of the data revealed no significant differences between the experimental and control groups at pretest, neither at posttest for the GDS-SF and the UCLA LS-3. Reliability analyses of the WHOQOL-BREF subscales revealed

unsatisfactory *α*-values and the measure was therefore not analysed any further. An in-depth discussion of the study findings is provided in the sections to come.

6.3. DISCUSSION OF THE FINDINGS

Previous investigations have explored the effect of AAAs on various health-related variables in institutionalised older people. The focus of the present study was on the provision of a dog visitation intervention to older people residing in a residential facility and measuring the influences that this intervention had on participants' depression, loneliness, and quality of life. This section discusses the results of the present study for each of the three hypotheses.

6.3.1. Hypothesis 1: GDS-SF

The first hypothesis of the study concerned the effect of the dog visitation intervention on the depression scores of institutionalised older people. Participants' depression were measured before and after the intervention using the GDS-SF. The results did not reveal any significant increases or decreases in depression scores among experimental and control group participants from pretest to posttest.

Specifically, participants in the experimental group did not exhibit a decrease in depression scores after exposure to the dog visitation intervention. The hypothesis that *HAI in the form of a dog visitation intervention is effective for significantly lowering depression scores of older people in a residential facility for the aged* was thus not confirmed by this study. This finding indicates that the dog visitation intervention in the present study had no impact on the occurrence of depression among the participating institutionalised older people. This finding is consistent with findings of numerous past studies by Berry et al. (2012), Lutwack-Bloom et al.

(2005), Motomura, Yagi, and Ohyama (2004), Phelps et al. (2008), Prosser, Townsend, and Staiger (2008), and Stasi et al., (2004), which found no significant reductions in the GDS or GDS-SF scores of institutionalised older people after exposure to an animal visitation intervention in their institution.

It must be considered how participants' baseline depression scores might have influenced the result of the present study. Even though the intent was to recruit participants who were depressed (Phelps et al., 2008), the majority of participants in this study had low pretest GDS-SF scores, which were not indicative of severe or even moderate depression at the start of the study. The overall pretest mean for the GDS-SF was 4.97 (*SD* = 2.73), while the highest pretest score obtained for the GDS-SF was 10. It is therefore possible that, because most participants were not depressed at the start of the study, a significant decrease in participants' GDS-SF scores could not be observed as there were little room for improvement on this variable for most participants. Different results may have been found if more participants had higher depression scores at the start of the study (Phelps et al., 2008).

On the other hand, this finding from the present study contradicts those of some studies that demonstrated the beneficial value of companion animal visits in residential facilities for alleviating depression among institutionalised older people (e.g., Francis, Turner, & Johnson, 1985; Le Roux & Kemp, 2009; Moretti et al., 2011). It is important to consider why the results of the present study failed to reaffirm this beneficial effect of animal visitation interventions, while Le Roux and Kemp (2009) and Moretti et al. (2011) succeeded to demonstrate the depression-reducing efficacy of a dog visitation intervention for institutionalised older people.

Phelps et al. (2008) propose that methodological limitations in previous studies may account, at least in part, for differences in study results. For this reason, it may be that the present study's results differ from those of Moretti et al. (2011), because of certain methodological limitations that were evident in each of these studies. While the results of Moretti et al.'s study showed significantly lower GDS-SF scores from pretest to posttest for the dog visitation group (n = 10; p = 0.013), their study was limited in that participants were not randomly allocated to the experimental and control groups. The present study also had its limitations, which are discussed in Section 6.5.

Moreover, the results of the present study differ from those of Le Roux and Kemp (2009), potentially because these studies used different instruments to measure participants' depression. While the present study used the GDS-SF to measure participants' depression pre- and post-intervention, Le Roux and Kemp (2009) used the Beck Depression Inventory (BDI). The BDI has six more items than the GDS-SF and offers four, rather than two, response options to choose from in relation to each of its items. As such, the range of potential scores for the BDI is much larger than for the GDS-SF—0 to 63 and 0 to 15 respectively. This might signify that the BDI has a higher probability than the GDS-SF of detecting significant differences within and between participants' depression scores from pretest to posttest.

6.3.2. Hypothesis 2: UCLA LS-3

The second hypothesis of the study concerned the effect of the dog visitation intervention on loneliness scores among institutionalised older people. Loneliness was measured among all participants pre- and post-intervention using the UCLA LS-

3. The results did not reveal any significant differences in the loneliness scores of experimental and control group participants from pretest to posttest.

Specifically, participants in the experimental group did not exhibit a decrease in loneliness scores after exposure to the dog visitation intervention. The hypothesis that *HAI in the form of a dog visitation intervention is effective for significantly lowering loneliness scores of older people in a residential facility for the aged* was thus not confirmed by this study. This finding indicates that the dog visitation intervention in the present study had no impact on the loneliness scores of institutionalised older people.

The results of the present study contradict those of earlier studies that suggest loneliness symptoms can be reduced among institutionalised older people through companion animal visits in the residential facility of these people. Four studies by Banks and Banks (2002, 2005), Banks et al. (2008), and Vrbanac et al. (2013) that all used versions of the UCLA measure of loneliness, demonstrated that animal visitation interventions in residential facilities can reduce loneliness among residents. The studies by Banks and Banks (2002) and Banks et al. (2008) were both randomised controlled studies.

It is important to consider why the results of the present study failed to reaffirm the loneliness-reducing beneficial effect of animal visitation interventions. For example, while Banks and Banks (2002, 2005) and Banks et al. (2008) demonstrated the loneliness-reducing efficacy of a dog visitation intervention for institutionalised older people, why did the present study fail to generate similar evidence?

Majić, Gutzmann, Heinz, Lang, and Rapp (2013) point out that it is unlikely that a specific AAA works equally well for all people. Therefore, it is conceivable that

certain aspects pertaining to the sample characteristics and/or the manner in which the intervention was applied influenced the impact or effect of the dog visitation intervention in the present study on participants' loneliness levels.

Banks and Banks (2002) and Banks et al. (2008) were successful in demonstrating the loneliness-reducing effect of a dog visitation intervention on institutionalised older people. The present study differed from these studies in that cognitively impaired and/or mentally disabled individuals were not explicitly excluded from participation. An informal verbal request was made to staff members at the facility that they not encourage or refer residents who notably present with symptoms of cognitive impairment or mental disability to partake in the study. Information was also not formally gathered regarding participants' mental state and level of cognitive functioning. As such, it is not certain whether there were any participants with mild or severe cognitive impairments or mental disorders involved in the study.

If there were participants with severe cognitive impairments or mental disabilities involved in the present study, it may be that these participants' responses to the UCLA LS-3 were confounded as a result of their cognitive limitations or mental abilities. It has been noted that people with severe cognitive impairments are sometimes unable to express distress adequately (Majić et al., 2013). A potential cognitive bias in participants' UCLA LS-3 responses may explain why the present study failed to generate findings similar to those of the studies by Banks and Banks (2002) and Banks et al. (2008).

Nevertheless, a potential cognitive bias in participants' responses on the UCLA LS-3 is not the only possible explanation as to why the results of the present study contradict those of Banks and Banks (2002) and Banks et al. (2008). The results of

the present study may be a consequence of the format or mode of delivery of the dog visitation intervention.

In terms of the format or mode of delivery, dog visitation interventions can be administered individually or in a group environment (Stern & Chur-Hansen, 2013). In Banks and Banks (2002) and Banks et al.'s (2008) studies, the dog visitation sessions were administered individually to older people in a residential facility while they were alone in their rooms. In contrast, the dog visitation sessions in the present study were delivered to all experimental group participants simultaneously while they were gathered in the entry lounge at the facility.

Considering this, it can be postulated that the discrepancy between the present study's findings and the findings of Banks and Banks' (2002) and Banks et al. (2008) are due to the variation in the format of delivery of the dog visitation interventions in these studies. It is possible that the present study would have obtained different results if the dog visitation sessions were administered individually. Dog visitation sessions with individual participants may have provided them with more time and privacy for rich and in-depth interactions with the visiting dogs. Indeed, Banks and Banks (2005) found that animal visitation sessions in a residential facility significantly decreased loneliness scores among participants who received the animal visits while they were alone in their rooms; In contrast, loneliness scores did not significantly decrease among participants who received the same intervention in groups of two to four residents. It is thus possible that the group format of the dog visitation sessions in the present study distracted participants' attention away from the dogs during visits. Phelps et al. (2008) have suggested that interaction with the visiting dogs

during group format interventions may have to compete with social interaction between residents and with volunteers.

6.3.3. Hypothesis 3: WHOQOL-BREF

The third hypothesis of the study concerned the effect of the dog visitation intervention on the quality of life scores of institutionalised older people. Quality of life was measured among all participants pre- and post-intervention using the WHOQOL-BREF. Reliability analyses of the WHOQOL-BREF subscales revealed unsatisfactory *α*-values. This measure was therefore not analysed any further.

Because the WHOQOL-BREF subscales did not reveal satisfactory reliability values in the present study, conclusions cannot be drawn in relation to the third hypothesis of the study which stated: *HAI in the form of a dog visitation intervention is effective for significantly improving quality of life scores of older people in a residential facility for the aged.* The effect of the dog visitation intervention on the quality of life scores of institutionalised older people was thus not determined in this study.

Prior evidence suggests the appropriateness, in terms of internal consistency, of the WHOQOL-BREF for measuring quality of life among institutionalised older people (e.g., Lai et al., 2005). The present study found this not to be the case. However, the present study's sample size was rather small (N = 35) in comparison with the sample size of Lai et al.'s (2005) study (N = 428). Nevertheless, the small sample size of the present study may not be to blame for the low reliabilities that were found for the WHOQOL-BREF subscales, considering the fact that the *α*-values for some of the subscales increased quite notably from pretest to posttest.

An alternative explanation may be that participants' responses to the WHOQOL-BREF were biased. According to Phelps et al. (2008) there are various factors that can influence participants' responses to measurement items, including social desirability, confusion, or misunderstanding. Some of the response options on the WHOQOL-BREF imply great dissatisfaction with certain aspects of one's life. It is possible that some participants may not have wanted to portray themselves as dissatisfied with certain aspects of their lives, potentially because of moral, social, or religious reasons.

