

CHAPTER 3

EFFECTS OF INTERACTIONS BETWEEN HUMANS AND DOMESTICATED ANIMALS

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Abstract: Humans have many kinds of relationships with domesticated animals. To maintain relationships interactions are needed. Interactions with animals may be beneficial for humans but may also be risky. Scientific literature on effects of human–animal relationships and interactions in a workplace, health-care and residential context has been reviewed to develop ideas about the effects farm animals can have on humans. Although there are quite a few studies, the variety of methods, the complexity of the material, differences in research goals and variable quality of the studies make that no general conclusions about the effect of animals on humans can be drawn. Nevertheless, when interactions with animals affect people, it may be expected that this will be similar for pets and farm animals.

Keywords: human–animal interactions; domesticated animals; farm animals

HUMAN–ANIMAL INTERACTIONS AND RELATIONSHIPS

Introduction

Human–animal relationship is an example of interspecies relationship (Odendaal 2000). Most relationships that people maintain with animals are with domesticated animals. Domestication is the process by which a population of animals becomes adapted to man and to the captive environment by some combination of genetic changes occurring over generations and by environmentally induced developmental events reoccurring during each generation (Price 1984). Domesticated animals have many functions in human societies. They are used for food and clothing production, for transportation and draught power, for religion, for sport, amusement, recreation and betting, for warfare, hunting, tracing and protection, for assisting disabled, shepherds and lumberman, for obtaining social status and social support, for nature conservation and for research. In all functions, different relationships are maintained and different types of interactions will appear.

Interactions are needed to start and maintain a relationship between two individuals. An interaction means that both individuals affect each other. In human–animal interactions, it is therefore important to keep in mind that both human and animal are active and reactive during an interaction, independent of who is the

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initiator. The chance that a human and an animal have a different perception of an interaction is considerable. What a human may experience as a pleasant interaction, may be an unpleasant experience for an animal. Furthermore, it is known that animals prefer species companion rather than human closeness (Raussi 2003). There are many types of interactions. An interaction can be gently and friendly, or aggressive and unfriendly. It can be non-tactile by observing each other or by vocalizing to each other. It can also be tactile by touching each other.

The type of relationship between humans and animals is continuously subject to changes and is very context-dependent. In western societies, for example, the relationship with farm animals has been extensified during the last 60 years (Stricklin 2001), while the relationship with companion animals has been intensified (Archer 1997). Remarkably enough the consumption of products of animal origin increased dramatically during this period (Roenigk 1999; Smil 2002). It seems that people have developed a detached attitude towards farm animals while an increasing anthropomorphic attitude has been developed for companion animals (Archer 1997; Driscoll 1995; Serpell 2000). This inconsistent attitude is even more complicated when realizing that one species can be a farm animal as well as a companion animal. Besides personality traits and attitude in human beings (Archer 1997; Hemsworth and Coleman 1998; Hills 1993; Serpell 1999a; 1999c), the economic and social context determines the kind of relationship with animals. Furthermore, the influence of the media on the attitude to animals should not be underestimated (F. Brom, personal communication). Animals in commercials, for example, increase the sales, and many nature-conservation groups use an animal as an icon for what they stand for.

Interactions with animals are supposed to teach responsibility, encourage a caring attitude and behaviour, and provide companion, social support, security, comfort, amusement or an outlet for affection (Enders-Slegers 2000; Serpell 1999b). They may promote respect, self-esteem and compassion for animals and nature in general, and learn about the facts of life (Serpell 1999b; Blackshaw 1996). Levinson (1969) was one of the first who described that emotionally disturbed children, who experienced difficulties in their relationships with people, relate more easily or quickly to animals. He suggested that the primary reason was the animals' ability to offer the child non-threatening, non-judgmental and essentially unconditional attention and affection.

Interactions with animals also include potential hazards to humans. In an extensive review, Plaut et al. (1996) divided these hazards into three categories: (a) infectious diseases associated with animals; (b) immunologic responsiveness to animals; and (c) injuries due to physical interactions with animals. Infectious diseases that animals can transmit to people are called zoonoses. Humans are infected either by direct contact with animals (e.g. skin, saliva, urine, faeces) or by indirect contact (water, food that has been contaminated with infectious secretions of an animal) (Plaut et al. 1996). Infectious diseases include bacterial, fungal, parasitic and viral diseases (Geffray 1999; Robertson et al. 2000; Plaut et al. 1996). They may vary from mild to fatal. Immunologic responsiveness to animals results in allergic disease, asthma and/or hypersensitivity pneumonitis (Ahlbom et al. 1998; Plaut et al. 1996). Most animal-allergic individuals react to many other allergens (Plaut et al.

