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REVIEW ARTICLE

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Animal-Assisted Therapy for Mental Disease in Aging Adults

Jill Hanika Stout, BA*

Mental Health Professional and Self- Advocate, USA.

ABSTRACT

Mankind has had relationships with animals since early history, as stock animals but also as hunting partners and pets. Animal-assisted therapy (AAT) involves the use of trained animals, such as dogs, cats, horses, and even dolphins, to improve mental and health in individuals. Aging adults often face depression and anxiety, as a consequence of other health problems in addition to a continuing mental health diagnosis. AAT reduces anxiety, stress, sleep disturbances, and even problems with memory and concentration in socially detached aging individuals, with or without mental health issues. In those with mental illness diagnoses, AAT reduces symptoms and can even increase endorphins and dopamine, "feel good" substances in the brain. There has been research that shows that the survival rate of one-year post myocardial infarction patients is significantly higher in persons with pets. Aging people with various health conditions benefit from having pets or receiving AAT. People with dementia, Alzheimer's disease, mental illnesses such as attention deficit hyperactivity disorder (ADHD) and depression, as well as cancer and other health issues, are helped by AAT. There are even robotic creatures developed for those who can't have pets of their own or are unable to care for them. These are expensive, but sometimes used in institutional settings; they provide companionship, comfort and emotional support. Animal-assisted therapy has the potential, with the number of robotic alternatives and the increasing number of animal agents of AAT, to improve the well-being of aging persons suffering from mental health issues.

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Many sources have reported that since early in man's development, he domesticated animals to use in farming, hunting and as companions [1-3]. But pet owners have always known that their dogs, cats, birds, fish, turtles, hamsters, rabbits, snakes, or lizards—their beloved pets of all kinds—provide a special kind of contentment and comfort as well as psychological and physiological benefits for them and their families.

Animal-assisted therapy (AAT) has been around for hundreds of years. The first recorded use of animals for medically beneficial support occurred in a Belgian hospital in the 11th century, when patients were allowed to care for birds [1]. Later in the late 18th and the 19th centuries, animals were used in treatments to help mentally disturbed residents at the York Retreat in England [1].

In the 1940s, doctors arranged for horseback riding and caring for farm animals as part of recovery for hospitalized veterans of World War II [1].

In 1969, Dr. Boris Levinson, an American psychiatrist, was amazed when a mute child he was treating suddenly began speaking to and interacting with Dr. Levinson's dog who was lying in the office during the therapy session. As the boy continued to communicate with only the dog during his sessions, he improved. Eventually Levinson wrote a book called *Pet-Oriented Child Psychotherapy*, and after that he became known as the "Father of Animal-Assisted Therapy" [1].

"Animal" is particularly broad in AAT: cats and dogs, of course, but some of the therapies include horses, fishes, even dolphins [4]. Many creatures can be trained and used for this therapy. And it has been noted that a family who has a pet develops family unity; also family members gain social support and personal competence [5].

However, if a family needs a therapy dog or a trained service dog, the cost might be prohibitive [5]. The Dog Alliance (thedogalliance.org) has noted that costs range from $2,000 for a therapy dog to $15,000 to $60,000 for a fully trained service dog [6]. This doesn't include veterinary care or food expenses. See the Appendix for further information on costs and financial assistance.

The effectiveness of animal-assisted therapy (AAT) or animal-assisted activities (AAA) can be noted in lessening of movement difficulties after stroke [7]. Cruz-Fiero, Vanegos-Farfano & González-Ramírez reported easing of anxiety at dental procedures; and increase in emotional or physical engagement in therapy has been noted [2,9].

Contact: Jill Hanika Stout, BA, Mental Health Professional and Self- Advocate, USA.

Many sources note interventions with pet therapy show that lowering of cortisol levels, which helps alleviate sleep disturbances; mood swings; fatigue; problems with memory and concentration; and weight gain are benefits of AAT [4,5,7,8]. Also petting and interacting with an animal can stimulate the parasympathetic system to encourage stress relief and pleasure, reducing feelings of social detachment [9].

Therapy animals decrease symptoms of anxiety, cause significant reductions in nightmares and sleep disruption, and decrease symptoms in schizophrenic patients [10].

Another physical benefit is increased oxytocin levels, which reduce stress, improve empathy and increase social bonding and feelings of trust [11].

Pet owners show marked decreases in cholesterol and triglycerides as well as blood pressure [3,12]. The survival rates of pet owners after a heart attack (myocardial infarction) is greater than for non-pet owners; with controls for exercise, it was found that there was a significantly higher survival rate at one year post-MI for pet owners [10]. Even familiar problems are less common in those with pets, such as pain, stress and nervousness.

