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A Review of Animal-Assisted Interventions in Long-Term Care Facilities

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ABSTRACT

Past research fails to make connections comparing appropriate settings for the benefits of different species of therapy and resident animals in long-term care facilities specifically for the elderly. Two types of animal-assisted interactions (therapy and resident) and four animal species (birds, cats, dogs, and fish) were compared. The findings were sorted into five categories of benefits (behavioral, mental, physical, physiological, and social) and three additional structural variables (affordability, accessibility, and cons). Appropriate activities for each species were also suggested. The review revealed it is important for the facility to consider its budget, number and ailments of residents, type of preferred accessibility, and preferred goal. By being aware of different characteristics of each animal species, such as benefits and affordability, facilities would be able to make an informed decision when considering which animal-assisted intervention would be an appropriate fit for their residents.

KEYWORDS

Animal-assisted interventions; benefits; elderly; long-term care; resident animals; therapy animals

Over the next couple of decades, the United States will continue to see an increase in its elderly population. The U.S. Census Bureau projected one in five Americans will be age 65 and older by 2030 (Colby & Ortman, 2015). “For the older population, the biggest increase is expected in the decade from 2020 to 2030, when the population aged 65 and over is projected to increase by 18 million” (Colby & Ortman, 2015). With an increase in the number of elderly, comes an increase in the number of residents in long-term care facilities. Since projections are set to increase, there is also a need for more social workers in these facilities: “The number of social workers in long-term care settings is projected to increase from 44,200 in 2006 to 110,000 in 2050 (NASW, 2008). It is common for the elderly residents in these facilities to experience negative emotions such as anxiety, depression, and loneliness, especially during the transition to the facility (Crowley-Robinson, Fenwick, & Blackshaw, 1996; Jessen, Cardiello, & Baun, 1996; NASW, 2008). Empirical evidence reveals therapy and resident animals can alleviate some of these issues (Banks & Banks, 2005; Crowley-Robinson et al., 1996; Jessen et al., 1996; Stasi et al., 2004).

There are numerous types of therapy and resident animals that can visit and live in these facilities. In Illinois, for example, birds, fish, cats, and dogs were the most popular animals in long-term care facilities in 2010 (Behling, Haefner, & Stowe, 2011). Although empirical evidence shows the benefits of each of these animal species, there is a lack of research comparing the benefits of these species. No comparison looks at why one species, such as fish, may be more appropriate in one type of setting or goal than another species, such as dogs. Previous meta-analyses look at animals or pets as a whole and do not analyze the benefits of each species (Nimer & Lundahl, 2007; Virués-Ortega, Pastor-Barriuso, Castellote, Población, & De De Pedro-Cuesta, 2012). The only article the authors found that does discuss bringing different species into facilities focuses more on logistics, such as planning the visits, selecting a responsible person, and being aware of sanitation concerns, than on comparing the benefits of different species (Baun & Johnson, 2010). By being aware of different characteristics of each animal species, such as benefits, affordability, and accessibility, facilities would be able to make an informed decision when considering which animal-assisted intervention (AAI) would be an appropriate fit for their population.

This article investigated the benefits of different species of therapy and resident animals specifically for the elderly in long-term care facilities; it compared the benefits of therapy cats, therapy dogs, resident birds, resident cats, resident dogs, and resident fish. The purpose was to look at individual studies, analyze which variables contributed to an effective AAI, and compare the studies to see which species may be more appropriate for which setting and for what type of patient. The authors analyzed existing AAI research to make new connections by providing evidence based on literature reviews to link which variables were best for which species of animals while visiting or residing in long-term care facilities. After a brief overview of the benefits of AAI and the data collection process, the authors discussed five types of benefits for each species: behavioral, mental, physical, physiological, and social. Next, limitations were discussed and recommendations were made regarding the benefits, affordability, accessibility, and cons of each species. Finally, specific activities for each species were suggested.

Importance of AAI

Animals and humans have been interacting for centuries (Fine & Beck, 2010). One of the main reasons animals and humans connect so well is because they form a human-animal bond. This bond can be explained by the biophilia hypothesis, which states that humans have an “innate interest in living things” (Melson & Fine, 2010, p. 236) that has been “hard-wired through evolution” (Pavlidis & Grandin, 2008, p. 187). As a result, “friendly, calm animals are likely to have a calming effect upon human mood, while agitated aggressive animals are likely to have the opposite effect” (Melson & Fine, 2010, p. 237).

Animals can have a profound impact on individuals who are elderly, especially those in long-term care facilities. Residents in these facilities often experience negative emotions, such as depression and loneliness (Crowley-Robinson et al., 1996). Therapy and resident animals can alleviate some of these emotions (Banks & Banks, 2005; Crowley-Robinson et al., 1996; Stasi et al., 2004). Surveys and literature reviews by Baun and Johnson (2010), Behling et al. (2011), and Darrah (1996) reveal that these animals can provide more than just mental benefits, but behavioral, physical, physiological, and social benefits as well, all through simple activities.

