The Evidence Supporting the Use of Animal-Assisted Therapy (AAT)

Introduction

Research in the last few decades has indicated that association with companion animals can have far reaching benefits on the health of the owners of pets (1). Pet ownership is an ancient activity, as was demonstrated by the recovery of a 12000year-old Palaeolithic tomb in Northern Israel containing the remains of a human and a dog buried together. The dead person's hand had been arranged so that it rested on the dog's shoulder as if to emphasise a bond (1). This is significant as the domestication of animals for food and transport needs occurred well after this burial, indicating that animals were first domesticated for 'companionship' (1).

Animal-Assisted Therapy (AAT) is defined as '*The introduction of an animal into the immediate surroundings of an individual, or a group, as a medium of interaction with a therapeutic purpose*' (2). Also known as pet-facilitated therapy, it is currently offered in a wide variety of settings such as nursing homes, rehabilitation centres, developmental centres, acute care, psychiatric centres, and hospices (2).

The literature indicates that pets were used as part of therapy as early as 1792 at the Quaker Society of Friends York Retreat in England (2, 3), and even Florence Nightingale appreciated the benefits of small pets' comfort in the treatment of individuals with illness (3). Similarly, the US military promoted the use of dogs as a therapeutic intervention with psychiatric patients in 1919 at St Elizabeth's Hospital in Washington, DC (2, 3).

Increased recognition of the value of human-pet bonding was noted by Dr.Boris Levinson in 1961 for the treatment of schizophrenia, contending that the caring, human-canine relationship helped ground the patient in reality. More recently, in 1990, Dr William Thomas developed a therapeutic environment, called the Eden Alternative, which sought to assimilate the natural world, including animals, into long-term care (2).

Animal companionship provides love, affection, and a sense of being needed (4), and serves as an accessible and boundless source of support and companionship (5). Out of this realisation several different types of programme have evolved to take advantage of the positive effect animals have on people-care settings (4), such as "pet visitation", the aim of which is to foster rapport and initiate communication. This is often effective in increasing patient responsiveness, providing patients with a pleasurable experience, enhancing the treatment milieu, and helping to keep patients in touch with reality (6).

Animal-assisted therapy is effective as research suggests that physiological variables change with both pet ownership and during short-term (2-12 minutes) interactions with animals (7, 8). Psychosocial and emotional benefits, such as the facilitation of normal child development, decreases in anxiety, loneliness, and fear of procedures, and improvements in social interaction, social support, communication, sensory stimulation, and happiness have been the focus of studies of brief exposures (10 to 30 minutes) to AAT (1, 9).

How does it work?

Current theories of health provide a framework to conceptualise potential physiological benefits for people from their pets. In the latter half of the 20th century, members of the health professions came to recognise how dramatically health depends upon interpersonal aspects of an individual's life (10). The influence of these factors on psychological disorders was recognized before it was realised that they had an effect on a broader range of physiological diseases (11). Within the last two decades, recognition of the role of psychosocial factors in physiological health has expanded tremendously (11). The diverse group of physiological conditions which involve psychosocial components includes, but is not limited to, asthma, cancer, colds, colitis, coronary heart disease, eczema, headaches, hypertension, impotence and ulcers (12).

This is due to the physiological effects of emotional stress. Experiencing stress has been found to be associated with negative physical and psychological outcomes, and it has previously been shown that there is a general decline in physical health during exposure to stress (13). Physiologically, the human body responds to stress activating the sympathetic nervous system, resulting in a rise in blood pressure, the release of certain hormones (*e.g.* cortisol) (14), and diminished activity of one or more types of white blood cells (10).

Further research suggests that chronic exposure to stress may ultimately cause an increase in blood cholesterol levels and hypertension due to the repeated increases in blood pressure and release of certain hormones (15), and the diminished activity of one or more types of white blood cells has been linked to decreased immune function (10). In addition, studies suggest that stress-induced increases in cortisol levels are also associated with depression (11).

Evidence indicates that pet owners may be better off than non-pet owners when it comes to physiological and psychological health: pet owners have lower blood pressure and heart rate (16), as well as fewer visits to healthcare providers (17). This may be explained by a study conducted by Barker *et al.* (2005), which revealed that both blood and salivary levels of cortisol were significantly lower after interaction with a dog (18). An earlier study had also demonstrated an increase in immune system function after interactions with pets, suggesting that interaction with pets may reduce the body's physiological response to stress (19).

