

THESIS

A SYSTEMATIC MAPPING REVIEW OF ANIMAL-ASSISTED THERAPIES FOR
ADULTS WITH ALZHEIMER'S DISEASE AND RELATED DEMENTIAS: IMPLICATIONS
FOR OCCUPATIONAL THERAPY

Submitted by

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ABSTRACT

A SYSTEMATIC MAPPING REVIEW OF ANIMAL-ASSISTED THERAPIES FOR ADULTS WITH ALZHEIMER'S DISEASE AND RELATED DEMENTIAS: IMPLICATIONS FOR OCCUPATIONAL THERAPY

The objective of this thesis was to map the current state of knowledge of animal-assisted therapies (AAT) for people with Alzheimer's disease and related dementias (ADRD) and to derive implications for occupational therapy in addressing dementia-specific quality of life (QoL). This study located 13 peer-reviewed articles related to AAT for adults with ADRD. These articles were written in English, published between 2004-2014, primary sources, and described a health professional as either designing or providing AAT. A data extraction tool was used to record data on the health professionals, participants, interventions, outcomes, and theories. All 13 articles described an outcome related to dementia-specific QoL, hence confirming that the AAT literature addresses QoL for adults with ADRD. Furthermore, 85% of these articles mentioned interventions that were activity-based, thus empathizing that activities, or occupations, may elicit positive outcomes related to QoL. These findings suggest that using animals in therapy may facilitate positive change. These results were also easily "mapped" on to a widely adopted and influential model in occupational therapy, the Person-Environment-Occupation Model. Therefore, incorporating animals into intervention plans in occupational therapy offers a promising avenue for addressing QoL for this population.

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CHAPTER 1: INTRODUCTION TO THE STUDY

For more than 35 years, the use of the horse to benefit the health and well-being of people has grown enormously. An interesting area of this growth pertains to equine-assisted activities and therapies (EAAT) for adults with Alzheimer's disease or related dementias (ADRD). As shown in promotional materials from a local therapeutic riding center, Hearts and Horses (2013) in Loveland, CO, the behavior and emotional expression of adults with ADRD can powerfully transform in positive ways when they are supported in riding and being with horses. In this short film, a participant instantly bursts into song when on the horse, expressing her personality and satisfaction with the experience. Other participants affectionately caress the horse and express their love and admiration, while attempting to recall past memories elicited by the experience. Most heartwarming, however, are the sincere gestures of gratitude as the teary-eyed participants reach out their arms to embrace volunteers and horses alike.

As suggested by the Hearts and Horses' (2013) short film, adults with ADRD can experience activities that require ongoing interactions with a horse and the social and physical elements of the equine environment as meaningful and rewarding *occupations*. Drawing from various definitions proposed by scholars in occupational therapy (Hasselkus, 2011; Law, Polatajko, Baptiste, & Townsend, 1997; Pierce, 2000; Yerxa, 1994), occupations are defined in this thesis as human experiences of engagement in purposeful activities that are individually interpreted and given value and meaning by the person and their culture. Activities within EAAT include riding the horse, grooming the horse, or conversing with volunteers or others within the equine environment. These activities can be considered forms of occupations that provide meaning and purpose to individuals experiencing them in the moment, thereby favorably

influencing their quality of life (QoL). By undertaking my thesis, I will investigate how various EAAT may benefit adults with ADRD. Guided by this learning, I aspire to identify how occupational therapy in equine environments might be provided in ways that enhance the QoL for this population.

In this chapter, I begin by describing the prevalence of ADRD and defining elements of dementia-specific QoL. I then discuss environmental influences on the QoL of persons with ADRD. I next define and describe animal-assisted activities and therapies (AAAT) and EAAT as potentially helpful intervention approaches for this population. I then further elaborate on how EAAT can potentially serve as an occupational catalyst enhancing dementia-specific elements of QoL. The chapter concludes with an elucidation of the possible significance of my study and its overall aims and research questions.

Background to the Study

Prevalence of ADRD

In 2015, the Alzheimer's Association estimated that 5.3 million people living in the United States were diagnosed with Alzheimer's disease (Alzheimer's Association, 2015). In addition, by 2050 the number of persons diagnosed with Alzheimer's disease is projected to nearly triple to 13.8 million. On a global scale, there are now 47.5 million people living with ADRD worldwide, and by 2030 this number will nearly double (Alzheimer's Society of Canada, 2015). Additionally, other types of dementia, such as vascular dementia, frontotemporal dementia, Parkinson's disease, and dementia with Lewy bodies share their prognosis with Alzheimer's disease in the progressive loss of cognitive and neurological functioning. This loss may negatively impact a person's behavior, personality, and life satisfaction (Fraker, 2012). For

example, a person with ADRD may become irritated or withdrawn, as their abilities to engage with others or their surroundings become more restricted by the prognosis of the disease.

Furthermore, these demographic projections underscore that there will be a rapid increase in persons with ADRD who will need services that help to optimize their QoL. As next described, dementia-specific indices of QoL emphasize the importance of maintaining, to the fullest extent possible, the personhood, social relationships, emotional well-being, and functional capacities of persons with ADRD. It should be noted that I will refer to ADRD as dementia from here forward, as dementia encompasses ADRD and is more common in the literature.

Dementia-specific indices of QoL. Personhood and social relationships constitute important dementia-specific indices of QoL. *Personhood* encompasses a person's identity, creativity, will, and ability to live in present relationships and make emotional connections with others (Kitwood, 1997). Persons with dementia possess unique feelings and emotions that allow them to relate to others and share experiences in the present moment. The emphasis of *social relationships* as a critical element of dementia-specific QoL recognizes the importance of this sense of connection and need for belonging in adults with dementia (Kitwood, 1997). Persons with dementia continually find themselves in unfamiliar or "strange" circumstances, evoking fear and anxiety. Therefore, creating and maintaining bonds or attachments with others provide comfort, feelings of security, and calming of their anxiety. In addition, inclusion of persons with dementia into social groups contributes to their feelings of belonging and of having a distinct place in the shared experience of the group (Kitwood & Bredin, 1992).

Emotional well-being is another critical element of QoL for people with dementia. *Emotional well-being* in persons with dementia refers to a state of happiness, peace, comfort, or inner satisfaction with oneself (Hasselkus, 1998). Emotional well-being may elevate a person's

self-confidence, sense of accomplishment, and pride, thus influencing their QoL. Kitwood and Bredin (1992) suggest that indicators of well-being include the ability to express and experience a range of both positive and negative emotions, the assertion of will, social inclusion with social confidence, showing evident pleasure, self-expression and creativity, and affectionate warmth.

Lastly, it is critically important that people with dementia maintain their functional capacities to the fullest extent possible, even as their dementias progress. *Functional capacities* refer to the retained skills and abilities of people with dementia, including physical, social, cognitive, and emotional capacities. For example, in their study with 112 war veterans in the moderate to late stages of dementia, Wells and Dawson (2000) found that the majority of veterans had high levels of retained abilities in voluntary and purposeful movements in simple activities of daily living, attention and humor, social conversation skills (e.g. personal greeting, introduction and handshake, and inquiry), comprehension of verbal commands, and facial affect recognition. These findings suggested that persons with dementia still possess many functional abilities such as the ability to express themselves and interact with others that support engagement in self-defined meaningful activities. Furthermore, dementia-specific QoL is greatly environmentally implicated.

Environmental influences on the QoL of Persons with Dementia. The QoL of adults with dementia is dependent on the particular *environmental presses* that they encounter in the moment and also cumulatively over time. Environmental presses, which can comprise of various physical, cultural, or social aspects of the environment, “serve to elicit or press toward the expression of some behaviors and suppression of others” (Wood, Womack, & Hooper, 2009, p. 338). For example, imagine that a cowboy with dementia enters an arena with a horse, his family members, and horse handlers who are able to help him groom, saddle up, and ride the

horse. The familiarity of these equine-related occupations, the presence of the horse, and the comfort of sharing this experience with his family create a nostalgic feeling and elicit memories of his past. These physical, cultural, and social aspects of his environment encouraged him to caress and then ride the horse. By participating in these familiar and meaningful occupations, he reconnects with his past and family and has a positive emotional experience. Therefore, this equine environment has served to optimize engagement by supporting purposeful use of his functional capacities in caring for and riding a horse and in emotionally reconnecting with family and equine professionals, thus enhancing his life quality while so engaged.

However, environmental presses that either under stimulate or exceed the functional capacities of people with dementia may restrict their ability to participate in occupations and interact with others. Now imagine if this cowboy with dementia spends most of his day sitting in front of a television at a nursing home. His physical and social needs and abilities are likely not being nurtured. This situation negatively impacts his identity, as there are reduced opportunities to engage in occupations involving a horse either alone or with others. As his abilities are not adequately challenged, the prevalence of problematic behavior increases such as becoming withdrawn, bored, depressed, agitated, or aggressive (Wood, 2005). Furthermore, lack of engagement and the disuse of abilities can result in atrophy of skills, boredom, and *excess disability*, or an incapacity beyond what is attributed to the disease (Wells & Dawson, 2000).

Therefore, the prevalence of these problematic behaviors in persons with dementia can result from limited engagement in meaningful life events and a lack of a sense of purpose. A catalyst for these negative outcomes is the discrepancy between the person's environment and their functional capacities, interests, and values (Kitwood, 1997; Wood, 2014). With this understanding, the focus to improve QoL and reduce problematic behaviors is then placed on

adjusting the social and physical elements of the environments to support personhood, functional capacities, and the occupational needs of the person. As next described, animal-assisted activities and therapies, including those involving horses, may offer promising opportunities to support these needs for people with dementia.

AAAT and EAAT with Adults with Dementia

Animal-assisted activities and therapies. *Animal-assisted activities and therapies* (AAAT) are interventions that incorporate human participants, trained professionals, and animals to provide opportunities for therapeutic benefits (Animal Assisted Intervention International, 2013). *Animal-assisted therapies* (AAT) are goal-directed interventions designed to promote social, physical, cognitive, and/or emotional function. Furthermore, credentialed health care health professionals deliver these therapies within the domain of their professional practices. *Animal-assisted activities* (AAA) are, therefore, interventions for educational, motivational, and/or recreational purposes that are less-goal directed, where specific objectives in AAA typically are not planned. As compared to AAT, AAA services are typically conducted on a volunteer basis, where the health professional and/or animal handler simply receive an introductory training.

AAAT, especially involving the use of dogs, have been used in dementia care to reduce aggression and agitation, increase communication and social engagement, and promote a higher QoL (Filan & Llewellyn-Jones, 2006; Nordgren & Engstrom, 2014a). Other findings suggest that animals reduce sadness and anxiety, while promoting positive emotions and motor activity in adults with dementia (Mossello et al., 2011). It is theorized that these improvements in psychosocial abilities and reduction in problematic behaviors are due to the participants' emotional and positive responses to the animal, the bond developed between the animal and

person, and the increase of attraction to a pleasurable environmental stimuli (Mossello et al., 2011; Nordgren & Engstrom, 2014a).

Equine-assisted activities and therapies. Equine-assisted activities and therapies (EAAT) are forms of AAAT that date back to the ancient Greeks, where riding horses was said to improve the health and well-being of persons with disabilities (DePauw, 1986). Broadly speaking, EAAT aims to address the physical and psychosocial abilities of participants through the therapeutic use of the horse (PATH International, 2015). *Equine-assisted activities* (EAA) primarily consist of a central activity, such as therapeutic riding, grooming and stable management, mounted or ground activities, etc., in which participants, instructors, volunteers, and horses are involved (Hauge, Kvaem, Pedersen, & Braastad, 2013). The following subtypes of EAA share this activity-based approach: therapeutic riding, equine-assisted or equine-facilitated learning, therapeutic vaulting or driving, and therapeutic horsemanship. A distinguishing feature among EAA and equine-assisted therapies (EAT) is that EAT incorporate habilitative and rehabilitative goals and treatments related to participants' needs and are carried out by credentialed health professionals in accord with their profession's standards of practice (PATH International, 2015). For example, occupational therapists, physical therapists, and speech language pathologists are common professionals conducted EAT. As with EAA, EAT involve equine activities, such as tacking and riding the horse, and the equine environment, such as volunteers or family. EAT subtypes include hippotherapy and equine-assisted, or equine-facilitated, psychotherapy.

A prevalent type of EAAT is therapeutic riding, also called therapeutic horseback riding. PATH International (2015) defines therapeutic riding as “an equine-assisted activity for the purpose of contributing positively to the cognitive, physical, emotional and social well-being of

individuals with special needs” (Therapeutic Riding section, para 8). Common examples of activities used in therapeutic riding include caring for the horse, such as cleaning stalls, feeding and watering, and blanketing the horse; ground activities, such as leading, tacking, and grooming the horse; riding activities, including walking, riding on uneven terrain, trotting, exercises on the horse, and steering the horse to move around objects, such as barrels and cones; and social activities, such as interacting and communicating with the involved equine-professionals, caregivers, volunteers, and other participants (Homnick, Henning, Swain, & Homnick, 2013; Lanning & Krennek, 2013; Yorke, Adams, & Coady, 2008). Recent research studies show that therapeutic riding activities can generate the following outcomes within the adult population: improved QoL, balance, and perception of health; increased sense of hope and trust; reduced feelings of isolation and interferences on daily life activities due to emotional health (Homnick et al., 2013; Lanning & Krennek, 2013). Other noted benefits include satisfying emotional and social experiences of the equine environment (Asselin, Ward, Penning, Ramanujam, & Neri, 2012). The equine environments also offer participants with unique opportunities. For example, as they comprise of caregivers, horse handlers, volunteers, therapists, and other participants, they can be socially stimulating, thus creating the potential for the formation of social relationships in the present moment (Yorke et al., 2008).