Many species of animals can be therapy or resident animals. Therapy animals are certified teams consisting of an animal, commonly cats and dogs, and handler that visit facilities (Kruger & Serpell, 2010). When a team goes on visits, it is called an animal-assisted intervention (AAI). AAI is an umbrella term for any animal-assisted interaction where an animal acts as a mediator between humans. Two common types of AAI are animal-assisted activities (AAA) and animal-assisted therapy (AAT). AAA are solely recreational; the main goal is to “enhance quality of life” (Kruger & Serpell, 2010, p. 34), such as by providing pleasure, increasing motivation, or aiding in the participants’ education. AAT is more structured since it is therapeutic, goal-directed, and involves a trained professional, such as a therapist. Therapy animals visit facilities; resident animals reside in facilities. Common resident animals include birds, cats, dogs, and fish (Baun & Johnson, 2010). These animals may or may not be certified therapy animals because animals like fish cannot be trained; however, the animals that reside in the facilities can still serve a specific purpose, as is discussed later. Both therapy and resident animals are considered in this review because there are different benefits to each type of interaction, even when it involves the same species, such as therapy dogs versus resident dogs.

Search methods

Two strategies were used to choose studies that involved therapy and/or resident animals in long-term care facilities. First, computer searches of 39 databases through Ebsco host were conducted in the fall of 2014 (e.g., Academic Search Premier, PsycINFO, Social Work Abstracts) using keywords associated with AAI and the elderly (e.g., therapy animals, visiting animals, resident animals, long-term care facilities, nursing homes). Second, the references of all retrieved articles were searched for additional relevant studies. Studies were selected that (a) were in long-term care facilities; (b) were quantitative, qualitative, literature reviews, or meta-analyses; (c) discussed the specific benefits of therapy cats or dogs, or resident birds, cats, dogs, or fish.

A color-coding and ordering method was conducted to sort through the numerous possible articles and select the ones that most pertained to this article’s purpose. Meta-analyses and literature reviews were highlighted in

purple and moved to the top; empirical studies that focused on a specific animal were highlighted in blue and moved to the middle; and studies that were non-empirical and included nonliving animals (e.g., robots) were marked with a strikethrough and moved to a separate section at the bottom. In order to sort through the empirical studies, the articles that described specific benefits due to the AAI were moved to the top of the blue section. Due to the excess of articles relating to dogs, an additional selection procedure was needed to select the articles that were most relevant. Articles that were published during or after the year 2000 were taken into consideration first. When redundant material was found, the newer article and/or the article that provided the most information relevant to the article's purpose was kept.

The reviewed literature looked at four species of animals: birds, cats, dogs, and fish. The studies looked at the species as a whole; however, cats and dogs were divided into the categories of resident or visiting. Of the 33 studies reviewed, five involved birds (15%), four involved fish (12%), two involved resident cats (6%), five involved visiting cats (15%), three involved resident dogs (9%), 17 involved visiting dogs (51%), and two looked at all of the species (6%). The visiting dogs were overrepresented because a majority of AAI research pertains to therapy dogs. Visiting cats and birds were the next highest represented, followed by fish, and finally resident dogs and cats. Three of the studies researched both visiting cats and visiting dogs (Barak, Savorai, Mavashev, & Beni, 2001; Bernstein, Friedmann, & Malaspina, 2000; Perelle & Granville, 1993), and two studies researched both resident dogs and visiting dogs (Crowley-Robinson et al., 1996; Kongable, Buckwalter, & Stolley, 1989).

The 33 studies were published in 26 different journals. Four studies were represented in *Anthrozoös* and three in *Western Journal of Nursing Research*. The journals revolved around the themes of gerontology and aging, physical and mental health, therapy, and animals. They were published between the years of 1979 and 2013. Fifteen of the 33 studies were published from 1979 to 1999, and 18 were published from 2000 to 2013. The authors drew upon research from the past 36 years due to the limited studies for many of the species, especially birds and fish.

Literature review

This section drew from the literature to summarize the main benefits of each type of therapy or resident animal and the variables that contributed to the AAI. The interventions took place in long-term care facilities, particularly nursing homes. Each species was discussed based on the following variables that contributed to the AAI: the type of facility if it was not a nursing home, the common issues the residents faced, the goal of the AAI if it was AAT, the activities the participants did with the animals, and which type of benefits they received from the AAI. This last variable was divided into five subcategories of benefits: behavioral, mental,

physical, physiological, and social. Behavioral benefits relate to changes in the participants' observed behavior toward others; mental benefits involve cognitive changes in the participants; physical benefits relate to changes that involve the participants' external body and that others can see; physiological changes involve changes inside the participants' body that need to be measured; and social benefits refer to changes in the participants' degree of engagement with others. See [Table 1](#) for a summary of the benefits of each animal species.