It has been suggested that companion animals may serve as 'stress reduction mechanisms' (19, 20), reducing the stress-related physiological reactivity described above (11, 16, 19). Companion animals could help people either avoid a stress response entirely, by altering a situation that would otherwise be stressful or by mitigating the stress response by decreasing the impact of the stressor (19, 20). For example, petting an unknown dog promotes relaxation, characterised by decreased blood pressure and increases in peripheral skin temperature (21). Allen *et al.* reported that relative to the support of friends and spouses, the presence of a pet elicits significantly lower blood pressure and heart rate reactivity during mental stress (7). Indeed, the social support given by companion animals may have advantages compared to that given by humans, by making people feel unconditionally accepted

without judgment or criticism, and a pet can act as a social buffer for people with little human social support, particularly during times of stress (1).

Numerous studies have suggested that pets might be associated with decreased risk and slower progression of coronary heart disease by reducing the physiological risk factors that lead to cardiovascular disease (*e.g.*, systolic blood pressure, serum triglycerides, cholesterol levels) (22, 23, 24).

Friedmann & Thomas and Friedmann *et al.* (19,25) found that pet ownership predicted 1-year survival rates of coronary patients: only 5.7% of the pet owners compared with 28.2% of the patients who did not own pets died within 1 year of hospitalisation (19, 25). In order to control for the potential effects of better health being required to care for a dog, dog owners were removed from the data set. The percentage of people who owned pets other than dogs who were alive 1 year after admission to a coronary care unit was still greater than people who did not own pets. Subsequent analyses revealed that pet ownership made a contribution to survival, independently of the severity of the disease (19).

In addition to coronary heart disease, AAT has a place in helping patients with a wide variety of conditions. For example, Siegel *et al.* (1999) in a study of men with AIDS found that those who owned pets reported less depression than those who did not own pets (11).

A report by Connor & Miller (2000) on the use of pet visitation in a critical-care medical setting suggested that AAT had a calming influence on patients, and advocated the use of AAT to increase patient cognition, range of motion, strength, and balance (2). When a 'pets as therapy' programme was conducted over a 12-week period with a group of chronic ward-bound patients with dementia, Walsh *et al.* reported a substantial drop in noise levels in the living quarters for the experimental group, as well as a statistically significant drop in heart rate of the residents (26).

Nurses have also used AAT in the peri-operative setting to decrease pre-operative anxiety, improve patient positive outlook, and reduce the need for preoperative medication (27). Also, a study of children in a paediatric cardiology inpatient unit demonstrated that AAT can reduce stress and improve morale (28).

There are also positive reports of the use AAT in helping individuals with spinal cord injury (29). A recent occupational therapy study found that senior citizens in a walking programme at an assisted living facility walked further when with a dog than when they walked alone, indicating the potential value of pets in physical conditioning (2).

Research has shown that AAT reduced loneliness in residents of long-term care facilities (30); enhanced socialization, activities of daily living, and general wellbeing among elderly schizophrenic patients (31), and increased nutritional intakes and weights among individuals with Alzheimer's disease (32). In 1999 a study to evaluate the effectiveness of 'Dr Dog', a pet visitation initiative of the Hong Kong- based charity 'Animals Asia Foundation' (AAF), was conducted at the Wai Ji Christian Day Activity Centre on mentally handicapped adult patients (33). The patients were divided into two groups: the control group, with no dog, and the experimental group, with a dog. The results indicated significantly fewer negative behaviours and a significant increase in positive behaviours (e.g. happiness) in the experimental group compared to the control group. In week five, a dog was introduced to the control group which resulted in an increase in positive behaviours and a significant decrease in negative behaviours (33). These results demonstrate the positive impact of the Dr Dog programme, and, as a result, 85% of staff, compared to just 53% at the outset, felt positively about the scheme at the end of the study (33).