Participants may also experience a sense of identity, comfort, security, or belonging by being in the moment, experiencing a connection, and relating with the horse. In a study by Yorke et al. (2008), the occupations of horseback riding and daily maintenance of the horse including grooming, feeding and watering, and cleaning of stalls helped survivors of trauma establish nurturing bonds with horses. Nurturing human-horse bonds, which participants described as personal, nurturing, responsive, interactive, and reciprocal, were found to provide a

sense of identity as a rider and the feeling of usefulness. Thus, occupations experienced in various EAAT may be a central force in bringing people's awareness to the present moment, unifying them with their surroundings, and allowing them to relate to others and horses alike. These intimate connections may serve the emotional needs of the participants.

While the studies cited above did not involve adults with dementia, they nevertheless raise the possibility that various EAAT could potentially improve their QoL.

Adults with Dementia and EAAT. Enabling persons with dementia to engage in occupations may provide them with opportunities to relate to others and their surroundings, initiate social contact, express pleasure, experience affectional warmth, and establish a sense of self and identity, which positively impacts their QoL (Hasselkus, 1998; Kitwood & Bredin, 1992). An EAA study by Dabelko-Schoeny et al. (2014) provides parallel evidence that equine-assisted interventions offer opportunities for meaningful occupation within enriched equine environments, which may potentially enhance the QoL of persons with dementia. Specifically in this study, activities involving grooming, leading, and painting horses along with other interactions with the horse, people, and physical affordances in the equine environment were found to improve the emotional well-being of participants with dementia. Participants also experienced a reduction in problematic behaviors such as resistance to care, agitation, and wandering. These changes were theorized to result from the horse sparking participants' interests and the social nature of the equine environment, including active engagement and interactions with the horse and involved instructors and volunteers. In addition, the enriched equine environment in this study, encompassing a barn surrounded by several shade-trees, was theorized as having a relaxing effect on the participants. Therefore, referring to my definition of emotional well-being relating to a state of peace and inner satisfaction, these findings that

problematic behaviors were reduced and participants felt calm suggest that they experience a higher QoL.

Dabelko-Schoeny et al. (2014) also suggested that exposure to the horse and its surroundings may motivate persons with dementia to partake in physical activity. Anecdotal evidence from this study suggests that this engagement in physical activity promotes the use of retained capacities. When presented to the horse, participants with mobility limitations would often rise without assistance and offer to walk the horse. Staff from the participants' adult day services reported that they had not seen some of these participants get out of their wheelchair or walk without assistance prior to these encounters with the horse. These observations highlight the potential impact EAAT may have on the QoL for adults with dementia, such as elicitation of their retained capacities.

Need for the Study

EAAT have become widely recognized for their therapeutic benefits, which have contributed to the expansion in published research and literature on EAAT over the past 35 years. This abundance of published literature has not yet been systematically analyzed and synthesized. Furthermore, information describing guidelines for interventions used in EAAT for adults with dementia is not widely known or implemented. The current state of knowledge regarding interventions and outcomes in EAAT relevant to dementia-specific QoL has also yet to be fully understood. Therefore, there is a need to critically examine the EAAT literature relevant to adults with dementia and identify treatment strategies and outcomes relating to dementia-specific QoL. These findings may provide a foundation of knowledge on EAAT for adults with dementia and may influence practice guidelines and future research within the industry of EAAT and profession of occupational therapy, thus further benefiting the QoL for this population.

Aims and Research Questions of the Current Study

The aim of this study is to map the current state of knowledge of EAAT involving adults with dementia and to derive implications for occupational therapy in addressing dementia-specific QoL. Relative to the overall topic of dementia, this study will investigate who participates in EAAT, as well as interventions and outcomes in EAAT that are activity-based and/or address indices of dementia-specific QoL. These indices include, but are not limited to, emotional functions, psychosocial functioning, confidence, competency, enjoyment, and attentiveness to task. The current study will address the following research questions. In refereed papers on EAAT and dementia:

- 1) What professionals are reported as having provided EAAT for adults with ADRD?
- 2) How are adults with ADRD who receive EAAT described, including, but not limited to, their age, gender, and/or specific dementia diagnoses?
- 3) How are interventions for this population described in EAAT?
- 4) What are the outcomes of these interventions, and what relation, if any, do they have with indices of dementia-specific QoL?
- 5) In EAAT, what are theorized as the agents for positive change in dementia-specific QoL in adults with ADRD?

CHAPTER TWO: METHODS

The methodology of a systematic mapping review (SMR) was chosen as the research approach for both the larger and present study, since identifying gaps and strengths in the current knowledge base of EAAT and AAT can help to guide future occupational therapy education, practice, and research. SMRs compile research and non-research literature on a broad topic, including descriptive, opinion-based, and evaluative papers in order to assemble a ‘map’ that describes, evaluates, and categorizes the current knowledge on that specific topic (Hammick, 2005; Hooper, King, Wood, Bilics, & Gupta, 2013). This process identifies gaps in the current literature, thus prompting further review and future research (Grant & Booth, 2009). SMRs differ from systematic reviews in that SMRs examine non-research literature in addition to research in order to create a more expansive “map” of what is known in a specific field. Therefore, I chose to conduct a SMR in order gain a more comprehensive understanding of EAAT for adults with dementia. Additionally, this comprehensive review can provide descriptions used in the literature on health professions providing services, participants, intervention strategies, theories, and outcomes, further influencing future practice guidelines, education, and research.

Research Approach

I have been a member of a research team conducting a SMR of all refereed papers on EAAT, not just those relevant to people with dementia, published from 1980 through 2014. The research team was comprised of the principal investigator of the larger study, two Ph.D. level graduate research assistant, and three master’s level graduate research assistants including myself. All of the EAAT papers for this SMR have now been collected, and I now know that

only one published article was found that focuses on EAAT with adults with dementia. I previously referenced this article by Dabelko-Schoeny et al. (2014) in Chapter One. Therefore, my study has been modified to systematically review AAT literature that pertains to adults with dementia. Literature from AAA was excluded from my study, since these services do not require that a health care professional conduct the therapy. Therefore, this SMR focuses specifically on AAT in order to draw implications for occupational therapy. The new aim for my study is two-fold: 1) to map the current state of knowledge of AAT involving adults with dementia as represented in peer-reviewed literature published between 2004 and 2014; and 2) to develop implications from this map for occupational therapy services that target improved QoL for people with dementia. The following modifications to the research questions were made to incorporate this broader expansion of the population to be studied.

- 1) What health professionals are reported as having provided AAT to adults ADRD?
- 2) How are adults with ADRD who receive AAT being described, including, but not limited to, their age, gender, and/or specific dementia diagnoses?
- 3) How are interventions for this population described in AAT?
- 4) What are the outcomes of these interventions, and what relation, if any, do they have with indices of dementia-specific QoL?
- 5) In AAT, what are theorized as the agents for positive change in dementia-specific QoL in adults with ADRD?

These questions were derived from the conceptual framework of this study. By gathering data related to these questions, this study can identify the current state of knowledge influencing AAT practice with this population, the impact of these services as it relates to QoL, and the most commonly addressed elements of dementia-specific QoL. As a result, future practitioners,

educators, and researchers in occupational therapy may be able to incorporate these findings when creating practice guidelines, educating on effective treatment strategies, and establishing pertinent research methods to address the QoL within this population.

For example, findings on how adults with dementia are being described in the AAT literature may highlight areas of opportunity for occupational therapists to provide their services. Sub-populations of adults with dementia frequently mentioned in AAT might suggest demographics of adults with dementia (i.e. level of dementia severity) that would be most susceptible to the potential benefits from occupational therapy in AAT. Additionally, sub-populations infrequently mentioned or not mentioned at all may also indicate an area for growth for occupational therapists to offer AAT services.

Furthermore, common theories identified in the AAT literature that justify positive outcomes or outcomes related to dementia-specific QoL may be furthered analyzed to determine relevance and applicability to occupational therapy. Additionally, findings on how interventions in AAT are described will determine how the environment and activities are being incorporated during treatment. This information will again highlight the feasibility implementing intervention strategies used in AAT within the professional realm of occupational therapy.

Findings on outcomes in the AAT literature related to changes in participation and/or involvement in activities might have the potential to outline implications for occupational therapy as well. Positive changes in occupational performance through the use of interventions in AAT may suggest the possibility of eliciting similar positive outcomes in by incorporating interventions strategies in occupational therapy. By occupational performance, it is meant the quality of participation in a life event, resulting from the dynamic transaction among the person, environment, and activity (Brown, 2014). Additionally, a lack of outcomes related to

occupational performance may indicate an area of growth for AAT in terms of researching and providing treatments that promote increased participation in meaningful occupations.

Furthermore, other outcomes of particular interest relate to elements of personhood, such as a person's identity and ability to make emotional connections; social relationships, including ability to create and maintain secure attachments with others; emotional well-being, such as confidence and/or showing evident pleasure; and use of retained capacities, including cognitive, emotional, social, and physical functioning. Understanding if AAT has an impact on dementia-specific QoL will also underscore potential opportunity for occupational therapy to incorporate using animals in a therapeutic manner.

Data Collection

Search Strategy and Data Management

As discussed in Hammick, Dornan, and Steinert (2010), thorough and structured protocols for recording, managing, and extracting data reflect sound practice. Therefore, my study consisted of three filters to retrieve, organize, and code data from relevant articles. Filter one consisted of a multiple database search for relevant sources on AAT. Filter two comprised of an inclusion and exclusion process designed to narrow my database to sources specific to AAT for adults with dementia. Lastly, filter three involved the creation and application of a data extraction tool.

My study began with comprehensive searches executed in selected databases conducted by a library science expert. Search strategies were modified several times to accommodate for relevant vocabulary eliminations and additions that were identified through concurrent review of relevant literature. The revised search strategy was executed in the following databases: CINAHL (EBSCO), PsycINFO (EBSCO), and PubMed (NCBI). Search terms were broad in

order to capture all literature related to AAAT. That is, terms did not include variations of dementia in order to compile an AAAT database for future research inquiries. The search strategy was restricted to the retrieval of articles written in English and published in peer-reviewed journals between 1980 and 2014. The date range and criteria for the initial search was intended to capture all AAAT literature for potential future research endeavors related to AAAT. This systematic search identified 1,401 sources meeting these criteria. After duplicate articles were removed, 1,295 sources remained. All records were managed in an EndNote library, which allows for organization and coding of references, a process described by King, Hooper, and Wood (2011).

Inclusion and Exclusion Criteria

Inclusion criteria consisted of articles that were peer-reviewed, a primary source, written in English, and published between 2004 and 2014. Papers had to pertain directly to AAT and the adults with dementia. A credentialed professional must have also conducted the therapy within the scope of their practice, as this relates to how AAT is defined in my thesis. Articles were excluded if they discussed human-animal interaction not for the purpose of therapy, studies on animals used in AAT, and intervention studies that did not have published results. Multiple iterations of the inclusion and exclusion criteria occurred after various discussions with the research team. Table 1 outlines the final criteria for this AAT study.

Table 1
Inclusion and Exclusion Criteria for Current Study

Inclusion	Exclusion
All included papers must be:	Papers are excluded that:
<ul style="list-style-type: none"> • Peer-reviewed; • Primary source; • Written in English; AND • Published between 2004 – 2014 	<ul style="list-style-type: none"> • Focus on human-animal bond, connection, or interaction that is unrelated to AAT, where animal(s) are not used for a therapeutic

<p>Paper must also directly pertain to AAT as indicated by a primary focus on:</p>	<p>purpose (i.e. service animals or pets as companions);</p>
<ul style="list-style-type: none"> • One or more kinds of AAT: AND • Therapy must be designed or conducted by a credentialed professional within the scope of their practice 	<ul style="list-style-type: none"> • Provide only a synopsis of a paper about AAT that has been published elsewhere or AAT is only as a minor focus among many activities or therapies;
<p>Paper must also directly pertain to population of interest for current study:</p>	<ul style="list-style-type: none"> • Studies on animals used in AAT; • Studies solely referencing toy animals;
<ul style="list-style-type: none"> • Adults with dementia 	<ul style="list-style-type: none"> • Provides animal-related information not related to AAT; OR • Intervention studies that do not have published results

After finalizing the inclusion and exclusion criteria, I conducted an initial screening process by eliminating sources by their title and abstract that were irrelevant to the study. Then I independently coded the remaining articles for inclusion and exclusion. I brought to the research team my rationales for including articles and all articles that were difficult to code for further discussion and evaluation. I also manually searched all reference lists of literature reviews or systematic reviews between 2004-2014 on AAT and/or adults with dementia for additional sources of relevance to AAT for adults with dementia. The final number of articles included in this study is 13. Figure 1 presents the data collection process for my study, including the identification, screening, eligibility, and final included articles.