The studies' sample size, time period, and goals and activities were also explored. Regarding sample size, of the 33 studies, four (12%) did not report one, five (15%) had 4–10 participants, seven (21%) had 12–20, 13 (39%) had 22–45, and only four (12%) had from 62 to 144. Regarding time period, five (15%) did not report any length, five (15%) were one day to two weeks, four (12%) were three to four weeks, 11 (33%) were five to twelve weeks, one (3%) was six months, five (15%) were one to two years, and two (6%) were four or more years. Overall, 15% were not reported, 27% were less than a month, 33% were one to three months, and only 21% were at least one year. Regarding the goals, six (18%) did not list any goals or activities and the other 27 (82%) listed only general activities to meet goals, such as pet, observe, or take care of the animal. However, nine did list more specific activities for cats and dogs, such as walk, feed, groom, or play ball with the animal. Refer to the limitations section to see how these statistics affect the validity of the studies.

Visiting cats

Of the literature reviewed, five studies (15%) brought therapy cats into long-term care facilities (Barak et al., 2001; Bernstein et al., 2000; Greer, Pustay, Zaun, & Coppens, 2002; Perelle & Granville, 1993; Stasi et al., 2004). One study specifically took place in a psychogeriatric ward in a hospital (Barak et al., 2001). The participants engaged in general activities, such as petting the cats, and in goal-related activities, such as activities of daily living (ADL) modeling activities. The studies benefited residents who experienced mental health issues, such as dementia, depression, and schizophrenia; were unable to participate in other activities, for instance due to frailty; were unaware of their environment; or had reduced communication and socialization. Two studies (Barak et al., 2001; Bernstein et al., 2000) worked toward goals of increased socialization and one additionally (Barak et al., 2001) worked toward AAT goals related to ADL and mobility.

The participants largely experienced social benefits, specifically toward initiating and engaging in longer conversations and anticipating the AAI. Next, they experienced physical benefits, such as enhanced ADL activity and mobility and tactile stimulation. Finally, some experienced behavioral benefits of impulse control and improved social behavior, mental benefits of increased general

Table 1. Summary of Benefits of Each Species (*n* = 33).

	Best for Behavioral Benefits	Best for Physical Benefits	Best for Physiological Benefits	Best for Mental Benefits	Best for Social Benefits
Resident Birds (<i>n</i> = 5)	—increased responsibility	—increased activity —incorporated physical activities to create and upkeep environment —opportunity to get outdoors	N/A	—increased sense of control —increased life satisfaction, well-being, and quality of life —increased motivation —increaseddremisec —reduced depression —reduced negative effects of change	—eased transition into facility —led to an increase in activities —increased social interaction
Resident Cat (<i>n</i> = 2)	N/A	—increased tactile stimulation —played with cats	N/A	—established emotional link —provided comfort, pleasure and companionship —stimulated responsiveness —provided them with reality therapy —increased self-esteem	—stimulated responsiveness —increased social interactions with residents and staff —reached out to withdrawn —increased communication through touch —breached language barriers —increased floor-to-floor and family interaction
Visiting Cat (<i>n</i> = 5)	—increased impulse control	—enhanced ADL	—reduced blood pressure	—increased general well-being	—increased socialization

(Continued)

Table 1. (Continued).

	Best for Behavioral Benefits	Best for Physical Benefits	Best for Physiological Benefits	Best for Mental Benefits	Best for Social Benefits
	—increased social behavior	—increased physical activity and mobility —increased tactile stimulation —increased self-maintenance		—reduced depression	—initiated conversations —maintained conversations —anticipated AAI —increased number of words, meaningful information units, and initiations
Resident Dog (n = 3)	—reduced problem behaviors (uncooperative/aggressive, irrational/restless, sleep problems, annoying, inappropriate, dangerous)	—increased vigor	N/A	—decreased tension, depression, anger, fatigue, confusion	—increased social behaviors over time (smiles, laughs, leans, touches, verbalizations)
Visiting Dog (n = 17)	—decreased impulse control	—enhanced ADL	—reduced heart rate	—increased spontaneous recollection	—increased socialization

(Continued)

Table 1. (Continued).