Additionally, some participants may have found the WHOQOL-BREF challenging to complete, because:

- *They were too tired*: Some of the participants may have found it challenging to maintain focus during the completion of the WHOQOL-BREF, because they were too tired. Sometimes, participants were measured in the afternoons, which is usually a slower time of day for older people when they want to rest.
- *The wording of the items, response options, and/or instructions were too complex*: It is possible that some of the participants did not understand the items, response options, and/or instructions of the WHOQOL-BREF and they may have felt too embarrassed to ask the interviewers for clarification. Moreover, the level of schooling and/or cognitive functioning of some of the participants may have been poor.
- *The items and/or response options were too many*: Some of the participants may have lost focus at some point during the completion of the scale. They may have also become impatient or tired and consequently responded to items hastily and/or without thorough consideration.

6.4. OUTCOME AND STRENGTHS OF THE STUDY

The results of this study do not give credence to reports about the depression- and/or loneliness-reducing effects of AAIs in residential facilities for the aged. Even though the study had its weaknesses, the results of the study are relatively robust, considering the following methodological strengths of the study:

- A pretest-posttest experimental design was implemented where randomisation was used to create two equivalent groups.
- A control group was included to allow the comparison of individuals who received the intervention with individuals who did not receive the intervention. Control group participants did not receive the intervention and continued living their daily lives as usual. The control group was similar to the experimental group in terms of size and gender distribution at pretest and posttest. The control group was similar to the experimental group in terms of mean depression and mean loneliness at pretest.
- Standardised measurement instruments were used that have good reliability and validity data that stem from prior research with institutionalised older people.
- The interviewers (except for me) were blind during pretest and posttest measurement as to the groups that participants were allocated to.
- Specified procedures and protocols were followed during the intervention and these procedures and protocols were described.
- The dogs that were used were all registered as visiting dogs with an organisation that specialises in the provision of animal visitation (i.e., PAT).
- Large and small dogs were used and the characteristics of the dogs were described.

- The level of interaction between volunteers and participants were described.
- Details were provided regarding the types of interaction that the participants had with the dogs.
- The data were analysed by an external-to-the-study professional statistician from the university.
- Pretest and posttest measurement were interviewer-administered and took place more than 10 weeks apart. This means that the participants' posttest data were unlikely to have been influenced by the effects of sensitisation to the material.
- Finally, the measures were interviewer-administered, which ensured greater control over the assessment situation (e.g., it ensured a high item response rate and that responses were recorded correctly; Bowling, 2005).

6.5. LIMITATIONS OF THE STUDY

There are some limitations to the present study that should be noted as they may have had an influence on the results of the study. These limitations are stated and briefly discussed in this section.

6.5.1. Limited biographical information

A limitation of the present study is that only basic biographical information was gathered regarding participants (this data were reported in Table 4.1). Data was not gathered regarding participants' educational history, level of cognitive functioning, serious past or present medical and psychiatric diseases, current medicines and treatments received, and length of institutionalisation. Such data may have proved valuable in interpreting the results of the study and it may have ensured a more accurate and complete description of the sample characteristics.

6.5.2. Limited sample size

The size of the present study's sample (*N* = 35) and experimental group (*n* = 17) was similar to or larger than those of some previous experimental studies that have demonstrated the beneficial effects of animal visitation interventions for institutionalised older people (e.g., Banks & Banks, 2002; Le Roux & Kemp, 2009). Nonetheless, it is conceivable that the present study was limited by its small sample size (*N* = 35), because the sample may have been somewhat heterogeneous. Kazdin (2010) emphasises that "a very diverse sample usually will require a much larger sample size to ensure that there is sufficient statistical power to detect an intervention effect" (p. 533). As such, significant effects may have emerged in the present study if more participants were involved. A larger sample may have increased statistical power and better accommodate the wide variety of backgrounds and combinations of problems that institutionalised older people might have (Kawamura et al., 2007; Le Roux & Kemp, 2009).

6.5.3. The majority of participants were not depressed at pretest

Some of the participants in the present study started the study with relatively low GDS-SF scores, which were not indicative of depression at the time of pretest measurement. Consequently, there was not much room for improvement in the GDS-SF scores of the participants. Different results may have been found if participants with low pretest GDS-SF scores were excluded from participation (Phelps et al., 2008).

6.5.4. It is not clear whether participants' responses to measurement items were accurate depictions of their experiences

All three measures used in this study are standardised measures with good reliability and validity data that stem from prior research with institutionalised older people. Nevertheless, while standardised measures "aim to include well-designed and tested questions that have the same meaning to all participants" (Bowling, 2005, p. 285), there are cultural, social, and language differences among people that can all influence interpretations (Bowling, 2005). Therefore, it is not clear whether responses of the participants in the present study were an accurate reflection of their actual experience of depression, loneliness, and quality of life. There are various factors that can bias participants' responses to measurement items (Phelps et al., 2008). For the present study, these included:

- *Interviewer-administration of measures:* When measures are interviewer-administered rather than self-administered, participants' responses to items may become biased due to social desirability factors (i.e., social desirability bias)[4] and/or due to the presence of the interviewer (i.e., interviewer bias)[5]. It is possible that social desirability bias and/or interviewer bias occurred in the present study. It is not known whether similar results would have been obtained if the measures were self-administered.

[4] Social desirability bias is a type of measurement error that occurs when a participant answers a measurement item in a way that he or she deems is more socially acceptable or desirable than his or her true attitude, feelings, or behaviour (Kaminska & Foulsham, 2013). Higher levels of socially desirable responses are usually present when measures are administered in face-to-face mode rather than in self-completion mode (Kaminska & Foulsham, 2013).

[5] Interviewer bias is related to social desirability bias. It may occur during interviewer-administered modes of data collection when participants are distracted by the presence of the interviewer during the completion of measures. Interviewer bias can occur as a result of the characteristics of the interviewer, participants' increased reluctance to disclose sensitive information face-to-face, or because of participants' reluctance to reveal beliefs unlikely to be endorsed by the interviewer (Bowling, 2005).

- *Cognitive impairment, mental disability, and/or poor educational history:* Data were not gathered regarding participants' level of cognitive functioning, mental state, and educational history. Therefore, it is unclear whether factors such as cognitive impairment, mental disability, and/or a poor educational background influenced some participants' data as a result of confusion and/or a misunderstanding of measurement instructions, items, and/or response options. All of the measures that were used in the study were however chosen carefully to ensure that they have indeed been successfully applied with institutionalised older people in prior research.

6.5.5. The WHOQOL-BREF may not have been appropriate for the particular sample of participants

It is important that the measurement instruments used in a study suit the abilities or characteristics of the study's target population (Le Roux, 2013). In the present study, the WHOQOL-BREF was perhaps not suitable for the study's target population (i.e., institutionalised older people who may or may not be cognitively impaired and who may or may not be literate or educated). The reliabilities of the WHOQOL-BREF subscales were very low and the measure could therefore not be used in further statistical analyses.

6.5.6. Fluctuating attendance of dog visitation sessions

Realistically, it was not expected from the onset of the intervention that all the experimental group participants would attend each one of the 10 dog visitation sessions throughout the intervention. While the majority of participants attended all 10 sessions, some of the participants were occasionally absent from the sessions due to various reasons (e.g., they did not feel well, they had a doctor's appointment,

they were out with friends or family or to run errands, or they simply preferred to spend the morning in solitude). It may be that the impact of the intervention on the depression and/or loneliness levels of these participants were diminished or compromised as a result of their occasional absence from the sessions.

6.5.7. Qualitative data was neither gathered nor reported

No qualitative data from participants or staff members at the relevant facility was gathered or reported during the present study. Some residents and staff members at the facility gave spontaneous qualitative feedback regarding their experiences of the dog visitation intervention. However, this feedback was not documented because the research had a quantitative focus. Qualitative input from residents and staff at the facility could have proved valuable, to some degree at least, for clarifying the quantitative results of the study.

6.5.8. Contamination across the study groups may have occurred

Contamination occurs when participants in the experimental group converse about their animal visitors with participants in the control group, or when participants in the control group inadvertently see the animal visitors, even if it is just for a brief period. In the present study, participants in the control group sometimes saw the dogs very briefly and from a distance as the dogs and volunteers entered or exited the facility. Participants in the control group were however denied access to the visitation venue during the visitation sessions. It is not known whether contamination occurred through conversations about the dogs between experimental and control group participants. Contamination has the potential to confound the purity of a study's results in some way (Johnson et al., 2002; Lutwack-Bloom et al., 2005).

6.5.9. Blinding was not rigorously implemented

The results of the present study may have been influenced as a consequence of blinding not being wholly implemented. It was not possible to conceal information regarding group allocation from participants, as participants would clearly become aware of which group they were allocated to as soon as the intervention commenced.

Randomisation took place after pretest measurement. Therefore, during pretest measurement, all the interviewers, including myself, were blind as to which group participants would be in. It was not possible for me to remain blind to group allocation after randomisation, because I managed the intervention and was present during visitation sessions. During posttest measurement, I withheld information regarding group allocation from the interviewers who administered the outcome measures.

6.6. RECOMMENDATIONS FOR FUTURE RESEARCH

In the preceding section the limitations of the present study that may have influenced the results of the study were discussed. This section will provide key recommendations for further research in relation to the beneficial effects of AAIs in general, and AAAs in residential facilities for the aged.

- *Sample:* Future studies should include bigger and more homogenous samples that represent specified characteristics of the (heterogeneous) older population. A larger sample may increase statistical power and better accommodate the wide variety of backgrounds and combinations of problems that institutionalised older people might have (Kawamura et al., 2007; Le Roux & Kemp, 2009).

Researchers may wish to limit the diversity and increase the homogeneity of their sample by applying stricter exclusion criteria in future studies. Researchers should also conduct a power analysis to determine the number of participants needed in the sample to achieve statistical significance for an intervention effect.

- *Biographical information:* Sufficient biographical information regarding participants' educational history, level of cognitive functioning, past or present medical or psychiatric diseases, current medications or treatments received, and length of institutionalisation should be collected. Such data may ensure a better description of the sample characteristics.

- *Distressed participants:* If possible, future pretest-posttest intervention studies in the AAI field should stipulate a cut-off point on the measures of the study for participation in the study. Individuals with a baseline score on a given measure that is not indicative of distress, should be excluded from participation in the study. If individuals are not distressed at the beginning of the study, it is not possible for them to show improvement on the measured variable from pretest to posttest. For example, if the GDS-SF is used to measure depression in a study, individuals with baseline scores of less than five on the GDS-SF should be excluded from participation, as these individuals achieved a normal score on the measure and are not depressed.