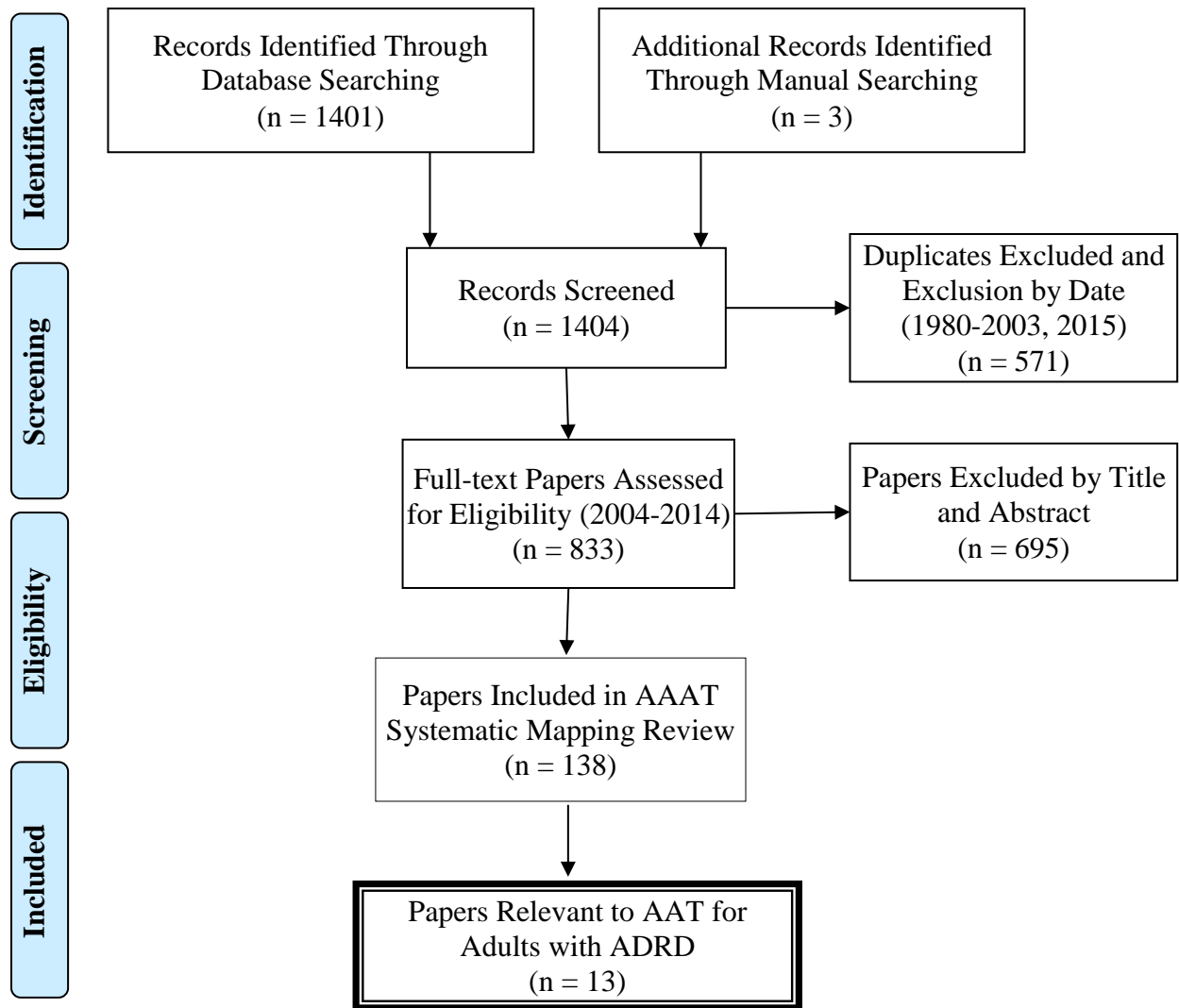


Figure 1. Data collection process

Data Extraction

A data extraction tool (DET) was developed to record and extract details from each included article in order to produce a subset of data that could be analyzed to answer my research questions. The DET used in my study, which I will refer to as the AAT DET, is a modified version from the DET in the larger EAAT study. The research team in the larger EAAT achieved interrater reliability at 90% agreement for the EAAT DET. The AAT DET was comprised of these broad categories that related to my research aims and questions: AAT recipients, health professionals, animals, interventions, outcomes, and theories. In addition to

extracting data related to these categories I wrote key impressions of each article to capture any salient information that had not been captured in the other sections (see Appendix A for a copy of the AAT DET).

DET categories related to descriptors of participants in AAT included age, gender, severity of the dementia, and type of dementia. Severity of dementia was divided into mild, moderate, and severe. Authors had to either specify severity of dementia in these categories or report a person's corresponding scores from the Mini Mental State Examination (MMSE). The MMSE is an assessment that measures cognitive impairment and rates impairment as mild, moderate, or severe (Kurlowicz & Wallace, 1975). Extracting data related to these specific characteristics of this population was undertaken to create an overall understanding of those who have and have not received AAT services or been studied. The health professional and animal categories simply included data on the professional conducting or designing the intervention and the type of animal involved in the intervention.

Furthermore, the DET intervention category consisted of brief descriptions on the intervention used in AAT, such as "petting the animal" or "opening song." Understanding how interventions are described in the AAT literature allowed me to determine the potential application of these strategies to an equine environment as well as highlight strategies that are applicable to the occupational therapy's realm of practice. For example, if a common intervention was grooming a dog, this activity would be feasible to incorporate into occupational therapy. Grooming the animal may be considered a meaningful activity for the adults, or an occupation, and therefore, an occupational therapist might incorporate this activity into a treatment session to benefit the client. Therefore, I analyzed intervention data in terms of strategies that, if incorporated in occupational therapy, would be considered occupation-based.

By occupation-based, it is meant employing methods that are based in engaging in an occupation (Fisher, 2014). On the other hand, however, if the most common intervention strategy related to talk therapy where the person is not engaging actively in an activity, this may suggest a need for occupational therapy. Therefore, data relating to intervention strategies were coded and grouped to identify trends within the literature. Data related to the context in which sessions in AAT occurred were also extracted to be analyzed. These data were analyzed in the hopes of better understanding of the practicality or feasible for applying AAT strategies to occupational therapy.

Outcomes related to changes in a person's ability to participate in occupations were also of great interest, as these outcomes could suggest implications for occupational therapy. To capture these outcomes, the AAT DET included an outcome code at the level of activity and participation. The International Classification of Functioning, Disability, and Health (ICF) (World Health Organization, 2002) defines *activity* as "the execution of a task or action," and *participation* as "involvement in a life situation" (p. 10). The ICF was used as a guide for the AAT DET due to its international influence as a conceptual model that incorporates activity and participation as contributors to health. As it is difficult to distinguish between an activity and participation, they were combined. Some examples of outcome measures related to activity and participation include performances in activities of daily living (ADLs) or participation in leisure activities. Data related to this combined outcome may indicate areas that occupational therapists could address within their scope of practice.

The DET category on theory captured data describing theorized mechanisms that promoted, or were presumed to promote, changes resulting from AAT. I only extracted data on theory related to positive outcomes, not the theoretical framework that influenced the study design or approach. Identifying popular trends related to theory may provide insight for future

practitioners and researchers in occupational therapy on how to design treatment plans or studies. For example, if positive findings were theorized to have occurred due to the adults' active engagement in activities with the animal, this may suggest a suitable fit for occupational therapists to incorporate using these activities into their treatments.

Data Analysis

Coding Strategies

All included articles in the study were uploaded into NVivo for data analysis. NVivo is a software program designed to evaluate and interpret qualitative data, such as data from journal articles (Edhlund, 2012). I then independently coded each article guided by the AAT DET. That is, I used the AAT DET to create and define apriori coding categories. That is, I deductively developed codes that aligned with the broad DET categories under *parent nodes* in NVivo. Parent nodes act as a container for gathering related data, so I could identify any emerging patterns from the AAT literature. Data pertaining to subcategories of the DET were coded under *child nodes*. Child nodes contain groups of related data that identify with a parent node. Some child nodes were developed deductively, as with the four elements of QoL for adults with dementia. Other child nodes, however, were developed inductively, such as intervention strategies described in the literature.

Therefore, the coding process consisted of both open coding and axial coding. Open coding can be described as coding for major categories of information, whereas axial coding is the coding of sub-categories related to open codes (Creswell, 2013). For example, data related to each element of dementia-specific QoL were subcategories (child nodes) under outcome (parent node). Open coding was also used to inductively develop child nodes, such as types of intervention strategies. Grouping data in more specific categories using child nodes allowed for

a more in-depth analysis of trends in the AAT literature related to the DET categories. I was then able to investigate which elements of QoL were most or least prevalent. Furthermore, some outcomes of dementia-specific QoL were further broken down into subcategories of child nodes using an inductive approach. I created these specific subcategories of child nodes based on what I found in the AAT literature related to dementia-specific QoL. For example, emotional wellbeing was comprised of engaged look or emotional expression, depression reduction, reduction of problematic behaviors, mood, financial concern, psychological wellbeing, and relaxation or calming.

Additionally, each outcome's findings were further coded as *statistically significant findings*, *other important findings*, or *no findings*. *Statistically significant findings* refer to findings where researchers stated a statistical significant improvement or reported a p-value < 0.05. *Other important findings* refer to positive findings in outcome measures, though not statistically significant. Lastly, *no findings* refer to findings that were either inconclusive or negative findings. This level of detail provided greater description and a more thorough analysis of outcomes, specifically those related to dementia-specific QoL. Refer to Figure 2 for an example of parent and child nodes in NVivo.

Nodes			
	Name	Sources	References
	Context of Intervention	13	29
	Health Professional	13	29
	Helpful Quotes for Thesis	9	28
	Intervention	12	106
	Outcomes	13	122
	Outcomes - Activity or Participation	6	16
	Outcomes - Emotional Wellbeing	13	53
	O - Calming/Relaxed	2	4
	O - Financial Concern	1	2
	O Depression Reduction	5	11
	O Engaged Look or Emotional Expression	7	13
	O Mood	1	2
	O Problematic Behaviors	8	15
	O Problematic Behaviors - No Findings	3	3
	O Problematic Behaviors - Other Important	5	9
	O Problematic Behaviors - Statistically Sig	1	1
	O Psychological Wellbeing	1	1
	Outcomes - Functional Capacities	9	30
	Outcomes - Personhood	5	7
	Outcomes - Social Relationships	8	16
	Participants	13	151
	Research Study	10	21
	Theory	12	27
	Type of Animal	13	28

Figure 2. Parent and child nodes in NiVo

I used memos in NVivo to record my key impressions of each article. To help assure that unique data, or difficult to code data, relevant to the research questions were incorporated in findings, I referred back to memos when I came across striking or conflicting findings. For example, when the same outcome had two different findings (i.e. *other important finding* and *no finding*). Memos provided explanations on coding strategies for individual articles, the rigor of

the study, and any unique occurrences that may have influenced findings, such as the flu potentially influencing the study's findings.

Queries

I conducted basic queries related to each of the broad DET categories. For example, I queried data related to theorized mechanisms for change to help further identify patterns or trends pertaining to theory. I used findings from these basic queries to create my table of findings, Table 2. Table 2 displays all articles in chronological order and summarizes findings on practitioners, participants, intervention, theories, and outcomes. These brief but salient descriptions of data allowed me to further analyze and identify major trends across the included papers, or the bigger picture findings. I also analyzed frequencies of all parent and child codes in every AAT DET category to determine the most and least prevalent data in the AAT literature.

After querying data on outcomes, I wanted to see any trends at the level of findings in terms of statistically significant findings, other important findings, and no findings. NVivo, however, is unable to run queries on child nodes with same titles that are under different parent nodes. For example, I cannot run queries on all data on *no findings* among all types of outcomes. Therefore, I manually recorded the frequency of findings from each outcome using a whiteboard. This visual allowed me to analyze any trends related to the level of findings.

I also conducted queries to analyze data specific to articles where an occupational therapist was involved in AAT. These queries consisted of extracting data related to each of the DET categories from only the articles that mentioned an occupational therapist. An example of a query is gathering data that are captured in both codes, intervention and practitioner – occupational therapist. Furthermore, identifying trends specific to occupational therapy may highlight the unique contributions that an occupational therapist can offer to facilitate positive

change. Additionally, patterns and trends on the populations served, interventions, theories, and outcomes specific to occupational therapy increases the understanding of occupational therapy's current involvement in AAT.

CHAPTER THREE: RESULTS

Chapter Three provides a detailed account of my findings related to my research aims and questions. Therefore, results are displayed in sections related to the topic that each research question addressed, specifically findings related to participants, interventions, outcomes, and theories. As the aim of my study was to identify implication for occupational therapy in an equine environment, within each section are findings from articles that mentioned the involvement of an occupational therapist. Superscripts used throughout my results section refer to articles presented in Table 2.

All of the 13 included articles mentioned an outcome related to the elements of dementia-specific QoL, thus confirming that current AAT literature addresses QoL for adults with dementia. These outcomes related to QoL were frequently reported as positive findings, some with statistical significance, suggesting that AAT has a positive influence on this population. Furthermore, 85% of the AAT articles described activity-based intervention strategies. These findings suggest that activities or occupations may promote positive outcomes related to dementia-specific QoL. Lastly, nine health care professionals were described in the literature, who provided services for people with mild to severe dementia. Therefore, AAT is a multidisciplinary field that addresses the needs of persons at all stages of dementia.

Question One: Professionals Providing AAT

As shown in Table 2, occupational therapists were identified in six articles as either designing treatment plans or implementing AAT to adults with dementia ^[1, 3, 5, 10, 12-13]. As further illustrated in Figure 3, diverse other health care professionals were reported as providing AAT services to this population, where the most prevalent were nurses. Seven articles (54%)

mentioned nurses as either conducting or designing sessions in AAT ^[5-6, 9-13]. Also represented in Table 2, articles often mentioned multiple health care professionals' involvement in an AAT session. Given these findings, presentation of results for subsequent research questions describes overall findings in the AAT literature, highlighting interesting findings specific to articles with occupational therapists.