Best for Behavioral Benefits	Best for Physical Benefits	Best for Physiological Benefits	Best for Mental Benefits	Best for Social Benefits
<ul style="list-style-type: none">—increased calmness during and after AAI—increased prosocial behaviors—decreased agitated behaviors (aggressive, physically nonaggressive, verbally agitated)—reduced ward noise level—reduced spontaneous and aggressive outbursts	<ul style="list-style-type: none">—increased physical activity and mobility—reduced restraints for wanderers—decreased impaired spatial orientation—increased touch and tactile stimulation—increased self-maintenance—increased vigor	<ul style="list-style-type: none">—trend toward reduced diastolic blood pressure	<ul style="list-style-type: none">—increased alertness, responsiveness, and reminiscence—increased orientation to present—increased self-esteem—increased emotional well-being—increased general well-being and quality of life—decreased depression, loneliness, tension, anger, fatigue, and confusion	<ul style="list-style-type: none">—increased verbal and nonverbal communication—initiated conversations—maintained conversations—improved interpersonal connections—drew out withdrawn individuals—increased attachment to humans and the dogs—increased smiles, laughs, leans, touches, verbalizations—eased transition to other activity—initiated prosocial behaviors (moving closer, patting, smiling)
Resident Fish (<i>n</i> = 4)				
<ul style="list-style-type: none">—increased length seated at table—increased responsibility	<ul style="list-style-type: none">—increased nutritional intake—increased weight gain and maintenance—increased length seated	<ul style="list-style-type: none">—increased weight gain—reduced stress—reduced blood pressure	<ul style="list-style-type: none">—increased relaxation and leisure satisfaction—reduced stress—increased attention—increased sense of worth	<ul style="list-style-type: none">—increased social interaction—increased quality of life
All of the Above (<i>n</i> = 2)				
<ul style="list-style-type: none">—increased responsibility, self-esteem, and independence	<ul style="list-style-type: none">—stimulated senses—increased muscle strength, range of motion, and pain management	<ul style="list-style-type: none">—reduced blood pressure and heart rate	<ul style="list-style-type: none">—increased responsibility, self-esteem, and independence	<ul style="list-style-type: none">—facilitated social interaction and companionship

well-being and reduced depression, and physiological benefits of reduced blood pressure (see [Table 1](#)).

Visiting dogs

Of the literature reviewed, 17 studies (51%) brought therapy dogs into long-term care facilities Banks & Banks, 2002; (Banks & Banks, 2005; Banks, Willoughby, & Banks, 2008; Barak et al., 2001; Batson, McCabe, & Baun, 1998; Bernstein et al., 2000; Beyersdorfer & Birkenhauer, 1990; Crowley-Robinson et al., 1996; Fick, 1993; Kaiser, Spence, McGavin, Struble, & Keilman, 2002; Katsinas, 2000; Kawamura, Niiyama, & Niiyama, 2007; Kongable et al., 1989; Perelle & Granville, 1993; Richeson, 2003; Sellers, 2005; Walsh, Mertin, Verlander, & Pollard, 1995). Two studies took place in psychogeriatric wards in a hospital (Barak et al., 2001; Walsh et al., 1995). The participants engaged in general activities with the dogs, such as petting, grooming, walking, feeding, and playing with them. In some studies, they participated in goal-related activities, such as reminiscing during the sessions, practicing ADL, and working toward personal goals. The studies benefited residents who experienced mental health issues, especially dementia, as well as depression and schizophrenia; were veterans; had pets earlier in life and enjoyed animals; were already part of a therapy program, such as rehabilitation; were unable to participate in other activities; were unaware of their environment and not adjusted to their surroundings; or had reduced communication and socialization. Seven studies worked toward goals relating to socialization, three toward loneliness, and one each toward ADL and physiological functioning.

The participants experienced numerous benefits in each category (see [Table 1](#)). First, they largely experienced social benefits. Specifically they were more engaged, initiated conversations, smiled more, bonded with the dogs, and transitioned easier among activities. Mentally they experienced decreased negative emotions, such as depression, loneliness, tension, anger, fatigue, and confusion, and increased positive emotions, self-esteem, orientation to the present, recollection, and general well-being. Physically, some experienced enhanced ADL activity and increased vigor, mobility, tactile stimulation, and spatial orientation. Behaviorally, some experienced increased impulse control and prosocial behaviors and reduced agitated behaviors and negative emotions. Finally, physiologically, participants in one study experienced a reduced heart rate and a trend toward reduced blood pressure (Walsh et al., 1995).

Resident cats

Of the literature reviewed, two studies (6%) housed resident cats in long-term care facilities (Brickel, 1979; Weisberg & Pack, 1991). One study took place in a hospital ward and focused on geriatric patients (Brickel, 1979). The participants

engaged in general activities, such as petting the cats. The interventions benefited residents who were missing pets from home or had chronic brain syndrome.

Participants in all of the studies experienced social and mental benefits (see [Table 1](#)). Socially, the cats stimulated the participants' responsiveness, especially regarding withdrawn individuals, and increased interaction between different floors and with family members. Mentally, the cats provided them with comfort, companionship, and reality therapy that oriented them to the present. Finally, some experienced physical benefits through tactile stimulation and playing with the cats.