1996). Cats cause the greatest part of the animal-related allergic reactions. In the USA, for example, approximately 3% of the population are allergic to cat allergens (Plaut et al. 1996). Physical interactions with animals can cause tissue damage through, e.g., biting and scratching and may induce infections (Abu-Zidan and Rao 2003; Björnstig et al. 1991). In the USA, there are an estimated 1.5 million dog bites and 400,000 cat bites that receive medical attention each year (Plaut et al. 1996). Bites are suggested to be greatly underreported because approximately only 10% of the injuries receive medical attention (Guy et al. 2001; Plaut et al. 1996). Dogs caused half of the animal-induced injuries that were treated in a Swedish hospital, while horses caused one-third of the injuries and the highest number of fractures (Björnstig et al. 1991). A New Zealand study associated many more animal-related injuries with horses (86%) and only 10% to dogs in an urban population. Fall from a horse was the most common cause (67%) of horse-related injuries (Abu-Zidan and Rao 2003).

In summary, humans and animals can have a relationship that must be maintained with interactions. The type of interaction and relationship is context-dependent and may be beneficial or hazardous for humans. The next paragraphs review scientific literature in the field of human–animal relationships and interactions. It will focus on the effects of interactions with domesticated animals on humans in a workplace, health-care and residential context. The last paragraph describes the chances and risks of farming for health and how interactions with farm animals can affect humans.

Workplace context

In several professions, people work with animals. The group of people working on a farm however, further called farmers, is probably the largest group of humans that work with animals in a professional way. Although a farmer may have an emotional relationship with his animals, this relationship will always have a business-like character. After all, the farmer has to earn his income from his farm animals. A positive attitude towards the animals may, therefore, be expected, because a farmer is economically dependent on his animals. Nevertheless, research showed that a positive attitude is not always the case and improvements can be made. Understanding the behaviour of a farmer appears to be the key to manipulate human–animal interactions for improving the farmer's attitude and motivation regarding the job (Hemsworth and Coleman 1998). Giving courses to farmers was the next step of these researchers. Cognitive-behavioural modification techniques were used to retrain farmers in terms of their behaviour, as well as changing their attitudes and beliefs. Training is likely not only to influence the skills and knowledge base of the farmer, but also to improve the self-esteem, job satisfaction, commitment and work motivation of the farmer with possible advantages to work performance and prospects (Hemsworth 2003; Hemsworth and Coleman 1998). Farmers who have been trained are also more likely to remain in the job (Coleman et al. 2000), indicating that these people find more satisfaction in their job. Furthermore, women seem to be more capable of empathy (Hills 1993) and are more

positive in their behaviour to cattle (Lensink et al. 2000). So far, no studies have been found on people working with animals in other professions, but it seems quite reasonable that results found by Hemsworth and co-workers can be applied to all animal-related professions.

Health-care context

In 1991, Allen et al. (1991) stated that in terms of therapeutic benefits of interactions with animals, there is still relatively little evidence of a positive effect. It has been shown, however, that the use of animals as icebreakers in psychotherapy and the use of animal helpers for persons with physical disabilities are successful. In a health-care context, animals are mainly used in so-called animal-assisted therapy (AAT) programmes. An AAT programme implies that the person receiving the animal's attention is challenged physically or mentally and can benefit from animal companionship (Fine 2000). There are many AAT programmes all over the world. They mainly use dogs, dolphins and horses.