- *Measurement instruments and mode of data collection:* Decisions regarding the outcome measures and mode of data collection that will be used in a study need to be made with consideration of the characteristics and abilities of the sample population. In the case of high levels of cognitive impairment among participants, using data collection methods and measures that do not rely on

self-report need to be considered. Objective data may be gathered from proxy informants, such as family or nursing staff (Nordgren & Engström, 2014). Subjective data from participants as well as objective data from proxy informants can be gathered. Kazdin (2010) stressed the importance of using multiple outcome measures with varied assessment methods (e.g., self-report, caregiver report, direct observation) in AAI efficacy studies.

- *Qualitative data:* In addition to the collection of quantitative data, future studies could collect more high-quality qualitative data regarding people's experiences in AAI and/or in their relationships with companion animals. According to Le Roux (2013), qualitative research can make a great contribution to the HAI research field. In-depth interviews, focus groups, and ethnographic studies can reveal subjective opinions on the value of AAIs. Findings from such studies can contribute to the improvement of AAIs (Le Roux, 2013). Qualitative research can also contribute to a better understanding of the human-animal bond from the view of different people. Important themes that have not previously been explored may be identified through qualitative research as it has the advantage of being open-ended (Chur-Hansen et al., 2010). The findings from qualitative studies can highlight further avenues of experimental enquiry (Chur-Hansen et al., 2010).

- *Pilot study:* Johnson et al. (2002) advise that researchers test the practicalities of AAIs with a pilot study before a complete research programme is initiated. They point out that "a researcher could learn much from the pilot to prepare for the full research project. In this way, certain pitfalls could be avoided or adaptations

could be made to the protocol to overcome potential obstacles" (Johnson et al., 2002, p. 433).

- *Staff members at the research site:* Orientating staff members at the facility or premises where the research will be done is important in any AAI study. Where experimental and control group participants are present in the visited institution at the same time, staff members at the institution should be thoroughly orientated for the study (Johnson et al., 2002). They should be informed about the importance of limiting contamination and they should be asked to divert control group participants away from the entry path of visiting animals before and after visitation sessions.

- *Optimal application:* Future research need to explore the optimal application of AAIs with various populations and in relation to different target outcomes. Majić et al. (2013) assert that "additional research is needed to tailor different types of AAT interventions to reach the individual needs of various types of patients" (p. 1058). Review studies need to be conducted that not only focus on establishing the efficacy of AAIs in relation to certain populations or outcomes, but also focus on reporting what methods work best in AAIs and with whom. The use of different animals in AAI can be explored with a focus on what types and sizes of animals are most suitable for use with certain populations or in certain settings (Fick, 1993; Johnson et al., 2002).

  Moreover, future AAI studies need to consider whether group format or individual format AAIs work best with certain populations, target outcomes, or settings. The optimal size of groups in group format AAIs also need to be determined and it should be considered how many animals are needed in group format AAIs. It

should also be explored how the length and intensity of the intervention in individual and group format AAIs may influence outcomes. The influence of the different types of interactions that take place between participants and animals in AAIs on the outcomes also need to be explored. For example, researchers could investigate whether a focus on more physical activities with visiting animals (i.e., walking with them, bathing them, brushing them, throwing balls, etc.) may enhance the effects of AAIs.

- *Long-term effects:* Follow-up assessments need to be conducted in AAI studies where significant intervention effects emerge, to determine the duration of these effects following treatment withdrawal (Lutwack-Bloom et al., 2005). In other words, future studies will need to assess whether the beneficial effects reported for AAIs are long lasting or whether they are confined to continued exposure to the animals (Berry et al., 2012). Lutwack-Bloom et al. (2005) suggest testing participants at six months and one year after treatment withdrawal in order to assess any long-term gains. The long-term effects of contact with companion animals for institutionalised older people are also a topic that requires further enquiry (Baun & Johnson, 2010).

- *Animals versus volunteers:* Moretti et al. (2011) noted that the effects of AAI might depend on interaction with the animals as well as with the volunteers that accompany them. As such, it is not possible to distinguish between the differential impact of the animal and the volunteer on participants (Moretti et al., 2011). Even if prior studies have endeavoured to investigate the differential effects of the animals and volunteers on participants in AAIs, further

investigations, which apply rigorous experimental methods, are needed in this area.

- *Good quality empirical research:* Multiple areas in the AAI field require further exploration. It is of the utmost importance that future research is planned carefully and that it takes into consideration the limitations, challenges, and recommendations that were highlighted in prior AAI studies. There is a need for more randomised controlled studies in the field that are implemented rigorously and reported thoroughly in peer-reviewed journals. Such studies may contribute to the empirical evidence base of AAIs and consequently allow for the use of AAIs to gain more widespread acceptance (Frishman et al., 2005; Johnson et al., 2002).

6.7. CONCLUSION

AAIs have been successfully applied with a variety of people with diverse needs. The beneficial effects of animal visitation interventions in residential facilities have been demonstrated for older people as well. However, robust empirical evidence on the actual health-promoting effects of animal visitation interventions is sparse, as prior studies in the area have been plagued with various methodological weaknesses.

The present study aimed to generate empirical evidence on the effect of a dog visitation intervention on the occurrence of depression, loneliness, and the quality of life of institutionalised older people. The participants of the study included older people (N = 35) residing in a South African residential facility situated in Stellenbosch in the Western Cape.

After the dog visitation intervention, neither control nor experimental group participants demonstrated a significant increase or decrease in depression and loneliness scores. The effect of the intervention on participants' quality of life could not be determined, as the WHOQOL-BREF subscales demonstrated unsatisfactory reliability values. The results of this study suggest that a dog visitation intervention in a residential facility does not have a beneficial effect on the depression and/or loneliness levels of institutionalised older people.

There were some limitations to the study that may have influenced the results. These included:

- limited biographical information regarding participants' level of cognitive functioning, mental state, and educational background;
- a limited sample size;
- the majority of participants were not depressed at the beginning of the study;
- participants' responses may have been biased;
- the quality of life measure did not yield reliable data;
- not all experimental group participants attended all the visiting sessions;
- qualitative data was not gathered;
- contamination may have occurred; and
- blinding was not wholly implemented.

While these limitations may have compromised the results of the study to some extent, it is yet possible that the results of the study are scientifically robust. This is because the study had certain methodological strengths, which included:

- the randomised controlled design that was implemented;

- the depression and loneliness measures that were used yielded reliable data;
- the interviewers (except for me) were blind during pretest and posttest measurement as to the groups that participants belonged to;
- specified procedures and protocols were followed and were reported;
- four different dogs were used in the intervention;
- the data was analysed by an external-to-the-study professional statistician from the university; and
- pretest and posttest measurement took place more than 10 weeks apart.

It is possible that the methodological strengths of the present study outweigh its limitations, which implies that the results of the study are empirically robust. If this is the case, the findings from the present study raise questions about whether dog visits are beneficial to older people living in residential facilities (Phelps et al., 2008). It is thus evident that more high-quality empirical research is needed that endeavour to determine the actual effects of an animal visitation intervention in a residential facility on certain health-related variables in older people.

Researchers should design and conduct rigorous experiments by considering the limitations and challenges that others have discovered in conducting research on the topic of AAI (Johnson et al., 2002). It is important that future studies in the area include only distressed individuals in the research, as it is only among these individuals that improvements in the studied variables can be observed. Moreover, researchers should aim to limit or eliminate the influence of confounding variables in future AAI efficacy research. Sufficient sample sizes also need to be implemented, qualitative data needs to be gathered, and the optimal application of AAIs with various populations and in relation to different target outcomes needs to be explored

in future research. Empirical evidence on the efficacy of AAIs can allow for the use of AAIs to gain more acceptance as an effective treatment modality (Frishman et al., 2005; Johnson et al., 2002).

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APPENDIX A

FREQUENTLY ASKED QUESTIONS ABOUT PETS AS THERAPY

(Retrieved from www.pat.org.za)

What is Pets as Therapy?

Pets as Therapy (PAT) was launched in South Africa in 2001. We are a registered Not for Profit Organisation (NPO), as well as a registered Public Benefit Organisation (PBO).

PAT organises therapeutic visits by pet owners who volunteer to take their pets (mainly dogs) to visit people in hospitals, hospices, retirement homes, frail care facilities, special needs schools residential centres, and a variety of other venues. PAT visits bring company, support, comfort, pleasure, stress relief and stimulation to those living either permanently or temporarily in these and other establishments.

There is a fortune of scientific evidence showing that the interaction between people and pets is therapeutic – physically, emotionally, psychologically and socially.

Why take animals to facilities?

Visiting with animals can help people feel less lonely, and less depressed. Visits from pets can provide a welcome change from routine, or the renewal of old friendships. People become more active and responsive both during and after visiting with animals.

An animal visit can offer entertainment or a welcome distraction from pain and infirmity. People often talk to the visiting pets, and share with them their thoughts and feelings and memories. Animal visits provide something to look forward to.

Stroking a dog or cat can reduce a person's blood pressure, and petting encourages use of hands and arms, stretching and turning.

The visiting pet makes it easier for two strangers to talk. It gives people a common interest and provides a focus for conversation. Many people in hospitals or group homes have had to give up pet ownership and they miss the unconditional acceptance that a pet gives them. A dog pays little attention to age or physical ability, but accepts people just as they are. And the benefits continue long afterwards, leaving behind memories not only of the visit, but of past experiences. It offers something for people to share.

People talk about animal assisted activities (AAAs) and animal assisted therapy (AAT). What is the difference?

PAT is involved in animal assisted activities which is the less formal of the two. Neither the human volunteer nor the visiting pet need specialised training. The interaction between animal and human is social and unstructured, but has therapeutic benefits - hence our name, “Pets as Therapy.”

Animal assisted therapy is more formal. It usually involves one particular animal and handler assigned to a particular set of clients. There tend to be particular goals on which the team need to focus.

How does PAT operate?