Resident dogs

Of the literature reviewed, three studies (9%) housed resident dogs in long-term care facilities (Crowley-Robinson et al., 1996; Kongable et al., 1989; McCabe, Baun, Speich, & Agrawal, 2002). The participants engaged in general activities, such as petting the dogs, either individually or in groups. The interventions benefited residents who had dementia, bore negative behaviors and moods, were veterans, were not adjusted to their surroundings, or had pets in the past.

Some of the participants experienced behavioral benefits of reduced problem behaviors, such as being uncooperative, aggressive, or restless and mental benefits of decreased negative emotions, such as tension, depression, anger, fatigue, and confusion. Physically, some participants experienced increased vigor and socially, some experienced increased social behaviors, such as smiles, laughs, and touches (see [Table 1](#)).

Resident birds

Of the literature reviewed, five studies (15%) housed resident birds in long-term care facilities (Banziger & Roush, 1983; Colombo, Dello Buono, Smania, Raviola, & De Leo, 2006; Davis, 2011; Holcomb, Jendro, Weber, & Nahan, 1997; Jessen et al., 1996). The participants engaged with the birds in one of four ways. They had a bird of their own in a cage in their room, they had a bird feeder outside their window, their facility had an aviary, or their facility had a nature garden that was geared toward attracting birds and other wildlife. Some participants also engaged in upkeep activities, such as making seed cakes for the birds. The interventions benefited residents who experienced mental health issues, such as dementia and depression; were veterans; or needed more independence and movement.

The participants largely experienced social benefits, specifically regarding social interaction with others and transitioning into the facility (see [Table 1](#)). Next, many experienced mental benefits of increased satisfaction with life, sense of control, recollection, and motivation. Finally, some experienced behavioral

benefits of responsibility and physical benefits of moving around more and getting outside to access the nature garden.

Resident fish

Of the literature reviewed, four studies (12%) housed resident fish in long-term care facilities (DeSchraver & Riddick, 1990; Edwards & Beck, 2002, 2013; Riddick, 1985). One study took place in a low-income housing complex for the elderly (Riddick, 1985). The participants engaged in general activities of observing the fish, particularly during mealtimes. The interventions benefited residents who experienced dementia, stress, or a low sense of worth. Two studies worked toward goals of increased food intake and weight maintenance (Edwards & Beck, 2002, 2013).

The participants experienced physiological benefits of reduced blood pressure, physical benefits of weight gain and increased nutritional intake, and mental benefits of increased relaxation, attention, and sense of worth. In addition, some experienced social benefits of increased interaction and behavioral benefits of staying at the table longer and showing responsibility (see Table 1).

Animals as a whole

Of the literature reviewed, two studies (6%) looked at the benefits of AAI programs as a whole (Behling et al., 2011; Darrah, 1996). Behling et al. (2011) looked at the benefits of AAI programs in 233 Illinois long-term care facilities in 1990 and 61 in 2010. The most popular resident animals in 1990 were first, fish, second, birds, third, dogs, and fourth, cats. The most popular resident animals in 2010 were first, birds, second, fish, third, cats, and fourth, dogs. The most reported benefit, regardless of type of animal, was an increase in social interaction (see Table 1).

Darrah (1996) conducted a survey of animal-facilitated therapy (AFT) programs in 33 urban California nursing homes and 23 rural South Dakota nursing homes. The most common animals brought into the nursing homes were first, dogs, second, birds, third, cats, fourth, fish, and fifth, rabbits. The animals most often aided residents who had dementia, depression, or Parkinson's. The residents experienced behavior benefits of increased responsibility and independence; mental benefits of reduced stress and increased self-esteem; physical benefits of stimulated senses and increased muscle strength, range of motion, and pain management; physiological benefits of reduced blood pressure and heart rate; and social benefits of increased social interaction and companionship (see Table 1).

Limitations

There is limited contemporary empirical research comparing the benefits of AAI for multiple species with five main issues. First, there is a lack of overall research, which makes it difficult to assess the benefits of AAI as a whole, let alone solely for the elderly in long-term care facilities. Second, a majority of the research focuses solely on dogs, particularly visiting dogs, as seen by the 51% representation of visiting dogs in the review. As a result, other species are under researched. Recall that only seven studies incorporated cats, five incorporated birds, and four incorporated fish. If a study discusses more than one species, such as cats and dogs, it usually focuses on the AAI as a whole rather than comparing the benefits of each species, as seen by the three studies that looked at both cats and dogs (Barak et al., 2001; Bernstein et al., 2000; Perelle & Granville, 1993). The same was true of the two studies that looked at all four species (Behling et al., 2011; Darrah, 1996). This lack of comparison makes it difficult to determine which animal species is a best-fit for a particular situation and resident. Third, the research often does not delve into the factors that contributed to the success of the AAI. For example, if researchers do not report variables such as why they chose that animal species, the demographics of their participants, the participants' beliefs and experience around animals, specific goals, the overall staff and participant satisfaction and success of the goal(s), or differentiations among species, then the variables that contribute to an intervention's effectiveness is not recorded to be utilized in future studies.