Since 1991, there have been a few more papers published on the therapeutic use of animals. In a two-year study by Crowley-Robinson et al. (1996), six different dimensions of mood states were checked over six AAT assessment periods for elderly in three nursing homes to measure the effect of a resident dog, a visiting dog with a researcher (once a week) or a visiting researcher (only during the assessment). Although they concluded that a resident dog has significant positive effects on several dimensions of mood, similar significant effects were found for the two other treatments. Furthermore, no details are given about type and frequency of interactions between clients and dog and clients and researcher. Since data were not analysed at individual level, it is not clear whose mood had improved. In another AAT study with dogs, three groups of 15 elderly were exposed to either no AAT with a dog, one 30-minute AAT session with a dog per week or three 30-minute AAT sessions with a dog per week during 6 weeks (Banks and Banks 2002). They analysed the data at individual level and found that AAT significantly reduces loneliness of the elderly. One or three sessions of AAT per week made no difference (Banks and Banks 2002). The elderly that chose to participate in AAT had pets earlier in life, while eight residents who chose not to participate in the study had no pets before. This shows that in research on therapeutic effects of animals previous experience is an important factor. In a third paper, Kaiser et al. (2002) present a small sample study. They found no difference in behaviour and preference in elderly living in a nursing home who were visited by both a happy visitor and a dog.

Although dolphins cannot be characterized as domesticated, they are used as well in AAT programmes. Very few investigations have been conducted to study the effects of therapy with dolphins. Nevertheless, therapeutic swimming with dolphins is a fast-growing business all over the world. Only one study found some indications that therapy with a dolphin helped to improve cognitive functions in some children with disabilities (Nathanson and De Faria 1992). Although they tried to separate the factors, it is difficult to accept from this small-size study that it was the interaction with dolphins instead of the water environment that provided the progression in

these children. The ultrasound produced by dolphins, one of the supposed therapeutic aspects of swimming with dolphins, can be excluded as a healing factor (Brensing et al. 2003).

Another widespread phenomenon is therapeutic horseback riding (Fitzpatrick and Tebay 1998). Although there appear to be regular international conferences on therapeutic horseback riding (Fitzpatrick and Tebay 1998), few studies have been conducted or have been published in scientific journals. One paper showed that a ten-week therapeutic horseback-riding programme (riding twice weekly for one hour) improved the posture in eight out of eleven children with cerebral palsy (Bertoti 1988). Cawley et al. (Cawley et al. 1994), however, did not find any benefits from an eight-week therapeutic horseback-riding programme on self-concept in adolescents with special educational needs.

Residential context

Animals kept in residential context are often called pets. Pet ownership is, and has been, widespread in many different cultures and societies (Archer 1997; Serpell 1999a). The most common reason for pet ownership in western societies is companionship (Robinson 1995). Pets evoke parental feelings in humans. Warm-blooded and furry animals are preferred (Archer 1997). However, there are more factors, such as size and intelligence preference, that determine the final choice of a pet. Different pet owners can be distinguished such as sole owners and shared owners. The latter are, for example, members of the household or people simply living in the same household as the owner (Budge et al. 1998). Although all animals kept for companion are pets, most research on human–animal interaction involving pets has been conducted with dogs.

Pet owners were found to be alive more likely one year after discharge from a coronary-care unit than non-owners (94% vs. 72%) (Friedmann et al. 1980). They did not find a difference in survival rate between pet owners and non-pet owners in a second study (Friedmann and Thomas 1995). Dog owners were, however, more likely to be alive after one year than non-dog owners (Friedmann and Thomas 1995). In both studies, the association of pet ownership or dog-ownership with survival could not be explained by differences in the severity of heart disease, psychological or social status or demographic characteristics between patients. They suggested that maintaining a relation with pets, and probably animals in general, might protect people from developing coronary heart disease or slow its progression. It seems that animals give the ability to modify lifestyle and thus enhance health and quality of life (Friedmann 1995). Odendaal (2000) found that both species, dog and human, showed the same physiological effects, based on blood pressure and neuro-chemicals, which may be linked to a feeling of well-being.

Cross-sectional studies about cardiovascular health and pet ownership gave contradictory results. No evidence was found that pet ownership can be associated with cardiovascular health benefits in two age groups (40-44 and 60-64 years of age) of randomly selected participants from the Australian Capital Territory region (Parslow and Jorm 2003b). Another analysis on the data of the 40-44 years group