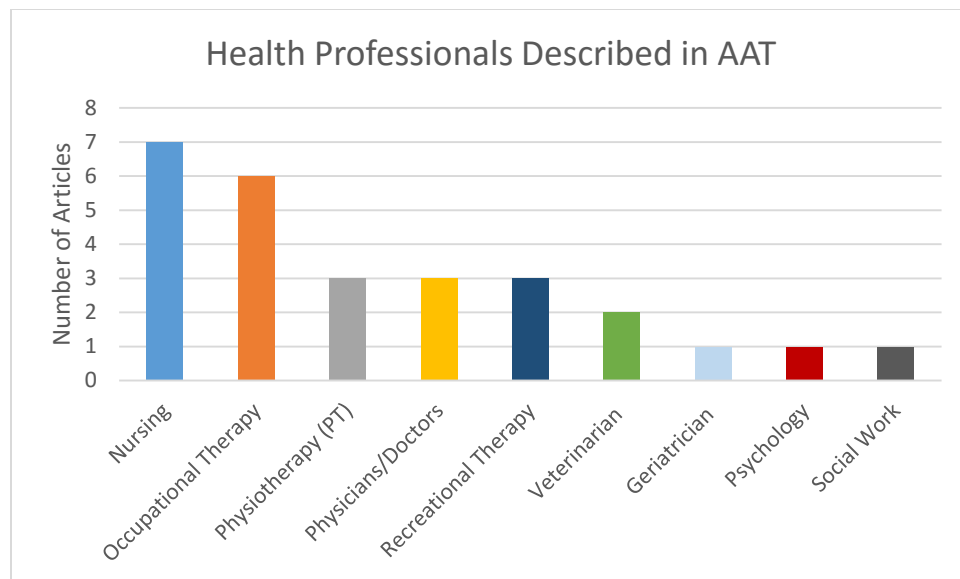


Figure 3. Health care professionals for adults with dementia in current AAT literature

Question Two: Description of Participants in AAT

Across all papers, adults with dementia who were reported to have participated in AAT ranged from 58 to 96 years of age. While descriptions on the persons' type of dementia were limited, all stages of dementia severity were reported.

As summarized in Table 2, few differences were found among participants in AAT that did and did not involve occupational therapy. Three out of the 13 articles (23%) focused on adults with mild dementia ^[4, 11, 13]. Moderate ^[2-4, 9, 11-13] and severe dementia ^[1-4, 10, 12-13] were each mentioned in seven articles (54%). Interestingly, five of the seven articles that mentioned people with severe dementia involved occupational therapists. The majority of articles (69%), however, did not specify a type of dementia in its descriptions of participants ^[1-3, 5-6, 8-9, 11, 13].

The most commonly reported type of dementia was Alzheimer's disease (38%)^[2, 4, 7, 12-13], followed by vascular dementia (15%)^[10, 13], and, lastly, senile dementia and secondary dementia (.08%)^[2]. Women far outweighed men as participants with dementia. Indeed, about two-thirds of reported participants were woman.

Question Three: Description of Interventions Used in AAT

Various intervention strategies and contexts for interventions were represented in this AAT literature (Table 2). When investigating the type of animal used in interventions, however, 11 out of the total 13 articles (85%) mentioned a dog^[2-4, 6-13]. Additionally, three articles (23%) described a robotic dog^[1, 3, 5], where one article (0.08%) reported using a robotic seal^[5]. Two articles in the study were reviews^[3,5], and therefore these findings are not mutually exclusive.

Furthermore, the most common intervention strategy reported in the literature was playing with the animal, such as playing fetch with a dog (69%)^[2, 4, 6-12]. Most articles, however, simply reported "playing with the animal" with no further description. The second most frequently described intervention, petting the animal, was discussed in eight articles (62%)^[2, 4, 6-7, 9-12]. Feeding^[2, 9, 10-13], grooming^[2, 6, 9-10, 12-13], and talking to the animal^[7, 9-13] were each mentioned in six articles (46%). Other strategies discussed in the literature were walking the dog (38%)^[6, 9-10, 12-13], discussion about the animal or an animal theme (23%)^[10-12], and being with the animal (i.e. animal sitting on person's lap) (23%)^[7, 10-11]. Refer to Figure 4 for a visual representation of the nine most frequently referenced intervention strategies.

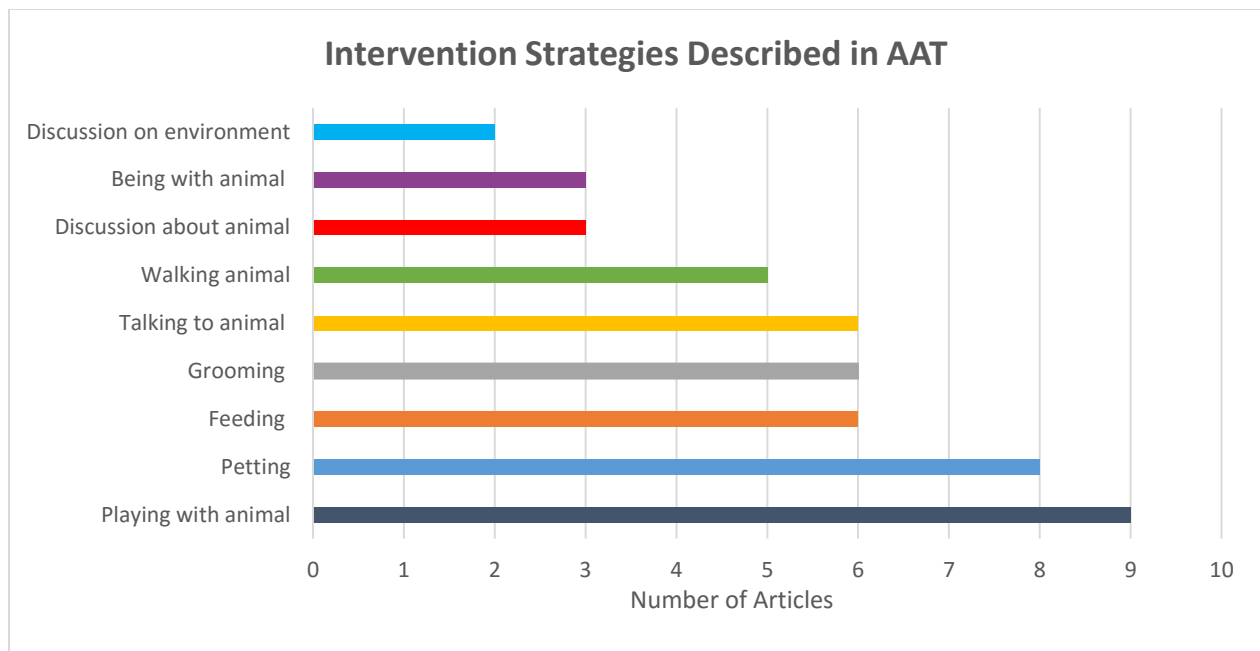


Figure 4. Most popular interventions described in the AAT literature

All of these intervention strategies incorporated the animal in some way. A few interventions, however, incorporated other elements of the environment as well. For example, an article that mentioned a nurse, physiotherapist, and occupational therapist illustrated an intervention strategy where participants in AAT discussed elements of the environment, such as flowers or photo albums ^[13]. A similar strategy was also mentioned in a non-occupational therapy related article where sessions were organized by a veterinarian, psychiatric nurse, and recreational therapist. Here, participants were asked to describe and discuss objects like hats, gloves, or a scarf ^[11]. Some articles also highlighted the involvement of the social elements of the environment. Examples of these social elements included encouragement from the health care professional or animal handler ^[1, 9, 12] and social interactions with other participants, such as through discussion or participating in an opening or closing song ^[1-2, 10-11, 13]. Interestingly, four of the five articles with interventions incorporating the social elements of the environments also mentioned occupational therapists ^[1, 10, 12-13].

Additionally, some intervention strategies did not directly involve interactions with an animal. These types of strategies were infrequently highlighted within the articles. For example, closing activities, such as a closing song^[1] or reading stories^[11], introductions or overview of AAT session^[2, 11], and discussions about elements of the environment^[11, 13] did not incorporate the animal. Other examples include writing poetry about the animal^[11] or discussing safety consideration^[6]. Lastly, group session^[1, 3, 8-9] and individual sessions^[2, 9-11] were each noted in four articles (31%).

Every article describing intervention strategies reported strategies related to activities or occupations^[1-2, 4, 6-13]. For example, feeding, grooming, singing a song, or participating in discussion are all activities, and if meaningful to the client, can also be interpreted as occupations. Furthermore, four of the six articles that mentioned occupational therapists reported intervention strategies that incorporated activities (occupations)^[1, 10, 12-13]. As presented in Table 2, the two articles that did not describe interventions were a non-researched review and a literature review^[3, 5].

Eleven articles (85%) described the context of the sessions in AAT as occurring in nursing homes, long term care facilities, or residential aged care facilities^[2-5, 7-13]. Conducting treatments indoors was mentioned in eight articles (62%)^[1, 4, 6-9, 11-12]. Descriptions relating to an indoor context include quiet area (i.e. meeting or treatment room) (38%)^[1, 4, 6, 9, 11] and the client's room or apartment (15%)^[6, 12]. Sessions outdoors^[7-8] were mentioned in two articles (15%). An article discussing robot therapy stated that this form of AAT is used in medical facilities (i.e. clinics and hospitals)^[5]. Refer to Figure 4 for a graph displaying results related to the context of interventions.

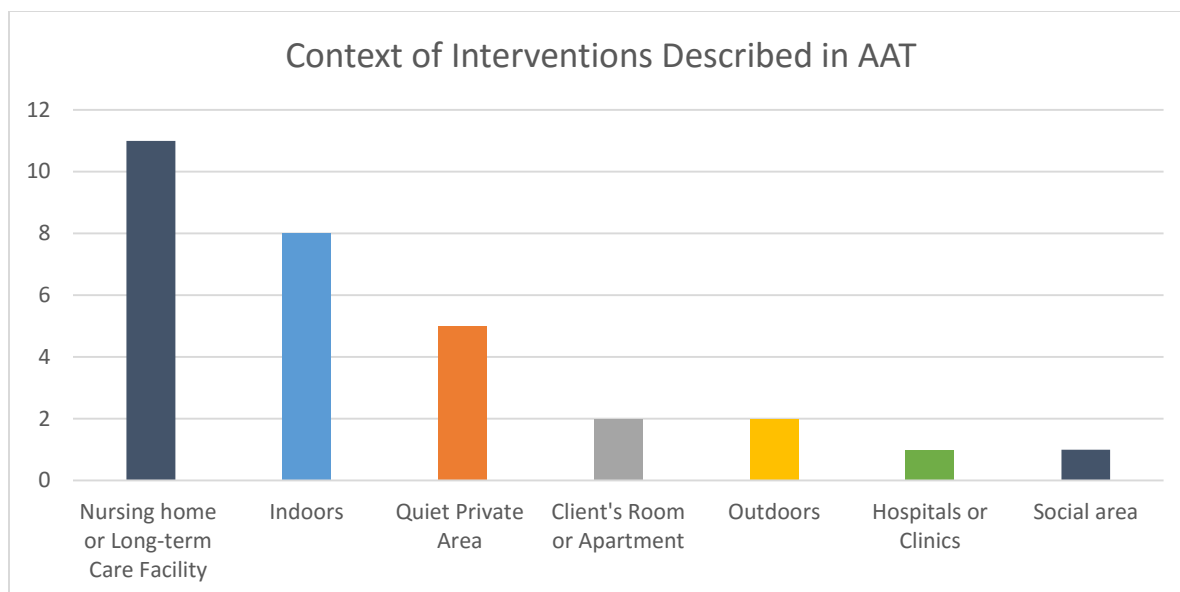


Figure 4. Context of interventions described in the AAT literature

Question Four: Description of Outcomes in AAT

As shown in Table 2, included articles encompassed all four elements of dementia-specific QoL (i.e. personhood, emotional wellbeing, social relationship, and functional capacities) as outcomes. The most prevalent element was emotional wellbeing, which was investigated or described in all 13 articles. The most prevalent subcategories of emotional wellbeing were reduction of problematic behaviors seen in nine articles ^[2-6, 10-13], engaged look or emotional expression seen in seven articles ^[1-3, 6, 9-10, 13], and depression reduction seen in five articles ^[6-9, 11]. The majority of the findings for the overall emotional wellbeing outcome (77%) were reported as *other important findings*. Four out of the 13 (31%) articles claimed *statistically significant findings*, where seven articles (54%) reported *no findings*. An overall strength of these findings is that positive changes related to emotional wellbeing are the dominant finding.

Examples of outcomes related to personhood included sense of wonder and meaning, changes in being withdrawn, or expressing will, such as suspicion. Five articles contained outcomes related to personhood ^[5-7, 10-11]. Majority of the findings were reported as *other*

important findings, where one article described *no findings* ^[11]. None were *statistically significant*.

Functional capacities were further broken down into physical, cognitive, emotional, and social capacities. Nine articles described outcomes related to functional capacities ^[1-3, 5-8, 10-11] with the most common being social functional capacities ^[1-3, 5, 10-11]. Four of the six articles (67%) with outcomes on social functional capacities also mentioned occupational therapists ^[1, 3, 5, 10]. Furthermore, the outcome of social functional capacities shared similarities with social relationships, but also included social skill development. For example, outcomes related to social relationships may refer to social behavior, where no further description is provided and no social skill development is specified. The majority of outcomes related to functional capacities were *other important findings* ^[1, 5-8, 10]. *Statistically significant findings* ^[2, 3] and *no findings* ^[10, 11] were both reported in two articles each.

Additionally, social relationships referred mainly to relationships with people, but one article did mention social relationships with the animal ^[9]. Eight articles mentioned outcomes related to social relationships ^[1, 3, 5-7, 9-11]. Six articles reported *other important findings* ^[1, 5-7, 10, 11], whereas three articles reported *statistically significant findings* ^[3, 9, 11]. One article described *no findings* ^[11].

The most common outcome described in this AAT literature with occupational therapists was the reduction of problematic behaviors, a subcategory of emotional wellbeing ^[3, 5, 10, 12-13]. This outcome category was seen in five of the six OT articles (83%). Also greatly emphasized were engaged look/emotional expression, a subcategory of emotional wellbeing ^[1, 3, 10, 13], social functional capacities ^[1, 3, 5, 10], and social relationships ^[1, 3, 5, 10].

Six out of the 13 articles (46%) measured or described an outcome at the level of activity or participation ^[1, 7-8, 10-11, 13]. Three out of these six articles also described the involvement of occupational therapists ^[1, 10, 13]. Examples of this outcome category mostly related to activities of daily living (ADLs), such as eating, dressing, hygienic procedures, grooming, or other self-care activities. Findings were equally divided between *other important findings* or *no findings*, where both level of findings were mentioned in four articles each. There were no *statistically significant findings*. Refer to Table 2 for the table of findings for a more detailed description on findings.