Most owners really love their pets and get so much pleasure from this relationship. Some feel that they want to share the joy and love of their animal companions with others. PAT’s role is to help facilitate this process. Sometimes, it’s really hard to phone an institution and say that you want to visit. There are also a whole range of issues that need to be considered such as:

- The suitability of the pet – its own temperament as well as the correct match between the pet and the clients. A docile elderly pooch will get overwhelmed in a children's home, and yet would be of great comfort in a frail care unit;
- The health of the pet – it wouldn't be appreciated if visiting pets caused a resident to get worms or started a flea epidemic! Nor would we want to stress any pet;
- The nature of the institution.

So PAT assesses you and your animal companion as a team. We match you with an institution where all will benefit. We support you to ensure that you feel confident on visits, and provide ongoing support to you.

Where do we currently visit?

More than 45 institutions in and around Cape Town are regularly visited including the Red Cross Children's Hospital Rondebosch, Huis Lückhoff Retirement Village Rosebank, St Dominic's School for the Deaf Tokai, Helen Keller Home for the Blind Pinelands, Alexandra Hospital and Includid Maitland, Huis Horizon Stellenbosch, Athlone School for the Blind, and House Hensie Vroom in Stickland, to name just a few.

We frequently review our list of facilities and will contact many more in the near future.

How much time is required?

Any PAT interaction is better than none! As the impact of PAT depends on frequency of contact, weekly visits would be ideal. Many of us lead busy lives and can only manage fortnightly or monthly visits. Some people walk through the

institutions spending a few minutes with many people for about an hour. We don't want to exhaust or stress the pets, so an hour is usually enough time for a visit. Others spend much more time with a few people and the pets develop really close relationships with their "clients."

What is the process of joining?

Once volunteers have made contact, we assess the pet. Basically any animal that is not aggressive, not too excitable, friendly, and under the control of the owners will be accepted. We need proof that vaccinations are up to date, that there is a parasite (fleas and ticks) control programme in place, and that the animal is healthy. The next step is two or three mentorship visits with experienced visitors to get the "feel" of what it takes. Then we discuss the institutional vacancies and match up the volunteer team.

We arrange to introduce the new team to the institution, accompany them for a visit or two to gain confidence. The team is then left to visit according to the arrangement set up between the team and the institution. We provide ongoing support through regular meetings and there is a membership fee of R120 per year. This is used to contribute towards annual public liability insurance fees.

What about people without pets or who have unsuitable pets?

Running an organization takes a lot of time and effort, so we do need volunteers whom we call Friends of Pets as Therapy. They help with arranging events, recruiting, marketing, fund raising etc. So, Friends are welcome and necessary members of PAT.

Friends have all the rights to PAT benefits which volunteers have, and can be elected to the executive.

What is regarded as an "unsuitable pet?"

Due to the nature of the activities and the potential stress on the pets, we do not assess dogs less than 18 months old. There is no upper age limit, but if an animal is showing signs of frailty, and the assessors feel that PAT activities will be detrimental to his or her health, the pet will be deemed as being unsuitable. We cannot deem dogs that have been "guard-dog" trained as suitable; our public liability cover specifically excludes such animals.

Animals that are not current with their vaccinations, de-worming schedules and external parasite control are also regarded as unsuitable.

Are there other activities associated with Pets as Therapy?

Recruitment drives, gaining exposure and raising funds are all critical to the ongoing success of PAT. We attend pet fairs, public events held by the SPCA, and have an annual book sale which raises the majority of our funds. We have informal links with animal welfare organisations, dog clubs, and organisations involved in human–animal interactions. There are great opportunities to develop closer relationships with these organisations. Like all Not for Profit Organisations, we are very short of funding and so donations are always gratefully accepted and acknowledged.

What about ongoing support for members?

We hold several meetings a year to discuss organisational issues and talks about our experiences. More social get-togethers to support members are planned for the future, such as picnics along with our pets, and social suppers.

What about other pets?

Evidence shows all pets have therapeutic impacts. PAT currently has two very elegant Siamese cats who love their therapeutic roles as visitors. However, they can occasionally cause allergic problems, so some institutions do not favour them.

Australians and certain American branches are quite big on white rats. We have had no experience with these, but are willing to give it a try as well as parrots, canaries, cockatiels, rabbits, miniature goats, miniature Shetland ponies, or pot-bellied pigs!

What else does PAT have to do?

We need to get the basics right – get our brand known, promote the concept to institutions and then recruit many more volunteers to visit. There are so many opportunities in Cape Town and the surrounding areas. There are also many relationships to build between organisations with overlapping interests. Once we have Cape Town working well, we would like to open branches in other cities and towns around South Africa. Stellenbosch and Polokwane are already up and running!

APPENDIX B

PERMISSION LETTER FROM PETS AS THERAPY TO USE VOLUNTEERS

10 June 2014
Chanellé J. Buckle
Stellenbosch University
Student number: 16211847

Dear Chanellé

PERMISSION TO DO RESEARCH: MA Research Psychology (Thesis)
On behalf of the Pets as Therapy (PAT) it is our pleasure to grant you permission to conduct your research *"Effects of an Animal Visitation Programme on Depression, Loneliness and Quality of Life in Elderly Nursing Home Residents: A Randomised Controlled Study"*, in cooperation with Pets as Therapy.

Please remember that our members are volunteers and that they are giving their time for this project on a voluntary basis. They do have to work according to PAT rules and the rules of any of the facilities that they visit. We do need a copy of your final research proposal, consent forms and ethical clearance for our records purposes.

On behalf of PAT, we wish this initiative much success and look forward to regular progress reports as well as a copy of your final thesis.

Yours sincerely
Bronwynn Douglas
Vice-Chair

APPENDIX C

BIOGRAPHICAL AND PET HISTORY SURVEY IN ENGLISH AND AFRIKAANS

BIOGRAPHICAL AND PET HISTORY SURVEY

All information disclosed in this survey will remain strictly confidential to the research team.

BIOGRAPHICAL INFORMATION	
Name and Surname	
Date of birth	DD / MM / YYYY
Age	
Sex	☐ Male ☐ Female
Marital Status	☐ Single ☐ Partnered ☐ Married ☐ Separated ☐ Divorced ☐ Widowed
Preferred Language	☐ English ☐ Afrikaans
Adequate Hearing	☐ Yes ☐ No
Adequate Vision	☐ Yes ☐ No
Ability to Talk	☐ Yes ☐ No
Do you have any other physical disabilities?	
PET HISTORY INFORMATION	
1. Do you like animals?	☐ Yes ☐ No
2. Do you like dogs?	☐ Yes ☐ No
3. Are you afraid of dogs?	☐ Yes ☐ No

4. Are you allergic to dogs?	☐ Yes ☐ No
5. Have you ever had a pet?	☐ Yes ☐ No

6. Please answer the following questions about your history with pets.

6.1. What kinds of pets have you had? (Please tick all that apply)

☐ Cats

☐ Dogs

☐ Fish

☐ Birds

☐ Other (please specify: _____)

☐ Can't remember

6.2. Did you have a pet whilst staying at your last residence before moving to an/this institution?

☐ Yes ☐ No ☐ Can't remember

6.3. In general, how attached were you to your pet(s)?

☐ Not very ☐ Somewhat ☐ Very ☐ Don't know / Can't remember

6.4. In general, did you feel that you had a close relationship with your pet(s)?

☐ Yes ☐ No ☐ Don't know / Can't remember

7. Do you believe you would enjoy receiving visits from dogs while staying at this institution?

☐ Yes ☐ No ☐ Don't know

BIOGRAPHICAL AND PET HISTORY SURVEY (AFRIKAANS)

BIOGRAFIESE EN TROETELDIER GESKIEDENIS VRAELYS

Alle inligting in hierdie vraelys geopenbaar sal streng aan die navorsingspan vertroulik bly.

BIOGRAFIESE INLIGTING			
Naam en Van			
Geboortedatum	DD / MM / JJJJ		
Ouderdom			
Geslag	☐ Manlik	☐ Vroulik	
Huwelikstatus	☐ Enkellopend ☐ Vervreemd	☐ In ’n verhouding ☐ Geskei	☐ Getroud ☐ Weduwee/wewenaar
Voorkeurstaal	☐ Engels	☐ Afrikaans	
Voldoende Gehoor	☐ Ja	☐ Nee	
Voldoende Visie	☐ Ja	☐ Nee	
Vermoë om te Praat	☐ Ja	☐ Nee	
Het jy enige ander fisiese gestremdhede?			

TROETELDIER GESKIEDENIS INLIGTING		
1. Hou jy van diere?	☐ Ja	☐ Nee
2. Hou jy van honde?	☐ Ja	☐ Nee
3. Is jy bang vir honde?	☐ Ja	☐ Nee
4. Is jy allergies vir honde?	☐ Ja	☐ Nee

5. Het jy al ooit ’n troeteldier gehad?	☐ Ja ☐ Nee

6. Beantwoord asseblief die volgende vrae oor jou geskiedenis met troeteldiere.

6.1. Watter tipes troeteldier(e) het jy al gehad? (Merk asseblief alles van toepassing)

☐ Katte

☐ Honde

☐ Visse

☐ Voëls

☐ Ander (spesifiseer asseblief: _____)

☐ Kan nie onthou nie

6.2. Het jy ’n troeteldier by jou laaste woning gehad, voor jy na hierdie instansie verhuis het?

☐ Ja ☐ Nee ☐ Kan nie onthou nie

6.3. Hoe geheg was jy oor die algemeen aan jou troeteldier(e)?

☐ Nie baie ☐ ‘n Bietjie ☐ Baie ☐ Weet nie / Kan nie onthou nie

6.4. In die algemeen, het jy gevoel jy het ’n noue verhouding met jou troeteldier(e)?

☐ Ja ☐ Nee ☐ Weet nie / Kan nie onthou nie

7. Glo jy jy sal dit geniet om besoeke van honde te ontvang gedurende jou verblyf by hierdie ouetehuis?

☐ Ja ☐ Nee ☐ Weet nie

APPENDIX D

GERIATRIC DEPRESSION SCALE (SHORT FORM) IN ENGLISH AND AFRIKAANS

GERIATRIC DEPRESSION SCALE (SHORT FORM)

Participant's name and surname: _____ Date: _____

***Instructions:* Choose the best answer for how you felt over the past week.**

No.	Question	Answer	Score
1.	Are you basically satisfied with your life?	☐ YES ☐ NO	
2.	Have you dropped many of your activities and interests?	☐ YES ☐ NO	
3.	Do you feel that your life is empty?	☐ YES ☐ NO	
4.	Do you often get bored?	☐ YES ☐ NO	
5.	Are you in good spirits most of the time?	☐ YES ☐ NO	
6.	Are you afraid that something bad is going to happen to you?	☐ YES ☐ NO	
7.	Do you feel happy most of the time?	☐ YES ☐ NO	
8.	Do you often feel helpless?	☐ YES ☐ NO	
9.	Do you prefer to stay at home, rather than going out and doing new things?	☐ YES ☐ NO	
10.	Do you feel you have more problems with memory than most people?	☐ YES ☐ NO	
11.	Do you think it is wonderful to be alive?	☐ YES ☐ NO	
12.	Do you feel pretty worthless the way you are now?	☐ YES ☐ NO	
13.	Do you feel full of energy?	☐ YES ☐ NO	
14.	Do you feel that your situation is hopeless?	☐ YES ☐ NO	
15.	Do you think that most people are better off than you are?	☐ YES ☐ NO	
		TOTAL	

(Sheikh & Yesavage, 1986).