The last two limitations focus on the type of research completed. Fourth, there is more qualitative research focused on personal success stories and less quantitative research that collects certifiable data. While personal accounts are powerful, they lack the data to back up the interactions and do not generalize to a population. The quantitative research tends to (a) be based on small sample sizes, (b) be based on short time periods without long-term follow-ups, (c) be geared toward more general than specific goals and activities, and (d) lack statistical analyses. This lack of specific goals and activities makes it difficult to quantify results. Finally, there is also a limited amount of statistical analyses. For example, of the 33 studies reviewed, only 16 computed an analysis of variance, 11 computed a *t*-test, three computed a chi square, and two computed a regression. If studies have multiple of these limitations, then it is possible the validity may be questioned.

Considerations

Instead of adding to the empirical research, the authors analyzed the existing research in order to make previously unmade connections. Thus, the authors focused on the second and third limitations, that there is a lack of research that compares the benefits of multiple species and that many studies fail to look into

the variables that made their AAI successful. Before moving on to more research, it is important to thoroughly analyze previous research. The review revealed five types of benefits of four species of animals in two different forms of AAI: visits and residency (see [Table 1](#)). Now the species were compared in order to determine when they may be a more appropriate fit. First, the authors discussed a summary of the main benefits of each species, then three other factors: affordability, accessibility, and cons, which affect when it might be more ideal to incorporate one species over another. Finally, a list of activities for each species is suggested. See [Table 2](#) for considerations.

Main benefits

The benefits of the AAI tend to expand beyond the original purposes of the studies. AAIs can cover a wide range of goals, and many of the benefits overlap into multiple categories. For example, a decrease in negative emotions leads to behavioral, physical, and mental benefits because the participant's external behavior toward others changes as well as their bodily response and internal state. From the existing research, the authors drew together a few main benefits for each animal species.

First, the authors looked at visiting animals. From the research, overall, visiting cats were the best for enhancing positive behaviors and socialization, especially conversations. Visiting dogs were great for encouraging reminiscing, tactile stimulation, increasing socialization, especially communication, and decreasing agitated behaviors.

Second, the authors looked at resident animals. From the research, overall, resident birds were effective at increasing socialization and life satisfaction and reducing depression. Resident cats were helpful for increasing socialization, especially communication, and providing comfort. Resident dogs were beneficial for reducing negative behaviors and increasing social behaviors. Finally, resident fish were great for weight maintenance or gain and increasing relaxation and social interaction (see [Table 2](#)).

Affordability

Determining which animal species is best for a facility is in part dependent on the cost. Each facility has a budget it can afford toward AAI, and that will impact what species it chooses. Visiting cats and dogs are the cheapest options because they are typically brought to the facilities by volunteer teams for free (Pet Partners, 2012). In addition, since the cats and dogs are brought by their owners and only for short-term visits, the facility is not responsible for animal-related costs, such as food or vet expenses.

The next cheapest options are likely the resident fish and resident birds. The facility could easily control the number and types of fish, and the upkeep is

Table 2. Considerations.

	Main Benefits	Accessibility	Affordability	Other Considerations	Cons
Resident Birds	help with transition motivation quality of life and satisfaction reduce depression reminisce responsibility/control social interaction	always present can have bird cage in room can have multiple birds can use nature can view bird feeder from room everyone can see the aviary	can choose how many can use nature low maintenance multiple options: nature, aviary, pet	more stimulation than fish most common resident animal in IL, 2010	2nd least interactive
Resident Cats	comfort communication through touch emotional link, pleasure physical play reality therapy self-esteem social interaction stimulate responsiveness	able to roam/visit a variety always present good for smaller facilities there if a crisis occurs	cheapest option: staff's pet low maintenance/ easier than dogs	2nd most common resident animal in IL, 2010 great for cat lovers	fears and allergies not equipped possibility for animal stress require education on animal welfare
Visiting Cats	activities of daily living (ADL) anticipation of AAI blood pressure depression environment awareness general well-being impulse control mobility number of words/ vocalization "social behavior/ socialization/ social functioning/ stimulation" self- maintenance tactile stimulation	could visit for few hours, if there is a place to rest could have during regular therapy/ programs something to look forward to	free/usually volunteers low maintenance	act as models of behavior benefits even in a short time period do more specific activities good for frail elderly: small; don't move much great for cat lovers little preparation after initial visit	fears and allergies possibility for animal stress present for short time period require education on animal welfare

(Continued)

Table 2. (Continued).