Figure 5 provides a visual of findings for outcome related to dementia-specific QoL and activity and participation. Please note that each unique finding was captured in the graph, and therefore, the y-axis does not represent number of articles. For example, if an article described both *statistically significant findings* and *no findings*, both of these level of findings were recorded.

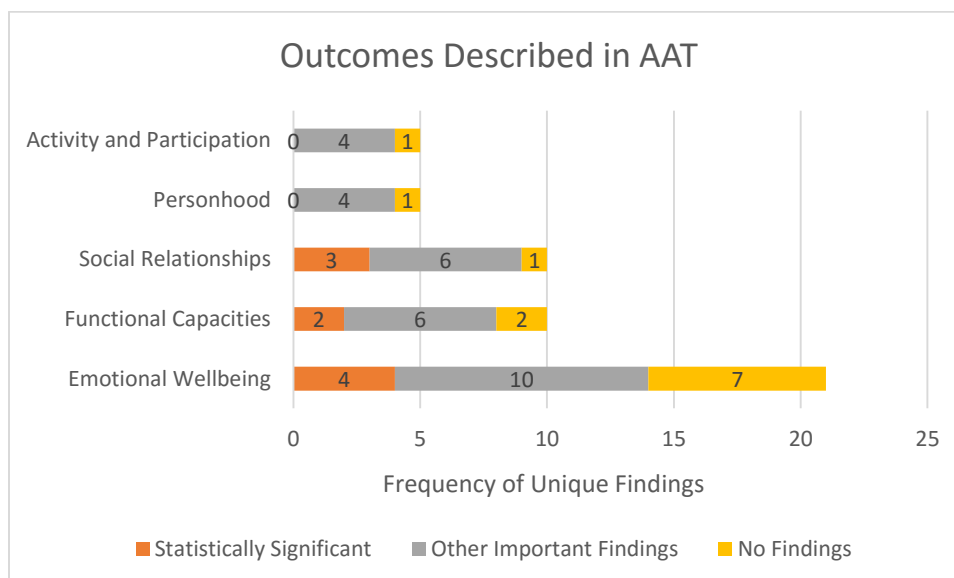


Figure 5. Outcomes in AAT that related to dementia-specific QoL and activity and participation that were described in the literature

Question Five: Description of Theorized Influences on Positive Change

Even though all article provided theoretical explanations of why AAT elicited positive changes for adults with dementia, descriptions of theory were limited. That is, many descriptions of theories were vague or unclear with underdeveloped concepts. The most prominent theory in the literature, however, accredited the animal as the driving factor influencing positive outcome. Various other explanations for change related to the health professional(s), meaningful activities involving an animal, social elements of the environment, and addressing unmet needs in the person with dementia.

Examples of brief and unclear theories included that AAT restored functional behavior as evidenced by decreased agitated behaviors ^[2], or that occupational therapy intervention with a robotic animal triggered emotions from the past ^[1]. The most prevalent theory, however, was that the animal stimulated participants or encouraged them to participate, which was emphasized in seven articles ^[1-2, 5, 7, 10, 12-13]. Interestingly, five of those seven articles sharing theories where the presence of animal prompted change also described occupational therapists as designing or conducting the treatments in AAT. Examples of this theory include that the animal psychologically stimulated the participants to care for themselves, which was influenced by the animal's need for care ^[7]; and the animal places the person at ease, making the therapist appear less threatening, creating a welcoming environment, and allowing the therapist to facilitate changes in behavior ^[2].

Theories accrediting encouragement from others within the environment (i.e. handlers, health professionals) ^[3, 9, 10, 13] and participation in activities (i.e. grooming, walking, playing with the animal) ^[4, 6, 9, 12] were the second most common theorized explanations for positive change. Three of four articles mentioning social theories also described occupational therapists'

involvement. The following theories described other aspects of AAT as the contributing factors for positive changes in participants: AAT addresses unmet needs (i.e. social interaction, participating in a meaningful activity, and feeling warmth, affection, or physical contact) ^[4, 6, 11]; and the human-animal bond or interaction contributed to change, such that it provided a sense of relaxation ^[3,7].

Additionally, seven articles presented a unique theory not described in another ATT article. Examples include that the novel experience prompted positive change ^[11]; and physical training can sustain or improve physical capacities ^[10]. Some of these once-mentioned theories were unclear such as that “the game system theory suggest that playing with an animal can increase defence [*sic*] and augment recovery potentialities; furthermore, an effective, emotional, psychological stimulation is known to solve important psychosomatic problems” (Moretti et al., 2011, p. 128) ^[7]. Refer to Figure 6 for a graph on the theorized influences for positive outcomes in AAT.

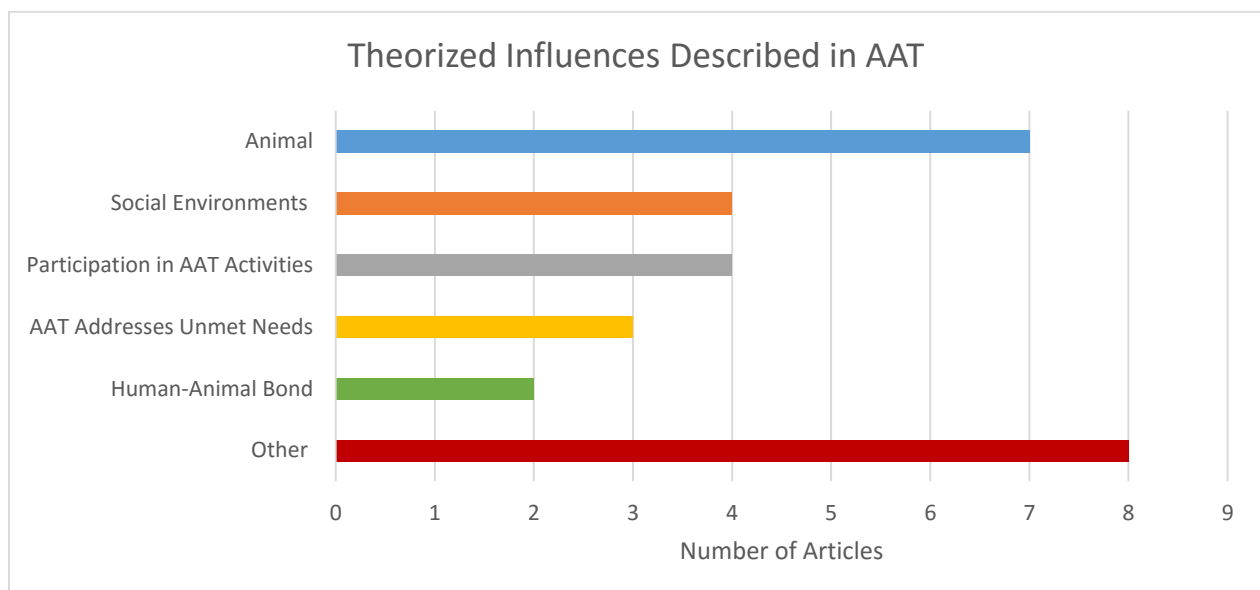


Figure 6. Theorized influences for positive outcomes in AAT that were described in the literature.

Table 2

Table of Findings for AAT Data Related to Research Questions

(Shaded = Articles that mentioned an occupational therapist)

<u>Paper</u> <u>Descriptors:</u> Author (Year); Country; Paper Type (Design); Health Professional(s)	<u>Participants:</u> Dementia Diagnosis (Severity); Age; Gender	<u>Interventions:</u> Animal; individual or group; location; specific methods	<u>Theory</u>	<u>Outcomes:</u> Statistically significant; other important findings; no findings
¹ Tamura, et al. (2004); Japan; Research (single group quasi- experimental); Occupational therapist	Dementia NOS* (Severe); Mean age, 84; One man, 12 women	Robotic dog; Group sessions; Indoor treatment room; Introducing animal to participant(s), health professional encouraging adult to participate in AAT, closing song	Occupational therapy with the robotic animal triggered emotions related to the participants' past.	<u>Other important findings:</u> <ul style="list-style-type: none"> • Activity/Participation – Socializing, clap hands, talk • Emotional Wellbeing - Engaged look or emotional expression • Functional Capacities – Social, emotional • Social Relationship
² Sellers, D. (2006); Oregon; Research (single subject design: ABAB design); Recreational therapist	Senile dementia, Alzheimer's, Dementia NOS* (Moderate, Severe); 88, 86, 95, 79; One man, three women	Dog; Individual treatment; Long-term care facility in a rural community; an overview, opening song, "things to do" discussion, feeding, grooming, petting and playing with dogs	AAT may improve QoL by restoring functional behavior as evidenced by reduced agitated behaviors. The animal places the person at ease, making the therapist appear less threatening. The welcoming environment allows the therapist to	<u>Statistically significant findings</u> <ul style="list-style-type: none"> • Emotional Wellbeing: Engaged look or emotional expression; reduced problematic behaviors ^A • Functional Capacities – Social ^A Reported for group as a whole and three of four participants <u>No findings</u> <ul style="list-style-type: none"> • Emotional Wellbeing – Reduced problematic behaviors ^B ^B Reported only for one participants

			facilitate changes in behavior.	
³ Filan, S. & Llewellyn-Jones. (2006); Australia; Research (systematic review); Recreational therapist, occupational therapist	Dementia NOS* (Moderate, severe)	Dog, robotic dog; Group sessions; Nursing homes	<p>The human-pet interaction lowers blood pressure and increases neurochemicals associated with bonding and relaxation. This reaction may lead to effective pet therapy.</p> <p>Therapeutic effect may be a result of the interaction with an animal and/or handler.</p>	<p><u>Statistically significant findings</u></p> <ul style="list-style-type: none"> • Functional Capacities - Social • Social Relationship <p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing – Reduced problematic behaviors <p><u>No findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing - Engaged look or emotional expression
⁴ Petterson, M. & Loy, D. (2008); North Carolina; Research (single subject alternating treatment design); Recreational therapist	Alzheimer's disease (Mild, moderate, severe); 79, 83, 87, 94; Four women	Dog; Private room, free of distraction (indoors) in a long term care facility; Petting and playing with animal	<p>AAT address unmet needs of adults with dementia.</p> <p>Active interaction and involvement resulted in altered arousal state</p>	<p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing - Calming/Relaxation, reduced problematic behaviors
⁵ Shibata, T. & Wada, K. (2011); Japan; Non-research review; Doctors, nurses, social workers;	Dementia NOS*	Robotic seal and dog; Nursing homes or medical facilities, such as hospitals and clinics (i.e. neurosurgery clinic)	Animal encourages social interaction with others	<p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing –Reduced problematic behaviors, calming/relaxation • Functional Capacities - Social • General Health - Cortical neurons activity

Occupational therapist				<ul style="list-style-type: none"> • Other - “Positive effect” • Personhood - Ease of moaning, relaxation, and spoke to therapist • Social Relationship
⁶ Buettner, L., Fitzsimmons, S., & Barba, B. (2011); North Carolina; Non-research review; Nurses, physicians, therapist NOS	Dementia NOS*	Dog; Conducted in a therapy room or client’s room (indoors); Safety considerations, grooming, petting, walking, and playing with the animal	<p>AAT address unmet needs of adults with dementia.</p> <p>Activities involving an animal (i.e. walking, petting, and grooming) motivate physical movements and encourages emotional expression and cognitive stimulation by reminiscing and discussion.</p>	<p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing - Engaged look or emotional expression, depression reduction, reduced problematic behaviors • Functional Capacities –Cognition, physical • Personhood - Sense of meaning; satisfaction with AAT • Overall QoL - Not further described • Social Relationship
⁷ Moretti, et al. (2011); Italy; Research (group comparison, non-randomized); Psychologist	Alzheimer’s disease, secondary dementia; 65 and older, mean = 84.7; One man, nine women	Dog; Nursing home, conducted indoors or outdoors; Introducing animal to participant(s), being with animal (i.e. holding animal), petting, talking to, and playing with the animal	<p>Animal is psychological stimulating. The animal’s need for care influenced the participants to take care of themselves.</p> <p>Game System Theory: playing with animals can augment recovery potentialities. The psychological and emotional stimulation can solve psychosomatic problems.</p>	<p><u>Statistically significant findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing - Depression reduction ^C <p>^C Within group comparison</p> <p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Activity/Participation - Engagement in daily activities • Emotional Wellbeing - Depression reduction ^D • Functional Capacities - Cognition • General Health - Sleeping and appetite • Personhood - Satisfaction in personal relationships