Animal-Assisted Therapy and Children

Although research involving AAT in children is sorely lacking (34), several studies have been published. For example, a quantitative cross-over study of children with pervasive developmental disorders that compared children exposed to a ball, a stuffed dog, and a live dog found that the children in the presence of the live dog were more focused and exhibited a more playful mood and more awareness of their social environment (35). In addition, research conducted by Sobo *et al.* revealed that in the presence of dogs, there were decreases in child pain perception (34).

Pets may play special roles in the social-emotional development in children, particularly in the development of self-esteem, autonomy and the development of empathy for others (1). For example, a study conducted at Beijing Normal University on 402 students from 11 primary schools in Beijing from 2003 to 2006 found that companion animals positively impacted children's upbringings; a decrease in sense of loneliness and an increase in willingness to share and care for others was reported in children with pets (36).

As a consequence of the family planning policy adopted in 1973, there were more than 90 million only children in China in 2006 (36). Zhou Xia, a senior researcher at Beijing Normal University, warned of the possible detrimental effects of only child character development, as a result of the lack of opportunity for children to learn how to love, care for, be responsible towards, and develop close links to others (36). As the number of pet owners in China increases (in 2007 more than 700,000 dogs were registered in Beijing, up 17.3 percent from 2006), experts have suggested that animal companionship may offer the only-child generation some of the experiences in nurturing, compassion, respect, teamwork and generosity that would otherwise come from siblings (37). A survey conducted by Zheng Richang, a professor at the Beijing Normal University School of Psychology, found 98.5 % of surveyed children with pets loved the animals, more than 85% believed the animals requited their love, and 94.1% of children without pets wanted them (37).

Also worth considering are the numerous studies demonstrating that pet ownership may decrease the risk of the development of asthma in children (38, 39, 40, 41). For example, a study conducted by Ownby *et al.* demonstrated that exposure to two or

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more dogs or cats in the first year of life may reduce subsequent risk of allergic sensitisation to multiple allergens during childhood, reducing the risk of asthma (39).

Associated Risks?

Bringing animals to an acute-care facility is not without opposition. One of the biggest concerns is the potential for transmitting zoonotic infections (*i.e.*, infections that can be passed from animals to humans) (42). However, research has shown that thoroughly screened dogs in controlled programmes may interact with hospital patients without transmitting zoonotic infections (4, 43). For example, in 3281 dog visits to 1690 hospitalized patients during a 5-year period no zoonotic infections were reported (4). Similar results have been noted by AAF: Jill Robinson, founder of AAF, reports no incidents of zoonotic diseases or injury in over seventeen years of work (Jill Robinson, *Pers. Comm.*).

Conclusion

The hypothesis that friendly animals can decrease anxiety and sympathetic nervous system arousal in both pet owners and non-owners by providing a pleasant external focus for attention, promoting feelings of safety and providing a source of contact comfort has been supported by much of the research conducted to date.

The changes recorded have been small, but repeated throughout daily life could have a major impact on psychological and physiological health (19). Since coronary heart disease and other stress-related diseases are common in our society, even a small positive effect from the presence of or interaction with animals can have significant impact on the health of many individuals (19).

While animals are far more than "tools" in therapy, their innate natures are often ideally suited to promote therapeutic disclosures and to enhance therapeutic progress. The Person Centered Counselling approach mentions three conditions that must be present in order for therapeutic growth to occur: 1) genuineness; 2) unconditional positive regard; and 3) empathy. Animals provide these emotions freely and without judgment, in a manner that human counsellors can only strive to achieve (44).

From an unscientific aspect.

At a fundamental level, the benefits of companion animals appear linked to the human desire to be close to nature and other living creatures. We all have basic psychological needs to be loved, respected, useful, needed, accepted, and trusted. An animal may fulfil these psychological needs by filling roles such as companion, friend, servant, dependant, admirer, confidante, scapegoat, mirror, trustee, and defender. An animal may also satisfy his human friend's need for loyalty, trust, respectful obedience, and even submission. Thus, for many people, caring for or interacting with an animal can mean the difference between loneliness and fulfilment.

The upshot of all this is that animals can be seen as wonderful promoters of health, happiness and general well-being.

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'The one absolutely unselfish friend that man can have in this selfish world, the one that never deserts him, the one that never proves ungrateful or treacherous, is his dog'. Samuel Taylor Coleridge (1824)

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