	Main Benefits	Accessibility	Affordability	Other Considerations	Cons
Resident Dogs	adjust to surroundings decrease tension, depression, anger, fatigue, confusion improve mood improve problem and prosocial behaviors, esp. during the day increase vigor	always present able to roam/visit a variety good for smaller facilities there if a crisis occurs potential for outdoor walks	cheapest option: staff's pet	4th most common resident animal in IL, 2010 best long-term beneficial for residents with dementia great for dog lovers may help reduce the need for medication	fears and allergies maintenance most expensive option not equipped possibility for animal stress require education on animal welfare
Visiting Dogs	activities of daily living (ADL) decrease agitated behaviors decrease fatigue decrease loneliness/social isolation environment awareness general well-being improve emotional well-being impulse control increase alertness/responsiveness increase prosocial interactions increase quality of life mental stimulation mobility nonverbal communication orientation to present reduce heart rate reduce noise level self-esteem self-maintenance socialization/stimulation/engagement spontaneity spontaneous recollection/reminiscence tactile stimulation	alternative: robot dog could visit for few hours, if there is a place to rest have during regular therapy/programs something to look forward to potential for outdoor walks	cheap alternative: robot dog free/usually volunteers	act as models benefits even in a short time period best long-term do more specific activities beneficial for residents with dementia great for dog lovers little preparation after initial visit	fears and allergies possibility for animal stress present for short time period require education on animal welfare

(Continued)

Table 2. (Continued).

	Main Benefits	Accessibility	Affordability	Other Considerations	Cons
Resident Fish	increase attention reduce stress and blood pressure relaxation responsibility sense of worth social interaction weight gain	can have fish tank in room can have multiple fish everyone can see the fish tank fish are always present	can choose how many cheaper alternative: fish video inexpensive low maintenance multiple options: large or individual tank, fish videotape	3rd most common resident animal in IL, 2010 can save money on nutritional supplements beneficial for residents with dementia	least interactive no physical contact
Overall Considerations	works well if already some sort of therapy program: incorporate into it an increase in socialization can possibly help participants achieve other treatment goals maximize benefits with collaboration (i.e., OT) long-term is best self-selection participants had and/or wanted pets pair with enthusiastic handlers				

minimal. The facility could choose to have one or multiple fish tanks throughout the facility or residents could have their own pet fish. Finally, the facility could pursue an even cheaper alternative: showing a videotape of lifelike tropical fish swimming that includes the sound of water.

Resident birds can include one of three possibilities. First, the facility could create or expand a nature garden, such as by planting flowers, making paths, and placing bird houses in a set area outside. This option could be as cheap as the facility decided. Second, the facility could set up an aviary for the residents to visit. The cost of this option is also flexible, since it could choose how many and what types of birds to buy. Finally, the residents could have a bird of their own, which could become expensive if a large amount of residents have birds. Regardless of what option the facility chooses, the upkeep of the birds is minimal and the number of birds is subjective. Similar to resident fish, facilities choosing resident birds could easily control the number and types of birds, and the upkeep is minimal.

The most expensive options for facilities are resident cats and dogs. An animal specifically trained for the facility as a professional therapy animal would cost around two to three thousand dollars (Lewellyn, 2008). A cheaper alternative would be for a staff member to bring a pet or therapy animal to stay during the day; however, that may result in liability risks. The facility could also have a robotic animal, but it may not be as beneficial as a living animal. In addition to the expenditure of the animal, the facility would also likely need to care for the animal's upkeep, such as food, vaccinations, and grooming, although, depending on the size of the animals, the cat's maintenance will likely be slightly less than the dog's (see Table 2).

Accessibility

Since the affordability of the animal species can be generally flexible, another consideration to aid in their decision can be accessibility. The residents are able to access each species to a different degree. Resident animals are the most accessible because they are in the facility full, or close to full, time. They would be better for smaller facilities, so they are more accessible to all of the residents and so the animals are not overwhelmed. Ideally, the animals would be in a room that the residents regularly pass through, and they could visit the fish or birds whenever they desire, especially if they had a pet of their own or could view a bird feeder from their window. The nature garden, however, would need to have wheelchair accessible paths, the residents would not be able to visit it at night or possibly during winter, and it is not always guaranteed that they would see an animal. The resident cats and dogs would be accessible throughout the day and would be helpful when crises occur. However, they would not be around at night or when the animals need breaks. Since there will likely only be one resident cat or dog at a time, they would be better fit for smaller facilities where there are not as many residents. One alternative is a robotic dog, which does not have all of the benefits of a living dog, but would be more accessible.

The visiting cats and dogs would be the least accessible because they would only be present for short periods and would likely not be able to visit every resident who would like to see the animals. However, they could be incorporated during regular recreation or therapy programs, and multiple visiting animals could come from multiple organizations, which make them more accessible. It may also be easier for facilities to bring in visiting animals from outside organizations instead of finding a resident animal to stay long term (see [Table 2](#)).