GERIATRIC DEPRESSION SCALE (SHORT FORM) (AFRIKAANS)

GERIATRIESE DEPRESSIESKAAL (VERKORTE VORM)

Deelnemer se naam en van: _____ Datum: _____

Aanwysings: ***Kies die beste antwoord vir hoe jy gevoel het die afgelope week.***

No.	Vraag	Antwoord	Telling
1.	Is jy hoofsaaklik tevrede met jou lewe?	☐ JA ☐ NEE	
2.	Het jy baie van jou aktiwiteite en belange gelos?	☐ JA ☐ NEE	
3.	Voel jy jou lewe is leeg?	☐ JA ☐ NEE	
4.	Raak jy dikwels verveeld?	☐ JA ☐ NEE	
5.	Is jy meestal in ’n opgewekte stemming?	☐ JA ☐ NEE	
6.	Is jy bang iets slegs gaan met jou gebeur?	☐ JA ☐ NEE	
7.	Voel jy meestal gelukkig?	☐ JA ☐ NEE	
8.	Voel jy dikwels hulpeloos?	☐ JA ☐ NEE	
9.	Verkies jy om liewer tuis te bly as om uit te gaan en nuwe dinge te doen?	☐ JA ☐ NEE	
10.	Voel jy jy het meer probleme met geheue as die meeste mense?	☐ JA ☐ NEE	
11.	Dink jy dis wonderlik om te lewe?	☐ JA ☐ NEE	
12.	Voel jy taamlik waardeloos soos jy nou is?	☐ JA ☐ NEE	
13.	Voel jy vol energie?	☐ JA ☐ NEE	
14.	Voel jy jou situasie is hopeloos?	☐ JA ☐ NEE	
15.	Dink jy die meeste mense is beter af as jy?	☐ JA ☐ NEE	
		TOTAAL	

(Sheikh & Yesavage, 1986).

APPENDIX E

UCLA LONELINESS SCALE (VERSION 3) IN ENGLISH AND AFRIKAANS

UCLA LONELINESS SCALE VERSION 3

Participant's name and surname: _____ Date: _____

Instructions: ***The following statements describe how people sometimes feel. For each statement, please indicate how often you feel the way described by selecting one of the boxes provided next to the statement.***

No.	Statement	Response
1.	How often do you feel that you are "in tune" with the people around you?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
2.	How often do you feel that you lack companionship?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
3.	How often do you feel that there is no one you can turn to?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
4.	How often do you feel alone?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always

5.	How often do you feel part of a group of friends?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
6.	How often do you feel that you have a lot in common with the people around you?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
7.	How often do you feel that you are no longer close to anyone?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
8.	How often do you feel that your interests and ideas are not shared by those around you?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
9.	How often do you feel outgoing and friendly?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
10.	How often do you feel close to people?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
11.	How often do you feel left out?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always

12.	How often do you feel that your relationships with others are not meaningful?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
13.	How often do you feel that no one really knows you well?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
14.	How often do you feel isolated from others?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
15.	How often do you feel you can find companionship when you want it?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
16.	How often do you feel that there are people who really understand you?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
17.	How often do you feel shy?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
18.	How often do you feel that people are around you but not with you?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always

19.	How often do you feel that there are people you can talk to?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always
20.	How often do you feel that there are people you can turn to?	☐ Never ☐ Rarely ☐ Sometimes ☐ Always

(Russell, 1996).

UCLA LONELINESS SCALE (VERSION 3) (AFRIKAANS)

UCLA-EENSAAMHEIDSKAAL WEERGAWE 3

Deelnemer se naam en van: _____ Datum: _____

<u>Aanwysings:</u> Die volgende stellings beskryf hoe mense soms voel. Vir elke stelling, dui asseblief aan hoe dikwels jy voel soos beskryf word deur een van die boksies langsaan die stelling te merk.

No.	Stelling	Antwoord
1.	Hoe dikwels voel jy jy is “in harmonie” met die mense rondom jou?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
2.	Hoe dikwels voel jy jy het nie kameraadskap nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
3.	Hoe dikwels voel jy daar is niemand tot wie jy jouself kan wend nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
4.	Hoe dikwels voel jy alleen?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
5.	Hoe dikwels voel jy deel van ’n groep vriende?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd

6.	Hoe dikwels voel jy jy het baie in gemeen met die mense rondom jou?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
7.	Hoe dikwels voel jy jy is nie meer na aan enigiemand nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
8.	Hoe dikwels voel jy jou belangstellings en idees word nie deur diegene rondom jou gedeel nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
9.	Hoe dikwels voel jy uitgaande (gesellig) en vriendelik?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
10.	Hoe dikwels voel jy na aan mense?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
11.	Hoe dikwels voel jy uitgelaat?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
12.	Hoe dikwels voel jy jou verhoudings met ander is nie betekenisvol nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd

13.	Hoe dikwels voel jy niemand ken jou regtig goed nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
14.	Hoe dikwels voel jy afgesonder van ander?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
15.	Hoe dikwels voel jy jy kan geselskap vind wanneer jy dit wil hê?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
16.	Hoe dikwels voel jy daar is mense wie jou regtig verstaan?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
17.	Hoe dikwels voel jy skaam?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
18.	Hoe dikwels voel jy mense is rondom jou maar nie saam met you nie?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd
19.	Hoe dikwels voel jy daar is mense met wie jy kan praat?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd

20.	Hoe dikwels voel jy daar is mense tot wie jy jouself kan wend?	☐ Nooit ☐ Weinig ☐ Soms ☐ Altyd

(Russell, 1996).

APPENDIX F

WHO QUALITY OF LIFE-BREF IN ENLGISH AND AFRIKAANS

The World Health Organisation Quality of Life (WHOQOL)-BREF

Participant's name and surname: _____ Date: _____

This assessment asks how you feel about your quality of life, health, or other areas of your life. ***Please answer all the questions.*** *If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.*

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life ***in the last two weeks.***

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1.	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2.	How satisfied are you with your health?	1	2	3	4	5

*The following questions ask about **how much** you have experienced certain things in the last two weeks.*

		Not at all	A little	A moderate amount	Very much	An extreme amount
3.	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4.	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5.	How much do you enjoy life?	1	2	3	4	5
6.	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7.	How well are you able to concentrate?	1	2	3	4	5
8.	How safe do you feel in your daily life?	1	2	3	4	5
9.	How healthy is your physical environment?	1	2	3	4	5

*The following questions ask about **how completely** you experienced or were able to do certain things in the last two weeks.*

		Not at all	A little	Moderately	Mostly	Completely
10.	Do you have enough energy for everyday life?	1	2	3	4	5
11.	Are you able to accept your bodily appearance?	1	2	3	4	5
12.	Have you enough money to meet your needs?	1	2	3	4	5
13.	How available is the information that you need in your day-to-day life?	1	2	3	4	5
14.	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither poor nor good	Good	Very good
15.	How well are you able to get around?	1	2	3	4	5

*The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.*

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16.	How satisfied are you with your sleep?	1	2	3	4	5
17.	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18.	How satisfied are you with your capacity for work?	1	2	3	4	5
19.	How satisfied are you with yourself?	1	2	3	4	5
20.	How satisfied are you with your personal relationships?	1	2	3	4	5
21.	How satisfied are you with your sex life?	1	2	3	4	5
22.	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23.	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24.	How satisfied are you with your access to health services?	1	2	3	4	5
25.	How satisfied are you with your transport?	1	2	3	4	5

*The following question refers to **how often** you have felt or experienced certain things in the last two weeks.*

		Never	Seldom	Quite often	Very often	Always
26.	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

THANK YOU FOR YOUR HELP

WHO QUALITY OF LIFE-BREF (AFRIKAANS)

Die Wêreldgesondheidsorganisasie se Lewensgehaltevraelys (WGOLG)-BREF

Deelnemer se naam en van: _____ Datum: _____

Die volgende vrae vra hoe jy voel oor die gehalte van jou lewe, gesondheid, of ander terreine van jou lewe. ***Beantwoord asseblief al die vrae.*** *As jy onseker is oor watter antwoord om te gee op 'n vraag,* ***kies asseblief die een*** *wat na die mees toepaslike lyk. Dit kan dikwels jou eerste antwoord wees.*

Hou asseblief jou standaarde, dit waarop jy hoop, vreugdes en bekommernisse in gedagte. Ons vra dat jy dink oor jou lewe ***die afgelope twee weke.***

Lees asseblief elke vraag, evalueer jou gevoelens, en omkring vir elke vraag die nommer op die skaal wat vir jou die beste antwoord gee.