			Human-animal bond that is relaxing reduces cardiorespiratory rates and arterial pressure.	<ul style="list-style-type: none"> • Social Relationship^D <p>^D Between group comparison</p>
⁸ Menna, et al. (2012); Italy; Research (single group quasi-experimental); Veterinarian, physician, geriatrician	Dementia NOS*; 69-89; Two men, 18 women	Dog; Group sessions; Nursing home conducted indoors or outdoors; Caring for and playing with animal	The personal and social perception of empathy from the zootherapy group (i.e. dog, veterinarian, physician) stimulated participants and promoted the retention of their skills in ADLs.	<p><u>Other important findings</u></p> <ul style="list-style-type: none"> • Activity/Participation - ADLs • Emotional Wellbeing - Depression reduction^E • Functional Capacities –Cognition^F • Functional Capacities - Physical^E <p>^E Reported for subgroup with internistic and/or neurological disabilities ^F Reported for subgroup with lower cognitive function at baseline</p> <p><u>No findings</u></p> <ul style="list-style-type: none"> • Activity/Participation – ADLs^G • Emotional Wellbeing - Depression reduction • Functional Capacities - Cognition^G <p>^G Reported for subgroup with serious cognitive impairment</p>
⁹ Berry, et al. (2012); Italy; Research (single group quai-experimental crossover design and group comparison); Physiotherapist,	Dementia NOS* (Moderate); 70-96, mean = 85; Six men, 13 women	Dog; Group sessions and individual treatment; Nursing home conducted in a social area or a quiet treatment room (indoors); Mediated engagement (encouragement by	<p>Dog handlers encouraged participants to participate.</p> <p>Playing fetch (throwing and retrieving a ball) caused participants to smile more. Ludic-recreational activities (i.e. playing with animal)</p>	<p><u>Statistically significant findings</u></p> <ul style="list-style-type: none"> • Emotional Wellbeing - Engaged look or emotional expression, depression reduction • Social Relationships (W/animal) <p><u>No findings</u></p> <ul style="list-style-type: none"> • General Health – Circadian decrease in cortisol levels

nurses		health professional to participate), allowing for spontaneous engagement, feeding, grooming, petting, walking, talking to, and playing with the animal	decreased apathetic state and promoted animal-participant interaction	
¹⁰ Nordgren, L. & Engstrom, G. (2012); Sweden; Research (Single-case study); Nurses, occupational therapist	Vascular dementia (Severe); 84; One woman	Dog; Individual treatment; Nursing home; Being with animal (i.e. spending time with animal), discussion about the animal, social interactions with others about animal, grooming, feeding, petting, walking, playing with, and talking to the animal	Animal and dog handler stimulated participant Physical training can sustain or improve physical capacities in persons with dementia.	<u>Other important findings</u> <ul style="list-style-type: none"> • Activity/Participation - Hygienic procedures • Emotional Wellbeing - Engaged look or emotional expression^H, reduced problematic behaviors^I • Functional Capacities - Physical, social • Personhood - Being suspicious • Social Relationship <u>No findings</u> <ul style="list-style-type: none"> • Activity/Participation - Eating/drinking, dressing, drinking, grooming • Emotional Wellbeing - Engaged look or emotional expression^I, reduced problematic behaviors^H • Fall Risk • Functional Capacities - Cognition, social^H • General Health - Pain and sleep • Pharmaceutical treatment

				^H Reported at 3-month follow-up ^I Reported immediately after AAT
^{II} Travers, C., Perkins, J., Rand, Bartlett, H., & Morton, J. (2013); Australia; Research (randomized control trial); Veterinarian, registered psychiatric nurse, recreational therapist	Dementia NOS* (Mild, moderate); Intervention group's mean = 84.9, control = 85.1; Intervention group = eight men, 19 females, control group = four men, 24 females	Dog; Individual treatment; Residential aged care facilities conducted in a treatment room (indoors); Non-physical opening activity NOT involving an animal (i.e. health professional introduces self and greets participants), discussion about the animal, being with animal (i.e. sitting with animal), discussing elements of the environment (i.e. hats, gloves, scarf), feeding, petting, playing with, talking to, and dressing up the animal, writing poetry about animal, closing activity NOT involving animal (i.e. reading stories)	AAT address unmet needs of adults with dementia Engagement and enjoyment in a stimulating, novel experience may have contributed to reduced depression.	<p><u>Statistically significant findings</u></p> <ul style="list-style-type: none"> Emotional wellbeing - Financial concerns ^J, mood ^J, depression reduction ^K Social Relationship ^J <p>^J Reported for two of the three experimental groups ^K Reported for participants with higher baseline scores (i.e. more depressed)</p> <p><u>Other important findings</u></p> <ul style="list-style-type: none"> Emotional wellbeing – depression reduction ^L <p>^L Reported as the overall finding for the experimental groups</p> <p><u>No findings</u></p> <ul style="list-style-type: none"> Activity/Participation - Self-care: to independently bathe and grooming Emotional wellbeing - Financial concerns ^M, mood ^M, depression reduction ^N, reduced problematic behaviors, psychological wellbeing Functional Capacities - Social General Health - Pain, vitality/fatigue, health perceptions, physical health Personhood - Withdrawn behavior Social Relationships ^M <p>^M Reported for one of the three experimental groups</p>

				^N Reported for participants with low baseline scores (i.e. less depressed)
¹² Nordgren, L. & Engstrom, G. (2014); Sweden; Research (pretest/posttest with repeated measures); Nurses, occupational therapist, physiotherapists	Alzheimer's disease (Moderate, severe); 63-91, mean = 81; Eight men, 12 women	Dog; Individually tailored; Nursing home conducted in participant's apartment (indoors); Communicating with handler or instructor, discussion about past pets, feeding, grooming, petting, walking, talking to, and playing with animal	Animal encourages social interaction with others. Animal interrupted disruptive behaviors (i.e. anxiety, aggression, agitation), motivating participant to participate and experience joy. Succeeding in activities involving an animal (having a dog chase a ball, brushing dog's fur) can promote self-esteem.	<u>Other important findings</u> <ul style="list-style-type: none"> Emotional Wellbeing – Reduced problematic behaviors <u>No findings</u> <ul style="list-style-type: none"> Emotional Wellbeing –Reduced problematic behaviors^o ^o Statistically significant increase in verbal agitation at 6-month follow-up
¹³ Nordgren, L. & Engstrom, G. (2014); Sweden; Research (pretest posttest single group quasi-experimental); Nurses, occupational therapists, physiotherapists	Alzheimer's disease, vascular dementia, dementia NOS* (Mild, moderate, severe; 58-88, median = 83; Eight men, 12 women	Dog; Individually tailored; Nursing home; Discussing elements in the environment (i.e. flowers, photo album), grooming, feeding, teaching, walking, and talking to the animal	Animal prompted memories. Communication between dog handler and participants encouraged reminiscing.	<u>Statistically significant findings</u> <ul style="list-style-type: none"> Overall QoL (not further described) <u>No findings</u> <ul style="list-style-type: none"> Activity/Participation - Eating Emotional Wellbeing - Engaged look or emotional expression, reduced problematic behaviors

*NOS = Not otherwise specified

CHAPTER FOUR: DISCUSSION

Findings from this SMR suggest that incorporating animals in therapy may facilitate positive changes in adults with dementia, most especially improvements in their QoL. In the 13 papers included in the study, it was proposed and, in some cases demonstrated, that people at various stages of dementia could benefit from engaging in activities with animals and the people involved in providing AAT. Furthermore, findings suggest that occupational therapists may already be extensively involved in incorporating animals within their treatment sessions. Health professionals, occupational therapists and other providers alike, used many activities in their interventions such as grooming, petting, or playing with the animal (Berry et al., 2012; Buettner, Fitzsimmons, & Barba, 2011; Moretti et al., 2011; Petterson & Loy, 2008; Sellers, 2006). Moreover, theories emphasized the activities in AAT as the driving factor contributing to increased social participation and higher QoL. Many of these intervention strategies and theories within AAT literature may be transferable to an equine environment, suggesting potential for occupational therapists to facilitate positive changes in QoL for persons with dementia through therapeutic incorporation of horses. Therefore, findings suggest future possibilities for occupational therapy in equine environments, while also indicating several next research steps.

This chapter elaborates on these results in order to “map” the current state of knowledge on AAT involving adults with dementia. Findings addressing dementia-specific QoL are especially highlighted. I first apply principles guiding occupational therapy to findings related to activities in AAT and occupation. Then, I further “map” findings from the literature on AAT onto an influential and widely adopted theoretical model in occupational therapy. By doing so, I

draw implications for occupational therapy in addressing QoL for adults with dementia. I conclude with the limitations of my study and next steps for future research.

Application of Theoretical Models and Principles in Occupational Therapy to AAT

After reviewing the results from this study, there appeared to be similarities between the findings and many perspectives within occupational therapy. I next suggest how a governing perspective of occupational therapy can be applied to these findings, followed by mapping data from this study on a model commonly used in occupational therapy.

Occupation-centered, Focused, and Based

As the aim of my study is to draw implications for occupational therapy, I must first discuss how an occupational therapist may view or interpret the findings. For example, valued principles in occupational therapy include being both *occupation-centered* and *occupation-focused* and providing *occupation-based* intervention strategies. Occupation-centered refers to the occupational therapy's perspective that positions occupation at the center of practice and research (Fisher, 2014). That is, using an occupational lens, occupational therapists understand the impact on a person's life due to occupational challenges and the power of engaging in occupation as a therapeutic agent of change. Therefore, an occupational therapist may view some of the findings from the AAT literature using this perspective. For example, participants were observed as smiling more when they were playing with a dog and interacting with others (Berry et al., 2012). Therefore, an occupational therapist may argue that the occupations (e.g. playing with the dog and socializing with others) was central to the intervention, where by participating or engaging with the dog and others, elicited positive behaviors suggestive of a higher QoL.

Furthermore, as previously mentioned, occupation-based refers to using engagement in occupation as an intervention strategy (Fisher, 2014). Therefore, an occupational therapist could incorporate activities commonly used within AAT as an occupation-based approach. That is, the occupational therapist may consider the list of most common intervention strategies (i.e. playing with, petting, walking, grooming, or talking to the animal) occupations, as participants are engaging in a potentially meaningful activity. Hence, occupational therapists could quite easily employ occupation-based strategies in their treatment program.

Lastly, occupation-focused can be described as aiming the immediate focus of treatment on changing the quality of a person's performance in occupation (Fisher, 2014). That is, occupational performance is the proximal focus of the intervention rather than personal factors, such as cognitive or physical abilities. For example, some studies within the literature demonstrated that AAT facilitated social relationships and improved social participation of adults with dementia (Filan & Llewellyn-Jones, 2006; Moretti et al., 2011; Nordgren & Engstrom, 2012; Tamura et al., 2004; Travers, Perkins, Rand, Bartlett, & Morton, 2013). The adults participating in the social interaction with the animal or others may find the interaction meaningful, and thus conducive to favorable experiences and a higher QoL. Therefore, an occupational therapist might view this increased engagement in a meaningful activity as increased occupational performance.

Fisher (2014) provides occupational therapists a lens for viewing how occupations within animal-assisted occupational therapy might benefit adults with dementia. By animal-assisted occupational therapy, it is meant the incorporation of dogs, horses, or other animals within skilled occupational therapy. Occupational therapists might use these perspectives to design interventions that address the occupational needs of their clients and improve their clients' QoL

through increased occupational performance. Next, I discuss a theoretical model within occupational therapy in hopes to provide more insight on how an occupational therapist may view these findings and apply them when addressing dementia-specific QoL.

Person-Environment-Occupation (PEO) Model

Occupational therapy utilizes ecological models to guide practice (Brown, 2014). That is, the constructs of the environment, occupation, and person are equally considered as factors impacting a person's engagement in occupations and their occupational performance.

Interestingly, findings from this study correspond with these three components. Therefore, I will elaborate on how findings map onto a prominent conceptual model for occupational therapy, the Person-Environment-Occupation (PEO) Model.

The PEO Model is a dynamic model that considers the goodness of fit among the person, occupation (i.e. meaningful activity), and environment for optimizing the occupational performance or participation of the person (Brown, 2014). Findings related to theory in this study suggest that factors of the environment (i.e. animal, health professional, other participants), the activities used in AAT, and the person (i.e. unmet needs) all may play a significant role in facilitating positive changes in behaviors, moods, and overall QoL. Therefore, I next describe how findings from my study map onto each component of the PEO. As the outcome of the PEO Model is optimized occupational performance (Brown, 2014), I developed an additional section related to occupational performance and how it relates to dementia-specific QoL.

Person. The AAT literature described adults in all stages of dementia with ages and gender distribution typical for those living with dementia. This demographic data may highlight the typical population commonly being served through AAT. Most interesting is that persons at all stages were described, suggesting that an occupational therapist might address dementia-

specific QoL for persons experiencing mild to severe stages of dementia in animal-assisted occupational therapy.

Also referenced in the literature was the notion that persons with dementia may have unmet needs that can potentially be addressed in AAT (Buettner et al., 2011; Petterson & Loy, 2008; Travers et al., 2013). That is, the person still possesses emotional, social, and physical needs that are not being nourished (Buettner et al., 2011; Petterson & Loy, 2008; Travers et al., 2013). These unmet needs may relate to the elements of dementia-specific QoL. For example, Kitwood (1997) emphasized there is a need for persons with dementia to feel a sense of inclusion in social relationships and to make emotional connections. In addition, people with dementia still desire to be happy, comfortable, and at peace (Hasselkus, 1998). They also may have the emotional, physical, and social abilities to interact with their environments to achieve a sense of well-being (Wells & Dawson, 2000), yet as described in chapter one, may not have the environmental affordances to do so; or in other words, the environment does not provide opportunity for a person to use their abilities. Furthermore, AAT was theorized as providing opportunities for social interactions involving giving hugs to others (Buettner et al., 2011) and for comfort from petting the animal or from physical contact with others (Travers et al., 2013), thus addressing the unmet needs of the participants.

Additionally, Petterson and Loy (2008) drew from Algase et al. (1996)'s concepts regarding need-driven dementia-comprised behaviors (NDB). Algase et al. (1996) explain that NDB occur when a person attempts to express a need. Therefore, behavioral symptoms of Alzheimer's disease (i.e. combativeness, agitation, night waking) arise when their immediate environment challenges or constraints their ability to satisfy their need. The concept related to NDB relates to the PEO in that they both highlight that the environment may impact a person's

performance, such as managing stimulation or regulating arousal levels. Therefore, an occupational therapist may consider this dynamic relationship between the environment within AAT and the person's needs when designing treatments to improve a person's QoL.