Studies have been made on the effects of assisted-animal activities (AAA) helping a wide range of conditions. Just 15 minutes of AAA influences neurochemicals such as prolactin, which lessens pain and boosts the immune system [3]. These researchers have also explained that dopamine, a neurotransmitter that acts to regulate the body's motor control, aids attention and memory. There is also an increase in endorphins [3], which serve as neurotransmitters to help control respiration and relieve pain and stress, and also as hormones to facilitate pleasurable actions like lovemaking and laughter.

Animal-assisted therapies, usually dog-assisted, are used for many conditions, so let's discuss AAT for older adults and their health conditions. This relationship includes *attachment* (a mutual association between humans and animals) and *biophilia* (emotional association with other living beings) [10].

Besides animal-assisted therapy (AAT) and animal-assisted activities (AAA), researchers refer to human-animal bond (HAB); human-animal interaction (HAI); canine-assisted therapy (CAT); animal-assisted interventions (AAI); canine-assisted psychotherapy (CAP); animal-assisted therapy/psychotherapy (AAT/P); pet-facilitated-therapy (PFT); and pet assisted therapy (PAT). These acronyms may allow researchers to pinpoint the exact therapeutic intervention being described, but they also sometimes confuse both the patients in the programs and their facilitators and healthcare teams.

Older hospitalized adults improved with animal-assisted therapy for such disparate chronic age-related problems as malnutrition and cancer. These patients ate significantly more nutritiously while hospitalized, and those with dog helpers used canine assisted ambulation (CAA) to walk more than control group participants. Pain medications were required less than previous to the AAT [13,14].

Researchers discovered that their older patients, who were provided AAT with dogs, cats, rabbits, caged birds, and fishes, had decreased systolic blood pressure and decreased epinephrine and norepinephrine levels (fight or flight hormones), causing less anxiety and stress [13,14].

Quite a few studies have shown that animal-assisted therapy and animal-assisted activities, no matter what they are called, are of great value to persons with dementia and Alzheimer's disease, as well as diseases of aging such as heart disease, hypertension, and respiratory illnesses.

In addition, there are benefits for surgical patients in recovery; those with cancer; and people with mental illnesses such as attention deficit hyperactivity disorder (ADHD), depressive disorders, anxiety, and schizophrenia [4,10].

Aging residents in a skilled nursing home also gained benefit from animal-assisted therapy (AAT) [14]. Diagnoses such as dementia, Alzheimer's disease, and depression were present in the test groups.

A study by Bono, Benvenuti, Buzzi, Ciatti, Chiarelli, Chaimbretto et al. [15] found that dog-AAT for patients with Alzheimer's disease (AD) mitigated stress, aggressive behavior and psychotic episodes. Some dogs are considered excellent subjects for training as therapy animals, because a number of breeds are even-tempered and experience minimal stress in AAT activities. These include border collies, golden retrievers, Labradors, Weimaraners, poodles, and Cavalier King Charles spaniels; these breeds are noted for their calm and steady dispositions, reported a number of sources.

There are also other breeds of dogs suitable for training as therapy or service dogs: It largely relies on which breeds the handlers have found most successful in the therapy. Researchers looked at specific benefits with AAT such as lowering anxiety levels, improving communication, promoting cognitive stimulation, encouraging physical activity, and overall well-being [14,15].

Our animals provide unconditional love and acceptance, and sometimes, the only thing we accomplish in a day is to feed and water our pets. But having them can help us to function and thus assists in recovery from illness, not to mention providing a calming effect. Psychologists have been finding out what pet owners have known for a long time: our pets are good for us.

What about people with animal allergies or fear of animals?

Research into human-animal interaction (HAI) for these people suggests that robot animal substitutes may offer the same benefits as live animals. We have seen that animals can alleviate loneliness and loss in the older population as well as help relieve a number of chronic conditions (such as cardiovascular disease, hypertension, depression and dementia). But robotic companions do not require food or special care, and do not provoke concerns about health and safety [16,17].

Early in the Covid-19 pandemic, when it was unclear whether

COVID-19 could be transmitted to and from animals, scientists were especially clever in developing a companion robot to facilitate different kinds of helpful actions for candidates for AAT [3].

Named Vector, the little robot was designed to serve as a personal assistant, friend and supportive "pal" to people suffering from the loneliness that the pandemic restrictions caused. A study by a group of marketing and economics experts, Odekerken-Schröder, Mele, Russo-Spena, Mahr & Ruggiero, determined that the robot was considered a viable indicator of well-being and that it could mitigate loneliness "through building . . . supportive relationships" [17].

Perhaps the most innovative robot companion is PARO, a robot baby harp seal covered in soft fur and able to make sounds of satisfaction when stroked [16]. Robots like these have been successfully used in patients with dementia, reducing agitation and apathy, taking note of the preferences and psychological needs [16]. They are most often used with inpatients because of the considerable purchase expense. They have been used during the COVID-19 pandemic and beyond.