		Baie swak	Swak	Nóg swak nóg goed	Goed	Baie goed
1.	Hoe sal jy jou lewensgehalte beoordeel?	1	2	3	4	5

		Baie ontevrede	Ontevrede	Nóg tevrede nóg ontevrede	Tevrede	Baie tevrede
2.	Hoe tevrede is jy met jou gesondheid?	1	2	3	4	5

*Die volgende vrae gaan oor **hoe baie** jy sekere dinge gedurende die afgelope twee weke ervaar het.*

		Glad nie	'n Bietjie	'n Redelike mate	Baie	'n Baie groot mate
3.	In watter mate voel jy dat fisiese pyn jou daarvan weerhou om te doen wat jy moet doen?	1	2	3	4	5
4.	Hoe baie benodig jy enige mediese behandeling om te funksioneer in jou daaglikse lewe?	1	2	3	4	5
5.	Hoeveel geniet jy die lewe?	1	2	3	4	5
6.	In watter mate voel jy jou lewe is betekenisvol?	1	2	3	4	5

		Glad nie	'n Bietjie	'n Redelike mate	Baie	Uiters
7.	Hoe goed is jy in staat om te konsentreer?	1	2	3	4	5
8.	Hoe veilig voel jy in jou daaglikse lewe?	1	2	3	4	5
9.	Hoe gesond is jou fisiese omgewing?	1	2	3	4	5

*Die volgende vrae gaan oor **hoe volledig** jy dinge kon ervaar of in staat was om dit te doen die afgelope twee weke.*

		Glad nie	'n Bietjie	Redelik	Meestal	Heeltemal
10.	Het jy genoeg energie vir die daaglikse lewe?	1	2	3	4	5
11.	Kan jy jou liggaamsvoorkoms aanvaar?	1	2	3	4	5
12.	Het jy genoeg geld om in jou behoeftes te voorsien?	1	2	3	4	5
13.	Hoe beskikbaar is die inligting wat jy benodig in jou daaglikse lewe?	1	2	3	4	5
14.	In watter mate het jy geleentheid vir ontspanningsaktiwiteite?	1	2	3	4	5

		Baie swak	Swak	Nóg swak nóg goed	Goed	Baie goed
15.	Hoe goed kan jy rondbeweeg?	1	2	3	4	5

*Die volgende vrae gaan oor hoe **goed of tevrede** jy die afgelope twee weke oor verskeie aspekte van jou lewe gevoel het.*

		Baie ontevrede	Ontevrede	Nóg tevrede nóg ontevrede	Tevrede	Baie tevrede
16.	Hoe tevrede is jy met jou slaap?	1	2	3	4	5
17.	Hoe tevrede is jy met jou vermoë om jou daaglikse werksaamhede te doen?	1	2	3	4	5
18.	Hoe tevrede is jy met jou werksvermoë?	1	2	3	4	5
19.	Hoe tevrede is jy met jouself?	1	2	3	4	5
20.	Hoe tevrede is jy met jou persoonlike verhoudings?	1	2	3	4	5
21.	Hoe tevrede is jy met jou sekslewe?	1	2	3	4	5
22.	Hoe tevrede is jy met die ondersteuning wat jy van jou vriende kry?	1	2	3	4	5
23.	Hoe tevrede is jy met die omstandighede by jou blyplek?	1	2	3	4	5
24.	Hoe tevrede is jy met jou toegang tot gesondheidsdienste?	1	2	3	4	5
25.	Hoe tevrede is jy met jou vervoer?	1	2	3	4	5

*Die volgende vraag verwys na **hoe dikwels** jy die afgelope twee weke sekere dinge gevoel of ervaar het.*

		Nooit	Selde	Heel dikwels	Baie dikwels	Altyd
26.	Hoe dikwels het jy negatiewe gevoelens soos neerslagtigheid, wanhoop, angs, depressie ervaar?	1	2	3	4	5

DANKIE VIR JOU HULP

APPENDIX G

WHO QUALITY OF LIFE-BREF SUBSCALES

Table G1

WHOQOL-BREF Subscales, Number of Items in Subscale, and Item Themes

Subscale	No. of Items	Item Themes
Physical Health	7	• Extent to which **physical pain** is debilitating to subject • Amount of **medical treatment** needed to function • Extent to which **energy-levels** are sufficient • Perception of **ability to move around** • Satisfaction with **sleep** • Satisfaction with **ability to perform daily tasks** • Satisfaction with **ability to work**
Psychological Health	6	• **Enjoyment** of life • **Meaningfulness** of subject's life • Ability to **concentrate** • Acceptance of **bodily appearance** • Satisfaction with **self** • Extent to which subject experiences **negative feelings**
Environment	8	• Extent to which subject feels **safe** • Perception of healthiness of **physical environment** • Perception of whether subject has enough **money** • Extent to which subject has access to **information** • Amount of time for **leisure activities** • Satisfaction with **circumstances of living place** • Satisfaction with access to **medical services** • Satisfaction with **transport**
Social Relationships	3	• Satisfaction with **personal relationships** • Satisfaction with **sex life** • Satisfaction with **support from friends**

Note: WHOQOL-BREF = World Health Organisation Quality of Life BREF

APPENDIX H

APPROVAL LETTER FROM THE RESEARCH ETHICS COMMITTEE: HUMAN RESEARCH

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
jou kennisvennoot • your knowledge partner

Approval Notice

Stipulated documents/requirements

25-Aug-2014
Buckle, Chanelle CJ

Proposal #: HS1101/2014

Title: **Effects of an animal visitation programme on elderly nursing home residents' depression, loneliness and quality of life: A randomised controlled study.**

Dear Ms Chanelle Buckle,

Your **Stipulated documents/requirements** received on **19-Aug-2014**, was reviewed by members of the **Research Ethics Committee: Human Research (Humanities)** via Expedited review procedures on **25-Aug-2014** and was approved.
Sincerely,

Clarissa Graham
REC Coordinator
Research Ethics Committee: Human Research (Humanities)

APPENDIX I

APPROVAL LETTER FROM THE RESEARCH ETHICS COMMITTEE: ANIMAL CARE AND USE

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
jou kennisvennoot • your knowledge partner

Approved with Stipulations

Date: 18-Aug-2014

PI Name: Buckle, Chanelle CJ

Protocol #: SU-ACUD14-00073

Title: Effects of an animal-visitation program on elderly nursing home residents' depression, loneliness and quality of life: A randomised controlled study

Dear Chanelle Buckle, the Initial Application submission was reviewed on 18-Aug-2014 by Research Ethics Committee: Animal Care and Use via committee review procedures and was approved on condition that the following stipulations are adhered to:

General:
- The dog owners must provide the researcher with a consent form indicating that they (dog owners) grant their permission for their dogs to be used in this study.
- The REC requests the researcher to clarify and explain how she will prevent over use of a particular animal.
- Please specify the breed of the dogs to be used.

To note:
- The well-being of the animals when forming part of a research activity is important. Transporting the animals therefore is a very important aspect. Dog owners must therefore also indicate that they are aware of the risks associated with the transportation of their animals and have the necessary procedures in place (such as contact details of a Veterinarian in case of an emergency).

Applicants are reminded that they are expected to comply with accepted standards for the use of animals in research and teaching as reflected in the South African National Standards 10386: 2008. The SANS 10386: 2008 document is available on the Division for Research Developments website www.sun.ac.za/research.

Please remember to use your protocol number, SU-ACUD14-00073 on any documents or correspondence with the REC: ACU concerning your research protocol.

If you have any questions or need further help, please contact the REC: ACU secretariat at WABEUKES@SUN.AC.ZA.

Sincerely,

Winston Beukes
REC: ACU Secretariat
Research Ethics Committee: Animal Care and Use

APPENDIX J

CONSENT FORM FOR VOLUNTEERS

Pets as Therapy Volunteer: Consent to Use My Dog in Research

I hereby consent for my dog, a _____ [dog's breed] named _____ [dog's name], to be used in the research study of Chanellé Buckle, "*Effects of an animal visitation intervention on the depression, loneliness, and quality of life of older people: A randomised controlled study*", that she will be conducting in cooperation with Pets as Therapy.

Ms. Buckle described the study and its procedures to me in English and Afrikaans, and I am in command of this language. Ms. Buckle handed a document containing study protocols to me. I declare that I fully understand and have familiarised myself with these protocols. I will comply with the study protocols to the best of my ability. I was also given the opportunity to ask questions and these questions were answered to my satisfaction.

I am fully aware of the risks associated with the transportation of my dog to and from the research site. I declare that I will do my best to ensure my dog's comfort at all times during transportation. I will ensure that I have the contact details of my dog's veterinarian at hand in case of an emergency, and I guarantee that my dog will be promptly treated for any injuries that he or she may acquire during transportation.

_____

Volunteer name

_____

Volunteer signature

_____

Date

APPENDIX K

PERMISSION FROM RESIDENTIAL FACILITY TO DO RESEARCH

EBENHAESER

HOME FOR THE AGED CLOETESVILLE STELLENBOSCH
TEL: 021-889 7158/79 FAX: 021-889 5856 VAT Reg No. 4890109574
C/O Pool & Valentine Street, Cloetesville, Stellenbosch 7600
PO Box 2133 Stellenbosch, 7599 E-mail: info@huiseben.co.za

12th June 2014

Pets as Therapy.

Dear Chanelle

We herewith give you permission to do the sessions here at Huis Ebenhaeser. We trust that the elderly will have an enriching experience.

Thank you for your work.

Kind regards

Sarah Erasmus

Manageress.

APPENDIX L

INTRODUCTORY LETTER SENT TO THE HEAD OF THE RESIDENTIAL FACILITY

UNIVERSITEIT·STELLENBOSCH·UNIVERSITY
jou kennisvennoot • your knowledge partner

20 February 2014

Dear Mrs. Erasmus

I am an MA (Psychology) student from Stellenbosch University and would like to conduct a research study at Huis Ebenhaeser in 2014. The study would entail an intervention with residents from Huis Ebenhaeser, wherein they will receive weekly visits from registered visiting dogs and their owners for 10 weeks.

Residents longing to participate will be assigned to one of two groups. Residents in the first group (experimental group) will receive the dog visitation intervention. This dog visitation intervention is also known as an animal-assisted activity (AAA) that will be performed by volunteers and their dogs from *Pets as Therapy* (PAT). PAT is a registered non-profit and public benefit organisation in South Africa that organises therapeutic visits by pet owners who volunteer to take their pets (mostly dogs) to visit people in nursing homes, hospitals, residential centers for disabled persons, care facilities, and special needs schools etcetera (see the attached information sheet or visit PAT's website, www.pat.org.za, for more information regarding PAT).