Environment. The animal, an environmental element, was most commonly credited as having a positive influence on persons with dementia. For example, the animal prompted memories, motivated adults to participate, and interrupted problematic behaviors (Nordgren & Engstrom, 2014a, 2014b). People present during AAT, considered part of the social environment, were credited as contributing to positive change as well. Animal handlers, practitioners, or other participants encouraged the adult with dementia to socially engage (Berry et al., 2012; Nordgren & Engstrom, 2014a). Therefore, it may be argued that social environments comprised of humans become even more impactful when an animal is present. Sellers (2005) emphasized that both the therapist and the animal play significant roles in facilitating positive social behaviors and reducing agitation. Sellers (2005) stated that the dog can place the person at ease, making the therapist appear less threatening. The therapist, therefore, can utilize the animal to create a welcoming environment that allows the therapist to facilitate behavioral changes in the client. Therefore, when the animal and human work jointly together, as social elements of the environment, they may press towards the expression of positive behaviors, relationships, and engagement (Berry et al., 2012; Nordgren & Engstrom, 2012; Sellers, 2006).

Dabelko-Schoeny et al. (2014) also provided similar theories that the animal influenced positive changes in behavior from adults with dementia. Dabelko-Schoeny et al. (2014) claimed the horse was a motivator, which encouraged people with mobility limitations to rise or walk unassisted. They also theorized that the equine environment was socially stimulating.

Therefore, there is a trend in theory that the social elements of the environment, comprised of the animal and human counterparts, have a significant role in facilitating positive changes for persons with dementia.

Surprisingly, there was little emphasis in the literature on AAT that the human-animal bond facilitated positive outcomes, especially since the horse-human bond is often theorized as the agent for positive change in the literature incorporating horses (Bachi, 2013; Glazer, Clark, & Stein, 2004; Luna, 2009; Mossello et al., 2011; Yorke et al., 2008). The reason for the limited emphasis on the human-animal bond may be due to my inclusion criterion that only articles mentioning a health professional as designing or conducting treatment sessions were included. Perhaps, this criterion excluded articles that focused more on the bonding between the person and animal, and included articles more focused on the therapeutic impact of the therapist and environment. An additional explanation for the difference in emphasis on the human-animal bond may be related to the differences between a horse and a dog. Perhaps, the animal's size and behavior impact treatment design, thus determining how the participant interacts and/or is able to bond with the animal.

Furthermore, AAT was shown to be a multidisciplinary field where various health professionals worked together to aid in improving the QoL for adults with dementia. As occupational therapists were the second most commonly mentioned practitioners in the literature, it may be assumed that their presence potentially impacted the participants' QoL. In relating to Sellers' (2005) emphasis on the dual contributions between the animal and therapist, occupational therapists may consider viewing the animal as a co-therapist, or part of the multidisciplinary team. That is, the occupational therapist may wish to use the animal as a buffer to calm clients or develop the therapeutic relationship.

Lastly, the literature revealed that AAT can be effective both indoors and outdoors, though it was most commonly seen inside. Dableko-Schoeny et al. (2014), however, found that physical elements of the environment, such as being outdoors in the barn or woods, may have placed a role in reducing stress levels in their participants. Dableko-Schoeny et al. (2014) theorized that this calming effect resulted in a reduction of problematic behaviors seen in the participants. Using the PEO Model, occupational therapists are clearly aware of the impact environment has on occupational performance. In hopes to positively influence a person's QoL, occupational therapists might apply their expertise to incorporate animals in various natural environments, such as playing fetch outside, to promote optimal occupational performance.

Occupation. Involvement in the activities during AAT was theorized has having positive influences on persons with dementia (Berry et al., 2012; Buettner et al., 2011; Petterson & Loy, 2008). For example, participants were seen smiling more than usual when playing fetch with a dog (Berry et al., 2012). The theorized beneficial impact of activity not only shares similarities with the PEO Model, which emphasizes that *doing* impacts quality of performance and participation, but it also resonates with another guiding principle in occupational therapy. That is, meaningful occupation is the means, or therapeutic agent, that favorably influences overall health and QoL (Gillen, 2014). Another example from the AAT literature that may correspond with this principle is that succeeding in tasks during AAT, such as getting the dog to chase a ball or brushing a dog's fur, led to an increase in the participant's self-esteem (Nordgren & Engstrom, 2014b). Furthermore, if a participant is smiling more or feeling a greater sense of self-esteem as previously described, an occupational therapist might argue that activities in animal-assisted occupational therapy are meaningful, and therefore, an occupation. These striking similarities among findings from the literature in AAT and principles governing

occupational therapy may suggest that occupational therapists have a valuable role to play. It appears that AAT relies heavily on the use of activities. As experts in designing and modifying activities to increase a person's engagement in occupation and promote their well-being (Boyt Schell, Scaffa, Gillen, & Cohn, 2014), occupational therapists can provide their expertise to positively influence adults' with dementia QoL. Therefore, the literature underscores that occupational therapy's unique expertise and knowledge is a strong fit with the incorporation of animal in occupational therapy.

These occupation-based strategies may also transfer to an equine environment, suggesting the potential to elicit similar outcomes in occupational therapy for this population. Drawing from literature on various types of EAAT, participants can feed, groom, talk to, and be with the horse (i.e. in the moment) in an equine setting (Andrea Beetz, 2015; Froeschle, 2009; Hirsch, 2014; Johansen, 2014). Other examples of strategies used in EAAT that mirror interventions in AAT include discussion about elements of the environment and social interactions with the equine professionals, family, volunteers, and other participants (Keino et al., 2009; Lanning & Krennek, 2013; Vidrine, Owen-Smith, & Faulkner, 2002). A concern, however, is how transferring the activity of "playing with an animal" in AAT to equine-assisted therapy. When comparing a horse to a dog for instance, there are striking differences such as the size and typical behaviors of the two animals.

Optimal Occupational Performance Related to Dementia-specific QoL

Now that I have presented each component of the PEO Model, I will next map findings from my study that correspond to optimal occupational performance related to dementia-specific QoL. Within the literature for AAT, many of the studies measured outcomes while the adult with dementia was interacting with the animal (Nordgren & Engstrom, 2014a; Petterson & Loy,

2008; Sellers, 2006; Tamura et al., 2004). Many positive findings, such as reduced agitated behaviors or increased social interactions among participants were observed during this human-animal interaction (Sellers, 2006; Tamura et al., 2004). Therefore, positive findings related to dementia-specific QoL may suggest that when engaged with the animal or others, the participants were exhibiting a greater quality of occupational performance, while simultaneously experiencing a higher QoL.

Furthermore, a profound finding in this study is that using an animal in therapy sessions positively influenced all four elements of dementia-specific QoL. Animals' involvement in therapy was therefore shown to maintain or facilitate personhood, social relationships, emotional well-being, and functional capacities for people with dementia. Therefore, intervention approaches incorporating an animal might be promising in addressing QoL for adults with dementia, specifically in minimizing problematic behaviors, reducing depression, and increasing engagement and emotional expression.

Lastly, this study also found that incorporating animals into treatment plans might favorably impact persons' with dementia participation in life activities, which is shown in the positive findings at the level of activity and participation. As occupational performance directly relates to participation, this finding can also be easily mapped onto the PEO Model.

As previously discussed, a theorized explanation for these positive findings might be due to the environmental elements (e.g. animal, human counterparts), as they address the person's unmet needs through interaction with the animal and people. This transactional relationship maps easily onto the PEO Model in that the person, environment, and occupation have a good fit, thus promoting a high quality of occupational performance. Not only does incorporating an animal into sessions offer occupational therapists a promising approach for addressing dementia-

specific QoL, but the PEO Model might be a suitable model for designing and adapting treatments to promote optimal occupational performance.

Implications for Occupational Therapy

Findings on intervention strategies, outcomes, and theories described in the literature on AAT were easily mapped onto Fisher's (2014) principles of occupation-centered, based, and focused and the PEO Model. Therefore, Fisher's (2014) principles and the PEO Model may serve as frameworks to guide decision-making for future occupational therapists providing AAT to address QoL for adults with dementia.

As discussed throughout this chapter, occupational therapists have unique perspectives on creating and modifying interventions by incorporating the person, environment, and occupation to promote a higher level of QoL. Occupational therapists might therefore provide their expertise during direct service and also as a consultant for the various health professionals currently providing AAT. For example, an occupational therapist may collaborate with nurses, physicians, or physiotherapists on ways to incorporate the natural environment, like going outside, more into treatment planning. Occupational therapists might also suggest incorporating other animals into treatment session and evaluating their impact on the client's QoL. As intervention strategies used in AAT integrated the animal in various ways, an occupational therapist might also provide recommendations for adapting or modifying activities that promote functional performance and influence a person's QoL. Lastly, the literature did not discuss intervention strategies designed to promote carryover; that is, strategies that would prompt memory of the session at a later time in hopes to elicit similar positive outcomes as when the adult was participating in a session. Occupational therapists might educate and train health professionals and caregivers on how to promote carryover to other environments. For example,

the health professional directing a treatment session could take pictures of the adult socially interacting with the animal and other participants. These photos could then be hung in the adult's room or shown periodically to them throughout their day, thus potentially prompting a memorable and favorable experience, similar to what was felt in the treatment session.

Limitations and Next Research Steps

As I am a master's thesis student, there were time restraints that contributed to a variety of my limitations. For example, only three databases were searched in this study. Running the searches in more databases and including articles published before 2004 may have yielded a higher number of articles, which would have allowed for a more thorough analysis of the AAT literature. Challenges in PubMed regarding medical terminology may have also restricted capacities to search for more recent articles.

Only including articles written in English was an additional limitation. This may have excluded international literature that could have provided additional rich data related to my research aims and questions on AAT for adults with dementia. Furthermore, I independently coded articles for the inclusion and exclusion process and when extracting data using the AAT DET. By doing so, there may be a higher chance for error or miscoding of data.

Future research opportunities for occupational therapy. My suggestions for future research endeavors correspond to gaps in the literature. For example, there is a lack of information on treatments using dogs in an outdoor environment. Since the environment may influence occupational performance, occupational therapists may wish to investigate the effect that the natural (i.e. outdoor) environment has on dementia-specific QoL in comparison to the built environment (i.e. indoors). Additionally, only dogs or robotic animals were used.

Therefore, occupational therapists may want to study the impact of various other animals, such as cats or horses, on dementia-specific QoL.

There were many differing theorized explanations for why incorporating an animal into a therapy session elicited positive reactions or behaviors related to QoL. This lack of consensus within the literature may also highlight an area for investigation. That is, occupational therapists can design studies testing theory. For example, Gabriels et al. (2015) investigated the impact of the horse on self-regulation, socialization, adaptive, communication, and motor behaviors for children with Autism Spectrum Disorder. The study was a randomized control trial, where the control group experienced the same treatment (i.e. barn environment and equine activities) as the experimental group, but instead of a live horse, the control group was given a life-size stuffed horse. Therefore, the significant improvements in behaviors reported for the experimental group can be attributed more so to the horse than any other factor within the equine environment. An occupational therapist may wish to mirror Gabriels et al. (2015) study to investigate the impact that animals or various activities have on dementia-specific QoL.

CHAPTER FIVE: SELF REFLECTION

My thesis journey was challenging, but it was through this challenge that I grew both professionally and personally. My research team contributed to this growth by providing their support, encouragement, and respect. As a result, I acquired a great deal of knowledge about research, while fine tuning my abilities and skills as a researcher.

What I Learned

Throughout my thesis experience, I learned that I thrive when on a team with others who are more experienced and have greater expertise than I. I need to be challenged in order to grow, mature, and develop my capacities as a researcher. The physical environment, comprised of office space designated for all the research assistants, also created a welcoming atmosphere for sharing ideas, questions, feedback, and much laughter.

However, I initially shied away from contributing my ideas or opinions to my team, as their expertise intimidated me. Nevertheless, I quickly learned that only I was benefiting from this. I learned from my research team and others, yet I deprived them from gaining new perspectives from my ideas, opinions, and past experience. It was through the welcoming and respectful nature of my team that I learned to find my voice, gain confidence, and contribute more to our research efforts.

Lastly, my writing abilities have greatly improved, though I still have a lot to learn. When reminiscing about my first few drafts of my thesis, I chuckle. They were mainly outlines filled with bullet points on various ideas going every which direction. But under the guidance of my patient and kind mentor, I began to craft my skills and produce a higher quality of written

work. I now feel confident that I have a strong foundation of knowledge on writing, which will contribute to more success as a researcher in the future.

Areas for Growth

A distinctive trait of mine is that often times I overanalyze. I get too concerned about missing an important detail or making a mistake. As a result of doing this throughout my thesis process, I over complicated things and often missed the bigger picture, which slowed down my progress. Again, my team members, especially my mentor, often pulled me out of the tree to see the forest. Even though I now recognize this characteristic about myself, it is still a challenging habit for me to break. Furthermore, when I analyzed and interpreted my data, I often made huge leaps in my claims of what the data were saying and overgeneralized my findings. Nevertheless, I am learning to be mindful of these tendencies and ask for support when needed, thus improving the overall quality of my work.

Who I am as a Researcher

My high intellectual curiosity influenced my decision to pursue research. It is this curiosity that continues to fuel my determination, motivation, and persistence even when faced with unexpected challenges. Additionally, my tendency to overanalyze contributes to my detailed and meticulous nature when collecting and analyzing data. Lastly, my utmost respect and love for my research team inspires me to reciprocate this respect, causing me to be a valuable team member with high integrity.

Conclusion

Incorporating animals into treatment plans in occupational therapy is a promising fit for addressing dementia-specific QoL. That is, the literature in AAT revealed favorable findings related to improving QoL for adults with dementia, where there were no indications of adverse

effects for including animals in therapy. Additionally, the AAT literature had examples that corresponded to prominent principles in occupational therapy; that is, providing occupation-based treatments and being both occupation-focused and occupation-centered. Therefore, AAT provided by occupational therapists can easily be occupation-based, occupation-focused, and occupation-centered, further suggesting a good fit.