Cons

It is also important for the facility to consider the cons of each animal species when making a decision. Cats and dogs yield the greatest risks because they can become potentially aggressive, and residents may be afraid or have allergies. The residents have a greater chance of being allergic to cats than dogs, and if even one resident is severely allergic, then the facility may not be able to have a resident animal. The facility also needs to realize that cats and dogs, especially resident cats and dogs, will become stressed at some point, and it will need to have a welfare plan in place and educate the residents on proper interactions. A specific con of visiting cats and dogs is their short-term presence in the facility. A specific con of resident cats and dogs is that they may not be certified, which means they are not trained to be as adaptable, which increases the liability risk. In addition, resident dogs are the most expensive option.

Resident birds and fish pose the least risk and cost to facilities, but they are the least interactive. The residents would not be able to get physical and sensory

stimulation from fish and only some from the birds, which reduces the intensity of an emotional connection. However, birds move around more than fish, which is more engaging (see [Table 2](#)).

Other considerations

The AAI would be increasingly beneficial for the residents if they are incorporated into current therapy programs, paired with enthusiastic and sociable handlers, and long-term (Bernstein et al., 2000; Beyersdorfer & Birkenhauer, 1990; Brickel, 1979; Fick, 1993; Kaiser et al., 2002; Katsinas, 2000; Richeson, 2003; Sellers, 2005; Weisberg & Pack, 1991). In regard to all of the species, the residents who would likely benefit most from the AAI are the ones who choose to participate and had pets in the past Banks & Banks, 2002; (Banks & Banks, 2005; Bernstein et al., 2000; Beyersdorfer & Birkenhauer, 1990; Kongable et al., 1989; Richeson, 2003) (see [Table 2](#)).

Suggested activities

Once the facility makes its decision, there is an array of activities it can choose to incorporate with each animal species. The most potential and variation lie with both visiting and resident cats and dogs. For residents that need the comfort or sensory contact or who are frail, cats could lie in their laps while they pet them (Bernstein et al., 2000). If they want to work toward more physical goals, they could play with the cat, such as with string or other cat toys (Brickel, 1979). The activities the residents can do with the dogs are endless, and many are applicable to cats as well. Besides petting the dogs, the residents could take them for walks, play fetch with them, and groom them (Banks & Banks, 2002; Barak et al., 2001; Beyersdorfer & Birkenhauer, 1990; Kawamura et al., 2007; Richeson, 2003; Sellers, 2005). Although simple, all of these activities can work toward physical, sensory, cognitive, and social-emotional goals. More specifically, the cats and dogs could be models for the residents, such as on the importance of eating, exercising, engaging in routines, and resting (Barak et al., 2001). In addition, they could visit residents who do not have many or any visitors to increase that social interaction and decrease their loneliness Banks & Banks, 2002; (Banks & Banks, 2005; Banks et al., 2008; Weisberg & Pack, 1991).

The residents can engage in fewer activities with the birds and fish, but there are still things they can do. The residents can take on responsibilities, such as making seed cakes for the birds or taking care of their pet bird or fish (Colombo, Dello Buono, Smania, Raviola, & De Leo, 2006; Davis, 2011; Jessen et al., 1996). If the facility can afford it, a pet bird or fish would be a great way to help the residents with their transition to the facility, increase their sense of worth, and decrease their loneliness if they do not receive many or any visitors (Davis, 2011; Jessen et al., 1996; Riddick, 1985).

Conclusion

The authors looked at four animal species and two different ways to bring these animals into long-term care facilities. From reviewing previous AAI research, five areas of benefits were deduced as well as three additional variables: affordability, accessibility, and cons. Although dogs may be the most popular, they are not always the best-fit choice for the issues elderly residents face or, depending on the facility's resources, may not be a practical option. The price of each species is generally flexible, but visiting animals are the cheapest, followed by resident fish and birds, and lastly resident cats and dogs. Cheaper alternatives include incorporating a fish videotape or robotic animal. When considering accessibility, resident animals are accessed the easiest, whereas visiting animals are only present in the facilities for short periods and likely see fewer residents. The biggest con of including cats and dogs is the potential risks, such as allergies, fears, potential aggression, and likelihood of some animal stress. The biggest con of including birds and fish is that they are not as interactive as cats and dogs.

This review carefully evaluates the existing research in a unique way: by comparing variables relating to different resident and therapy animals. As a result of this analysis, long-term care facilities would be able to make more informed decisions when considering which animal-assisted intervention would be an appropriate fit for their elderly residents. The analysis revealed it is important for the facility to consider factors, such as its budget, number and ailments of residents, type of preferred accessibility, and preferred goal. To add to this limited field of AAI research, future studies may consider administering quantitative studies measuring specific variables of what contributes to the success of the AAI, such as the benefits of that particular species, the conditions of the facility, and the demographics of the residents.

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