The second group of participants will be a control group. They will not receive visits from the PAT dogs and their owners. I will compare the data gathered from

Departement Sielkunde • Department of Psychology

Privaatsak/Private Bag X1 ● Matieland, 7602 ● Suid-Afrika, Tel: +27 (0) 21 8083444, Faks/Fax: +27 (0) 21 8083584
epos/email: mclr@sun.ac.za

participants in this group with the data gathered from participants in the experimental group in order to assess the effect of the dog visitation intervention on the depression, loneliness, and quality of life of the participants in the experimental group. All participants will complete questionnaires (measuring depression, loneliness, and quality of life) before and after the intervention. I will then compare the questionnaire results of the two groups to explore whether the dog visitation intervention had any beneficial effects on the posttest questionnaire scores of participants in the experimental group.

I can assure you that strict procedures will be followed during the study to ascertain the safety of the residents and staff of Huis Ebenhaeser. The dogs used in the intervention will be thoroughly assessed for cleanliness, health, suitability and temperament before they are enrolled in the study. I will also make sure that the volunteers are trustworthy and suitable for utilisation in the intervention. I sincerely hope that you are willing to grant me the needed permission to conduct my research at Huis Ebenhaeser. I will contact you during the next few days to arrange a meeting wherein we can discuss the study more elaborately. You may contact my research supervisor, Dr. Marieanna le Roux, at mclr@sun.ac.za for more information.

Kind regards,

Chanellé J. Buckle
084 792 1582
chanellebuckle@gmail.com

Dr. Marieanna C. le Roux
Research Supervisor / Chair of PAT
mclr@sun.ac.za

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Privaatsak/Private Bag X1 ● Matieland, 7602 ● Suid-Afrika, Tel: +27 (0) 21 8083444, Faks/Fax: +27 (0) 21 8083584
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APPENDIX M

PETS AS THERAPY AND ANIMAL ASSISTED INTERVENTION INFORMATION SHEET

PAT Information Sheet

Positive interactions between humans and companion animals can have beneficial effects on the physical and mental health of people. It is believed that pet ownership and interaction with pets can have therapeutic effects and improve the general health of disabled, ill, at-risk or vulnerable populations.

Who is "Pets as Therapy" (PAT)?

PAT is a non-profit organisation which makes use of animal-assisted interventions in hospitals, old age homes, and other settings. PAT organises animal-assisted activities (AAAs) by assigning animals and volunteers to carry out interventions. Further information regarding PAT can be found at www.pat.org.za.

What is animal-assisted therapy (AAT) and animal-assisted activities (AAAs)?

Animal-assisted interventions have become widely applied in clinical and healthcare settings. Animal-assisted therapy (AAT) refers to a goal-directed intervention in which an animal that meets specific criteria is an integral part of the treatment process. In other words, an animal is present in the therapeutic setting. AAT is directed by a healthcare professional with specialised expertise.

Animal-assisted activities (AAAs) differ a little from AAT. AAAs do not necessarily involve specialised health service professionals or a therapy plan. AAAs can be offered by paraprofessionals or volunteers in companionship with their pets. Thus, AAAs are casual "meet and greet" activities that entail pets visiting people. The

same activity can be repeated with many people, unlike a therapy programme that is tailored to a particular person or medical condition. During AAAs, interactions with pets can include anything from talking to, touching, and grooming the pet visitors.

How can AAAs benefit older people?

Animal-assisted interventions have been widely applied with older people in residential facilities. It has been suggested that these interventions can significantly improve the lives of older people. AAT/AAAs can

- lessen symptoms of loneliness,
- lessen symptoms of depression and improve mood,
- reduce anxiety,
- lessen agitated behaviours and aggression,
- improve and/or increase social interactions,
- enhance quality of life,
- boost cognitive functioning, and
- improve physical health by regulating blood pressure.

APPENDIX N

INFORMED CONSENT FORM IN ENGLISH AND AFRIKAANS

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CONSENT TO PARTICIPATE IN RESEARCH

TITLE OF THE STUDY: Effects of an animal visitation intervention on the depression, loneliness, and quality of life of older people: A randomised controlled study

You are invited to participate in a research study conducted by Chanellé Buckle from the Department of Psychology at Stellenbosch University. I am currently enrolled as a Master's student at Stellenbosch University and I intend to report the results of this study in my thesis.

You were selected as a possible participant in this study because you are elderly and residing in a residential facility for the aged. Prior research has shown that older people in residential facilities are often at risk of experiencing depression, loneliness, and poor quality of life. This study will aim to alleviate such feelings by bringing dogs to visit you at your residence facility. Visits from dogs and their human owners may improve the mental and physical health of people living in residential facilities for the aged.

1. PURPOSE OF THE STUDY

The purpose of the study is to determine the effect of a dog visitation intervention on the depression, loneliness, and quality of life of older people in a residential facility.

2. PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

You will be asked to complete a biographical and pet history survey soliciting biographical data and your personal responses towards dogs. After that, you will be asked to complete three additional questionnaires that will measure your depression, loneliness, and quality of life. A research assistant will be available to help you with the completion of the measures if you should require assistance.

Thereafter you will be divided into an experimental group OR a control group. This division of groups will be done via a computer program.

If you form a part of the experimental group, you will receive weekly visits from three dogs and their owners. These visits will last approximately an hour each and take place for 10 weeks. During the visits you will be allowed to talk to, groom, or pat the dogs whenever you want. At the end of this dog visitation intervention, you will be asked to complete the questionnaires that you completed at the beginning of the study again.

If you form a part of the control group, you will (for the duration of the study) unfortunately not be receiving any visits from the dogs and their owners. Your daily life will continue as usual, and after

10 weeks you will again be asked to complete the same questionnaires you completed at the beginning of the study. It is important for you to understand that you still fulfil a vital role in the study if you form a part of the control group.

Participants in the experimental group and the control group, as well as all of the residents at your facility will be granted the opportunity to receive visits from the dogs and their owners after the study has been completed.

3. POTENTIAL RISKS AND DISCOMFORTS

The study will not hold many risks to participants and of foremost concern will be your safety. Even so, we take note of the fact that you may experience some psychological discomfort during or after the completion of the surveys that will be used in the study. In the event that you should experience such discomfort, you will be referred to a counselling service.

Another possible risk of participation is that you are bitten or scratched by one of the dogs. I want to emphasise that this is highly unlikely, because all the dogs that will be used in the study are registered and trained visiting dogs with a happy and friendly personality! If you should suffer a physical injury as a consequence of participating in the study, I will make sure that your injury is promptly treated by a doctor.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

This study aims to establish if receiving visits from dogs in a residential setting can improve the mental health of older people by alleviating symptoms of depression, loneliness, and poor quality of life. The contribution of this study on a societal level can be major if the study should yield positive results. Evidence for the effectiveness of animal-assisted intervention could allow for its use to become more widespread.

5. PAYMENT FOR PARTICIPATION

You will not be paid for participating in the study.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of safeguarding electronic data by storing it in a password protected folder on my personal computer. All hardcopies of the data will be safely stored.

The research team will not disclose any sensitive information about you to anyone not involved in the research. Your name will also not appear in my thesis or in any later publications of the research results.

7. PARTICIPATION AND WITHDRAWAL

You can choose to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study. I may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact me (the principal investigator), Chanellé Buckle, at 084 792 1582 or chanellebuckle@gmail.com; or my research supervisor, Dr. Marieanna le Roux, at 021-808 3444 (w) or 021-886 6101 (h) or mclr@sun.ac.za.

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms. Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to me by Chanellé Buckle in English and Afrikaans, and I am in command of this language or it was satisfactorily translated to me. I was given the opportunity to ask questions and these questions were answered to my satisfaction.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form.

_____

Name of Participant

_____

Name of Legal Representative (if applicable)

_____ _____

Signature of Participant or Legal Representative **Date**

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to _____ [*name of the participant]* and/or [his/her] representative _____ [*name of the representative].* [He/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in [Afrikaans/English] and no translator was used.

_____ _____

Signature of Investigator **Date**

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INWILLIGING OM DEEL TE NEEM AAN NAVORSING

TITEL VAN DIE STUDIE: Die effek van 'n troeteldierbesoekprogram op die depressie, eensaamheid, en lewensgehalte van ouer mense: 'n Ewekansige gekontroleerde studie

U word genooi om deel te neem aan 'n navorsingstudie deur Chanellé Buckle van die Departement Sielkunde aan die Universiteit Stellenbosch. Ek is tans 'n ingeskrewe Meestersstudent aan die Universiteit Stellenbosch. Ek is van voorneme om die resultate van hierdie studie in my tesis te rapporteer.

U is gekies as 'n moontlike deelnemer aan hierdie studie omdat u bejaard is en in 'n residensiële fasiliteit vir ouer mense woon. Volgens vorige navorsing loop inwoners van residensiële fasiliteite vir bejaardes dikwels gevaar om depressie, eensaamheid, en swak lewensgehalte te ervaar. Hierdie studie is daarop gemik om sulke gevoelens te verlig deur honde te bring wat u sal besoek waar u woon. Besoeke deur diere en hulle eienaars mag die fisiese en geestesgesondheid van mense wat woon residensiële fasiliteite verbeter.

1. DOEL VAN DIE STUDIE

Die doel van die studie is om die effek te bepaal van 'n hondebesoekintervensie op die depressie, eensaamheid, en die lewensgehalte van ouer mense in 'n residensiële fasiliteit.

2. PROSEDURES

Indien u inwillig om aan die studie deel te neem, vra ons dat u die volgende moet doen:

U sal gevra word om 'n biografiese en troeteldiergeskiedenis vraelys te voltooi om biografiese inligting en besonderhede van u persoonlike reaksies teenoor honde te verkry. Daarna sal u gevra word om nog drie vraelyste te voltooi wat u vlakke van depressie, eensaamheid, en lewensgehalte sal meet. 'n Navorsingsassistent sal beskikbaar wees om u te help met die voltooiing van die vraelyste sou u hulp nodig hê.

Daarna sal u verdeel word in 'n eksperimentele groep OF 'n kontrolegroep. Hierdie indeling van groepe sal geskied deur middel van 'n rekenaarprogram.

Sou u in die eksperimentele groep wees, sal u weekliks besoek ontvang van drie honde en hul eienaars. Die besoeke sal oor 10 weke plaasvind en elk ongeveer 'n uur lank duur. Tydens die besoeke mag u met die honde gesels, hulle borsel of streel net wanneer u wil. Aan die einde van hierdie hondebesoekintervensie sal u gevra word om weer dieselfde vraelyste as aan die begin van die studie te voltooi.