Robots can be purchased and maintained more easily by a large hospital or nursing facility than an individual, because of their cost. They are used as social robots rather than as functional robots, to mitigate loneliness, increase emotional wellbeing and eliminate isolation, anxiety and fear. Another robot used in dementia and elder care is Probo, who is padded to be "huggable" [16,17].

These devices provide respite from isolation (which is called utilitarian) as well as contributing to social connection (referred to as hedonic); users report strong feelings of attachment to, and even love for these robots, making the robot into assistant, equal, and "intimate buddy" [17]. This is important because the robots provoke feelings of friendship and understanding as their main function.

It is important to clarify the special circumstances involved with pet ownership for aging adults. Many older adults find cats as appropriate pets, due to their size, lesser requirements for walking or exercising, and for their natural autonomy [2]. They provide opportunities (as do smaller dogs) for nurturing and for maintaining physical and cognitive functioning in aging.

But older adults may become less able to care for their pets as they age, and while animal ownership reduces isolation and loneliness in older pet owners, feeding them and providing medical care may become problematic. There is also the fear in older adults of outliving their pets, considerations in maintaining their pet's health and welfare [10].

Finally, we must address safety concerns for both human and animal participants in these therapies. Canine-assisted interventions (CAI) need evidence of effectiveness and dependable standards of practice to safeguard patients, healthcare professionals, and the dogs themselves and their handlers [12].

Crowded hospitals, staff or patients who move rapidly, or patients calling out for assistance or in pain, and constant audio pages and alerts might befuddle other than the most highly trained animals with the variety of sounds and sensations. Each arm of the triangle of patient, animal and handler must be considered [12].

In situations like the animal-assisted services provided for older persons with belligerent behavior due to dementia [18], care must be taken to safeguard the animals from stress and abuse by the patients with close observation of the patients' behaviors, as well as the animals' cues, such as laying back of ears, yawning, and licking behaviors along with elevated heart rate and increased salivary cortisol measurements in service dogs [19].

These animals, especially service dogs, are trained to wait for reward and do their caregiving actions without hesitation. Their handlers (who are usually their owners) have also had rigorous training and so are able to anticipate when their animal partners are tiring or getting confused by patients' actions [19]. Sessions with clients are usually time-limited for just such reasons [20].

Time limits for AAT and AAA sessions are generally set by doctors and handlers, long enough to accomplish the therapy's goals and short enough in duration so that animal, trainer and patient do not tire [20]. Remember, these animals are considered to be working animals, not pets. The handler must have a secure attachment to the animal to cope with the diverse pressures for the animal in each session every working day [18,20,21].

Animal-assisted therapy and animal-assisted activities are explained thoroughly here. You have learned about various physiological and psychological conditions, and how older adults' lives can be changed for the better by AAT and AAA. You have learned about current research that routinely finds positive aspects to AAT and AAA. And you have learned about various alternatives to AAA with the use of robotic devices. You have also learned about concerns for patients' and animals' satisfaction and safety, and how these concerns are met with innovative and well-reasoned solutions.

Animal-assisted interventions cover a wide range of therapeutic services that work for human health and wellness. Hopefully you will now have a good understanding of the benefits obtained through animal-assisted interventions.

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Appendix

The following organizations are 501(e)(3) nonprofits that will help you find an accredited organization to help with your needs. Contact them to discover specific costs and requirements for training and placement of animals, especially if you are a veteran or have a specific disability. Also check local nonprofits, foundations and veteran's organizations that might offer specific financial assistance.

Canine Companions for Independence provides service dogs at no charge to people with disabilities and to veterans. Your only financial responsibility is travel and housing during training.
Paws With A Cause primarily provides financial assistance or free service dogs to those who qualify.
Doggie Does Good, Inc. connects people with trained service dogs and provides a financial application to assist with some of the costs.
The Seeing Eye offers a reduced-cost dog program for people with vision impairments, providing the first dog for only $150.
Assistance Dogs International (ADI) is an excellent starting point to locate accredited organizations that offer a variety of services for therapy and assistance dogs. Start with ADI for comprehensive information.

Training Costs

Overall costs for raising and training a fully trained service dog can be very high, with organizations like **Little Angels Service Dogs** reporting that they spend a minimum of $60,000 per dog.

Therapy dogs' training costs vary widely, often including a combination of group classes, private lessons and board-and-train services which can cost $1,500 to $4,500, depending on the length and intensity of the training.

Natan Maimes & Travel Service Dog Scholarship Fund provides reduced-cost training for low-income persons with disabilities who are training their own service dogs.
Check out local nonprofits too, such as United Way, veterans' organizations and various disability foundations which might offer financial assistance.