Furthermore, these findings within AAT literature hold promise for future practice and research pertaining to EAAT for adults with dementia. While literature on horses used in therapy for adults with dementia is extremely limited (Dabelko-Schoeny, 2014), the interventions, theories, and outcomes within the AAT literature may have implications for using a horse as a therapeutic modality to favorably influence dementia-specific QoL. The AAT literature recognized the importance of the person, the environment, and the activities that adults were engaged in. Therefore, occupational therapists are well positioned to provide therapies incorporating animals, dogs and horses alike, as well as advance the knowledge of EAAT through research. Therefore, occupational therapists could be frontiers in providing services and conducting groundbreaking research on using horses for adults with dementia, thus improving these adults' QoL.

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APPENDIX A: AAT DATA EXTRACTION TOOL

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SECTION I: BROAD DESCRIPTORS OF PAPERS

1) Who are the Authors of the Paper?

Guideline: Write authors here:

2) What is the Title of the Paper?

Guideline: Write title here:

3) What Year was the Paper Published?

Guideline: Write year here:

4) In What Issue of What Journal Was the Paper Published?

Guideline: Write journal and journal issue here:

5) Is this Paper a Research Report?

Guideline: Check yes if the primary focus of this paper is a research report and there is a systematic and apriori approach to data collection and analysis related to a purpose/aim. If yes, continue through the rest of the tool, being sure to complete the entire tool.

Guideline: In order to qualify as research, the paper must follow a traditional research format and have clearly stated headings: purpose/hypothesis, literature review, methods, results, and discussion sections.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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If not research, then what type of paper is this?

SECTION II. DESCRIPTORS OF AAT RECIPIENTS AND/OR RESEARCH PARTICIPANTS

Guideline: Yes may be checked for the following questions for both research and non-research papers as long as the paper describes AAT recipients, practitioners, or significant others. For non-research papers if ANY descriptors of participants are provided, check yes, even if it is very broad information or very specific information about one person.

Guideline: Data about Animals should NOT be coded here, but in Section IV.

Guideline: If research, all of the following questions pertain only to research participants and rely solely on description provided in methods section.

If a group comparison design, the following questions pertain only to the experimental group, not the control group. If non-research, questions pertain to the most pertinent AAT participants described in the article.

6) Does this Paper Describe recipients of AAT?

Guideline: If no description is provided, skip to Section IV.

Guideline: For conceptual articles, check Yes if articles if describes recipients of AAT. For research, check Yes and categorize research participants.

Guideline: If research participant is a practitioner, all other information should be coded in the practitioner section (skip questions 16-19).

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

7) Were Ages Specified?

Guideline: To check yes, ages must be explicitly stated OR some reference to developmental stages must be evident (e.g., young children, adolescence, young adults, older adults, geriatric etc.).

Guideline: For non-research papers specify the general age groups, if apparent, but not specific age ranges (leave specific ages for intervention studies).

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

What Age Ranges Were Specified?

8) Was Gender Specified?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If yes, specify in the box below. Check all that apply.

<input type="checkbox"/> Female	<input type="checkbox"/> Transgender
<input type="checkbox"/> Male	

9) Was Type of Dementia Specified?

Guideline: Use DSM IV language when applicable for diagnoses.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

<input type="checkbox"/> Alzheimer's disease	<input type="checkbox"/> Lewy body dementia
<input type="checkbox"/> Creutzfeldt-Jakob disease	<input type="checkbox"/> Mixed dementia
<input type="checkbox"/> Dementia unspecified	<input type="checkbox"/> Parkinson's disease
<input type="checkbox"/> Familial British dementia	<input type="checkbox"/> Vascular dementia
<input type="checkbox"/> Frontotemporal dementia	<input type="checkbox"/> Other
<input type="checkbox"/> Huntington's disease	

If yes, specify in the box below. Check all that apply.

What Additional Diagnoses Were Specified?

Guideline: If yes, then list any diagnoses used to describe participants.

Note: For Personality Disorder, refer to this as specified when coding-not unspecified. If unspecified, code Borderline Personality Disorder.

10) Was Severity or Stage of Dementia Specified?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If yes, specify in the box below. Check all that apply.

<input type="checkbox"/> Mild or Early Stage
<input type="checkbox"/> Moderate or Middle Stage
<input type="checkbox"/> Severe or Late Stage
<input type="checkbox"/> Other

What Additional Descriptors on Severity Were Specified?

Guideline: If yes, then describe any additional descriptors using the language of the authors that may not have been captured in any of the above categories.

11) Were There Assessment Measures Used to Describe AAT Participants?

Guideline: To be standardized, the assessment must be referenced in peer-reviewed literature.

Guideline: Do not code assessments here that are also used as outcome measures in pre-post research designs. Assessment measures to describe participants are mutually exclusive with outcome measures.

Guideline: Add here assessments used for inclusion/exclusion criteria or baseline measures that are not used as an outcome measure.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If yes, fill out table below.

Name of Tool	Standardized?	What Does the Tool Measure?
	<input type="checkbox"/> Standardized <input type="checkbox"/> Customized	
	<input type="checkbox"/> Standardized <input type="checkbox"/> Customized	
	<input type="checkbox"/> Standardized <input type="checkbox"/> Customized	
	<input type="checkbox"/> Standardized <input type="checkbox"/> Customized	
	<input type="checkbox"/> Standardized <input type="checkbox"/> Customized	

12) Were inclusion criteria specified?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Guideline: Inclusion criteria do not have to be explicit but do not over-interpret, but must be fairly obvious. Do not confuse with sampling strategies. Use author's original groupings (i.e. if authors stated "no previous experience with an animal" as inclusion criteria, code as inclusion criteria).

If Yes, Write in Below.

13) Were exclusion criteria specified?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Guideline: Exclusion criteria do not have to be explicit but do not over-interpret, but must be fairly obvious. Do not confuse with sampling strategies. Use author's original groupings (i.e. if authors stated "no previous experience with an animal" as inclusion criteria, code as inclusion criteria, not exclusion).

If Yes, Write in Below.

SECTION III. PRACTITIONERS AND ANIMALS

Guideline: Yes may be checked for the following questions for both research and non-research papers.

14) Was Any Information Provided About Practitioners?

Guideline: Check yes if one or more practitioners are described with detail further than just "instructor".

Guideline: If research paper, practitioner information must be related to specific study.

Guideline: If an intervention study, this question applies only to the practitioner involved in the intervention (not animal handlers, etc)

Guideline: for OTAs check Occupational Therapy, and PTAs check Physical Therapy

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Check all that apply

<input type="checkbox"/> Animal Professional	<input type="checkbox"/> Social Worker
<input type="checkbox"/> Occupational Therapist	<input type="checkbox"/> Mental health professional not otherwise specified
<input type="checkbox"/> Physical Therapist	<input type="checkbox"/> Speech/Language Pathologist
<input type="checkbox"/> Psychologist	<input type="checkbox"/> Animal Therapy Instructor
<input type="checkbox"/> Recreational therapist	<input type="checkbox"/> Other certifications or backgrounds

If checked other, describe other practitioners.

15) Was Any Information Provided About Type of Animal Used?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Check all that apply

<input type="checkbox"/> Dog	<input type="checkbox"/> Dolphin
<input type="checkbox"/> Cat	<input type="checkbox"/> Bird
<input type="checkbox"/> Guinea Pig	<input type="checkbox"/> Cow
<input type="checkbox"/> Rabbit	<input type="checkbox"/> Ferret
<input type="checkbox"/> Bird	<input type="checkbox"/> Farm Animal, not specified
<input type="checkbox"/> Fish	<input type="checkbox"/> Robotic Animal
<input type="checkbox"/> Monkey	<input type="checkbox"/> Other

1) If checked other, describe other type of animal.

2) If checked robotic animal, describe type.

SECTION IV. DESCRIPTORS OF AAT INTERVENTIONS

Guideline: If research article, Information in this section should come exclusively from the Methods section.

Control group: The group of subjects in a controlled clinical trial that receives no treatment, a standard treatment or a placebo.

Experimental group: a group of subjects exposed to the variable of an experiment, as opposed to the control group.

Guideline: If group-comparison research, the questions below pertain only to the experimental group, not the control group.

Guideline: Must check Yes to only 30 or 32 (Not both).

Guideline: Yes may be checked for the following questions for both research and non-research papers as long as the paper describes interventions.

16) Were Theorized or Hypothesized Influences On Positive AAT Outcomes Described?

*Guideline: Check yes if there is any clear theorized or hypothesized explanation of what influences or causes (e.g., independent variable, mechanism of action) positive changes resulting from AAT. This is regarding to theory about **WHY** AAT may work, and must directly relate to how the intervention is developed and outcomes are achieved. Click yes if theory is presented anywhere in the article.*

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

What Favorable Influences Upon or Causes of Positive AAT Outcomes Were Discussed or Specified?

Guideline: Write in Access all that apply

<input type="checkbox"/> Write in drop-box box with access to add entries

17) Were Details of AAT-related Interventions Provided?

Guideline: Check yes if any explanation of what actually occurred during the intervention was provided.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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What Therapeutic Interventions During Sessions Were Described?

Guideline: Write in Access all that apply

<input type="checkbox"/> Write in drop-box box with access to add entries

18) Were Numbers or Durations of Intervention Sessions Stated?

Guideline: Check yes if any explanations were provided of how many individual sessions occurred, of how long each session was, or of 'dosages'.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Described Stated Durations of AAT Sessions

Guideline: Provide written description of durations. These can be durations of individual sessions and/or #s of sessions in a designated program.

SECTION V. INTERVENTION OUTCOMES

Guideline: If research, rely solely on information given in the outcomes section. It is up to the researcher's judgment whether to code the outcome given by the entirety of an outcome measure, or to code outcomes given by individual subscales.

Guideline: Yes may be checked for the following questions for both research and non-research papers as long as the paper describes or claims specific outcomes.

Guideline: If non-research, outcomes coded here should be specific to AAT interventions only.

19) Were AAT Outcomes Identified Related to the Indices of Dementia-specific Quality of Life?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Which one?

<input type="checkbox"/> Personhood	<input type="checkbox"/> Social Relationships
<input type="checkbox"/> Emotional Wellbeing	<input type="checkbox"/> Functional Capacities

If Yes, Classify Findings. Check All that Apply.

<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
--	--	-------------------------------------

20) Were AAT Outcomes Identified Related to Activity/Participation in the ICF?

Guideline: Author does not need to use explicit ICF language, it is up to the clinical rational of the researcher to map onto the ICF framework. If there is a direct link to the subdomains listed in the ICF (in boxes below), then interpretation is appropriate.

Guideline: Refer to ICF definitions of Activity and Participation when considering where to code outcomes. "Activity is the execution of a task or action by an individual. Participation is involvement in a life situation" (WHO, 2002, p. 10).

Examples of Outcome Measures that measure activity/participation are: The Timberlawn Parent-Child Interaction Scale, and The Activity Card Sort, Barthel Index (self-care) (keep adding examples as you come across them and notify the team of changes you make).

Guideline: In order to code as activity/participation the outcome must be related to task behavior that occurs in any context.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
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If Yes, Classify Findings. Check All that Apply.

<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
--	--	-------------------------------------

If provided, specify in detail outcomes related to activity/participation that were identified and classify the significance of the findings.

Civic participation – political life, citizenship, human rights, and advocacy

Communication (reception and production) – receiving and producing (verbal, nonverbal, written, sign language), conversation and use of communication devices and techniques

Domestic life (household tasks) – acquisition of a place to live, acquisition of goods and services, preparing meals, doing housework, caring for household objects, assisting others

Education – informal, preschool, school

General tasks and demands (single task, routine) – undertaking a single task, undertaking multiple tasks, carrying out daily routine, handling stress and other psychological demands

Interpersonal interactions and relationships – general interpersonal interactions, informal social relationships, formal relationships, relating with strangers, family relationships, intimate relationships

Learning and applying knowledge – purposeful sensory experiences (watching, listening), basic learning (copying, learning to read, learning to calculate, rehearsing, learning to write, acquiring skills), and applying knowledge (focusing attention, thinking, reading, writing, calculating, solving problems, making decisions).

Recreation and leisure - sports, arts and culture, crafts, hobbies

Work – apprenticeship; acquiring, keeping, and terminating a job; remunerative employment; non-remunerative employment

<input type="checkbox"/> Carrying and Handling Objects	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Civic Participation	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Communication (reception and production)	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Community Participation	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Domestic life (household tasks)	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Education	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> General tasks and demands (single task, routines)	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Interpersonal interactions and relationships	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Learning and applying knowledge	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Play	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Recreation and Leisure	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other important finding	<input type="checkbox"/> No finding
<input type="checkbox"/> Religion and Spirituality			
<input type="checkbox"/> Self-care			
<input type="checkbox"/> Walking and Moving			
<input type="checkbox"/> Work			
<input type="checkbox"/> Any other activity			

21) Where Were Outcomes Measured?

*write- in

22) Were Any Other Additional Quantitative Outcomes Identified?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If yes, write-In additional outcomes and classify their significance

Guideline: Include all quantitative finding not captured elsewhere in the tool, including personal factors.

Guideline: Mutually exclusive significance, only check one level of significance for each outcome.

Guideline: Any outcomes related to the animal should be coded as "animal – _____" (animal as a prefix) to differentiate between people and animal outcomes.

	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding
	<input type="checkbox"/> Statistically-significant	<input type="checkbox"/> Other Important Finding	<input type="checkbox"/> No Finding

23) Were Any Additional Qualitative Findings or Outcomes Identified?

Guideline: If themes were provided list major themes with brief description. Remain close to author's language and quote when possible.

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

(Write In Access)

SECTION VI. KEY IMPRESSIONS

24) Write key impressions about this article below.

Write things that stand out about the article, characteristics or qualities, things that stand-out or are unusual about the article, what strikes you, your overall impressions that will help you distinguish and remember this article from others.

For example: This article seems to be translated from another language and has poor usage of English. "I loved this article." "This has one of the clearest definitions I have seen about AAT theory."

Write in if you do not agree with what the authors stated as study design, etc. Anything that bugs you, you like, caveats, whatever stands out.

If there is any doubt about how you chose to code something, explain that here.

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