Sou u in die kontrolegroep wees, sal u (vir die duur van die studie) ongelukkig geen besoeke van die honde en hul eienaars ontvang nie. U daaglikse lewe sal voortgaan soos gewoonlik en na 10 weke sal u weer gevra word om dieselfde vraelyste as aan die begin van die studie te voltooi. Dit is

belangrik om te begryp dat u steeds 'n noodsaaklike rol in die studie speel as u in die kontrolegroep is.

Deelnemers in die eksperimentele group en in die kontrole groep, asook al die inwoners van u residensiële fasiliteit sal na die afloop van die studie die geleentheid kry om besoek van die honde en hul eienaars te ontvang.

3. MOONTLIKE RISIKO'S EN ONGEMAKLIKHEID

Deelnemers loop nie gevaar van baie risiko's tydens die studie nie. U veiligheid sal voorkeur geniet. Ons is bewus daarvan dat u tydens of na die voltooiing van die vraelyste 'n mate van sielkundige ongemak mag ervaar. Sou u enige sodanige ongemak ervaar, sal u na 'n beradingsdiens verwys word.

Nog 'n moontlike risiko betrokke by deelname is dat u gebyt of gekrap kan word deur 'n hond. Ek beklemtoon egter dat dit hoogs onwaarskynlik is dat so-iets sal gebeur. Al die honde wat in die studie gebruik gaan word is opgeleide en geregistreerde besoekhonde met vrolike en vriendelike geaardhede! Sou u enige besering opdoen as gevolg van u deelname aan die studie, sal ek seker maak u besering word onmiddellik deur 'n dokter behandel.

4. MOONTLIKE VOORDELE VIR PROEFPERSONE EN/OF VIR DIE SAMELEWING

Met die studie sal gepoog word om vas te stel of besoeke van honde die geestesgesondheid van inwoners van 'n residensiële fasiliteit vir ouer mense kan verbeter deur simptome van depressie, eensaamheid, en swak lewensgehalte te verbeter. Sou die studie positiewe resultate voortbring, kan dit moontlik 'n groot bydrae in die gemeenskap lewer. Bewyse vir die doeltreffendheid van troeteldier-ondersteunde intervensie kan toelaat dat die gebruik daarvan meer wydverspreid raak.

5. VERGOEDING VIR DEELNAME

U sal nie betaal of vergoed word vir u deelname aan die studie nie.

6. VERTROULIKHEID

Enige inligting wat deur middel van die navorsing verkry word en wat met u in verband gebring kan word, sal vertroulik bly en slegs met u toestemming bekend gemaak word of soos deur die wet vereis. Vertroulikheid sal gehandhaaf word deurdat elektroniese data in 'n wagwoord-beskermde omslag op my persoonlike rekenaar geberg sal word. Alle harde kopieë (afskrifte) van die data sal veilig gestoor word.

Die navorsingspan sal geen inligting oor u aan enigiemand buite die navorsingsprojek bekendmaak nie. U naam sal ook nie in my tesis of in enige latere publikasies van die navorsingsresultate verskyn nie.

7. DEELNAME EN ONTTREKKING

U kan self besluit of u aan die studie wil deelneem of nie. Indien u inwillig om aan die studie deel te neem, kan u te eniger tyd u daaraan onttrek sonder enige nadelige gevolge. U kan ook weier om op bepaalde vrae te antwoord, maar steeds aan die studie deelneem. Ek kan u aan die studie onttrek indien omstandighede dit noodsaaklik maak.

8. IDENTIFIKASIE VAN ONDERSOEKERS

Indien u enige vrae of besorgdheid omtrent die navorsing het, staan dit u vry om in verbinding te tree met my (die hoofondersoeker), Chanellé Buckle, by 084 792 1582 of chanellebuckle@gmail.com; of my toesighouer, Dr. Marieanna le Roux, by 021-808 3444 (w) of 021-886 6101 (h) of mclr@sun.ac.za.

9. REGTE VAN PROEFPERSONE

U kan te eniger tyd u inwilliging terugtrek en u deelname beëindig, sonder enige nadelige gevolge vir u. Deur deel te neem aan die navorsing doen u geensins afstand van enige wetlike regte, eise of regsmiddel nie. Indien u vrae het oor u regte as proefpersoon by navorsing, skakel met Me Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] van die Afdeling Navorsingsontwikkeling.

VERKLARING DEUR PROEFPERSOON OF SY/HAAR REGSVERTEENWOORDIGER

Die bostaande inligting is aan my gegee en verduidelik deur Chanellé Buckle in Engels en Afrikaans, en ek is dié taal magtig of dit is bevredigend vir my vertaal. Ek is die geleentheid gebied om vrae te stel en my vrae is tot my bevrediging beantwoord.

Ek willig hiermee vrywillig in om deel te neem aan die studie. 'n Afskrif van hierdie vorm is aan my gegee.

_____

Naam van Deelnemer

_____

Naam van Regsverteenwoordiger (indien van toepassing)

_____ _____

Handtekening van Deelnemer of Regsverteenwoordiger **Datum**

VERKLARING DEUR ONDERSOEKER

Ek verklaar dat ek die inligting in hierdie dokument vervat verduidelik het aan _____ [*naam van die deelnemer*] en/of [sy/haar] regsverteenwoordiger _____ [*naam van die regsverteenwoordiger*]. [Hy/sy] is aangemoedig en oorgenoeg tyd gegee om vrae aan my te stel. Dié gesprek is in [Afrikaans/Engels] gevoer en geen vertaler is gebruik nie.

_____ _____

Handtekening van Ondersoeker **Datum**

APPENDIX O

PROTOCOLS FOR THE DOG VISITATION INTERVENTION

The protocols in Table O1 were adapted from Lefebvre et al. (2008). These protocols were described to the PAT volunteers before the start of the intervention. Volunteers were asked to follow these protocols for the duration of the intervention. Most of the protocols address the volunteers directly, but it was also my responsibility to ensure that the protocols were followed. Some protocols address me specifically.

Table O1

Protocols for the Dog Visitation Intervention

Before each visit:	Additional protocol(s):
a) Self-screen for any symptoms of transmissible illness.	• Refrain from visiting while ill. • Inform the researcher that you are unable to visit.
b) Self-check your dog for any symptoms of illness or infection.	• Have your dog examined by its veterinarian when you suspect that it is ill. • Refrain from visiting while your dog is ill. • Wait at least 1 week beyond the resolution of your dog's illness before recommencing visits at the facility.
c) Ensure that your dog is thoroughly groomed before each visit.	
d) Please arrive on time for the visits.	• Please inform the researcher if you are running late. • Please inform the researcher in due time if you are unable to attend a visit.

Upon arrival at the facility:	Additional protocol(s):
e) Put your dog's leash and PAT scarf on it before entering the facility.	• Only remove your dog's scarf and leash after exiting the facility and not during visits.
f) Let your dog relieve itself before entering the facility.	• Appropriately dispose of any excrement.
g) Wash your hands thoroughly.	
h) The researcher: Inform relevant authorities at the facility about your arrival.	
During each visit:	**Additional protocol(s):**
i) Kindly require that all residents and staff wash their hands thoroughly before and after contact with your dog.	• You may carry an alcohol-based hand sanitizer or wet wipes with you. The researcher will also have some of these at hand.
j) Ensure that residents handle your dog with caution and appropriately.	• Ensure that your dog is comfortable during contact with the residents. • Report any inappropriate resident behaviour (e.g., inappropriate handling, refusal to follow instructions) to the head of the facility.
k) Monitor your dog for any signs of a negative behavioural change, aggressiveness, restlessness, or fear.	• If your dog should exhibit any of the behaviours mentioned in the opposite column, you should terminate the visit immediately and suspend further visits. Additionally, have your dog re-evaluated by a therapy dog training agency (e.g., Cape Canine).
l) Please refrain from using your cell phone during visits; unless it is absolutely necessary.	

m) Monitor your dog for urges to relieve itself, fatigue, stress, thirst, or overheating.	• Take a short break to ease your dog's signs of discomfort, take it outside to relieve itself, or (if you deem it necessary) terminate the session for that day. • If your dog should accidentally relieve itself on the premises, please clean up the area appropriately and hygienically.
n) When possible, prevent your dog from licking any surfaces or the residents.	
o) Kindly permit that residents not eat or drink while interacting with your dog.	• Wait until a resident has finished eating or drinking before taking your dog to him or her.
p) The researcher: Immediately report any scratches, bites, or other inappropriate behaviour exhibited by any of the visiting dogs to health care staff at the facility so that contingency procedures are practiced promptly.	• Minor scratches should be cleaned and treated at the facility as soon as possible. • Serious wounds (i.e., scratches or bites) should be treated at a medical facility or by a professional doctor at the facility immediately. • Terminate the visit immediately after any bites or serious scratches. • Contact PAT so as to discuss the incident and possible revision of the dog's visitation privileges as soon as possible.
q) Before taking your dog to a resident, ask the resident if you and your dog may approach him or her.	• Do not approach a resident if he or she appears afraid or asks you to not approach him or her.
r) Keep away from non-participating residents at the facility and do not wander in areas not designated as appropriate for you or your dog to enter.	
s) Restrict visits to a maximum of 1 hour.	• Visits may be terminated prematurely if your dog exhibits negative behaviours or fatigue.

After each visit:	Additional protocol(s):
t) Wash your hands thoroughly and kindly request that residents who had contact with your dog do so too. u) The researcher: Inform relevant authorities at the facility about the conclusion of the visit.	
v) Please keep all sensitive information about the research site, research participants, other residents, and staff at the facility confidential.	• If you should feel obligated or wish to report any sensitive information regarding the research site, participants, other residents and staff of the facility, please only disclose this information to the researcher and/or her research supervisor. They will then discuss and decide upon an appropriate manner to handle the information.

APPENDIX P

PHOTOGRAPHS OF THE DOGS USED IN THE INTERVENTION

Photograph P1. A female participant delighted by Lacy, a toy poodle.

Photograph P2. A male participant caressing Lexi, a miniature schnauzer.

Photograph P3. A male participant scratching Sambuca's (flat coated retriever) chin.

Photograph P4. Juno, a golden retriever, enjoying a back-scratch from a female participant.