also showed no benefit of pet owning or pet caring on mental or physical health (Parslow and Jorm 2003b). An earlier Australian cross-sectional study reported that pet owners have a lower systolic blood pressure than non-pet owners (Anderson et al. 1992). A lower blood pressure may be interpreted as beneficial for the prevention of heart diseases. A longitudinal study on a German and an Australian data set showed that people who had continuously owned a pet for 5 years reported the fewest doctor visits in the three months before the interview (Heady et al. 2002; 2004). In the analyses of these studies, no distinction was made with regard to the type of pet. In addition, there were no arguments given why a period of only three months was chosen to report doctor visits while giving results per year. In another study, new pet owners (dog or cat versus no dog or cat) showed a reduction in minor health problems during the first month following pet acquisition, and this effect was sustained in dog owners throughout 10 months (Serpell 1991). He concluded that acquiring new pets may have positive effects on human health and behaviour, and that in some cases these effects are relatively long-term. Since exercising has been recognized as beneficial to health, more walking by dog owners would be likely to have positive long-term health implications (Serpell 1991). Parslow and Jorm (2003a) cited two investigations conducted in the USA that show some better physical health and more physical activity in elderly people owning pets. In an Australian study it was found, however, that dog owners were not inclined to walk more hours per week than non-owners (Bauman et al. 2001).

Straede and Gates (1993) found that cat owners had a lower level of psychiatric disturbance than non-pet owners. For most measurements, however, the groups did not differ. Unfortunately, a number of demographic factors are missing and they did not make the comparison with non-cat owners. People (21-79 years old) who think they are fitting relatively well with their pets reported better mental health and fewer physical symptoms. Social support and pet attachment were positively associated with mental health but negatively with physical health (Budge et al. 1998).

Stress-reducing effects of dog presence have been found for adults (Allen et al. 1991), elderly (Siegel 1990) and children (Friedmann et al. 1983). The presence of an animal facilitates human social approach and interactions with other humans, which can be beneficial for human health (Melson 2002; Parslow and Jorm 2003a). Mugford and M'Comisky (1975, cited in Banks and Banks 2002) reported social and psychological improvements in bird-owning elderly compared to plant owners and elderly with no treatment over a 5-month period. Their results were, however, based on very small sample sizes and doubtful statistical analysis (Serpell 1991).

CONCLUSIONS

Human-animal interactions

The multi-disciplinary character of research on human-animal interactions makes that many different concepts, methods and instruments are used. Furthermore, researchers with different backgrounds use a different terminology, which can cause communication problems. It is clear that a lot of work has to be done, especially empirical research, to understand the long-term effects of human-animal

interactions. The number of research papers is relatively high but quality and research results vary considerably. Garrity and Stallones (1998) described this already in their review based on 25 scientific papers written between 1990 and 1995. They concluded that quality-of-life benefits of an association between pet and human are apparent only under certain conditions. Benefits occur on the psychological, physical, social and behavioural levels. In relation to pet support and well-being Garrity and Stallones (1998) found that 16 of the 25 papers reported at least some advantage of having contact with companion animals, but they also found that 11 of the 25 studies reported no advantage of having contact with companion animals.

From a medical point of view, a major disadvantage of studies on human–animal interactions or relationships is that it is impossible to conduct experiments with double-blind and placebo-controlled trials. People voluntarily acquire animals and agree to participate in research. It is possible that people who are healthy and happy tend to acquire pets, rather than that having a pet causes better health. Another problem is that there are few papers from public-health or medical professionals outside the immediate narrow confines of the field itself. Mostly, the people who cite papers belong to the same group of researchers who have long been interested in the issue. In other words, citation records tend to be circular and internal to the group. In addition, most studies are performed on small sample sizes and are relatively superficial. Fine (2000) attributed this to the fact that there is limited funding support for studies in the field. So far, there is little unambiguous evidence for positive effects of human–animal interactions. Some suspicion is therefore necessary when seeing the many health claims on, for example, AAT websites.

Farming for health

Having reviewed the scientific work on human–animal interactions and relationships, I would like to stress the potential effects farm animals could have on humans. ‘Potential’ because there is much unknown about the effects farm animals could have on humans. Zasloff (1996) stated that there are commonalities in the emotional experience of having a relationship with a pet. The question is, can farm animals bring about similar emotions as companion animals and will interactions with farm animals affect humans?

In Europe there is a recent tendency to use farm animals for other purposes than food production only. Farm animals are used for education, recreation, company, therapy, hobby and nature conservation. Farm animals acquire a new role in their relation to humans and the number of interactions with many different and inexperienced people is increasing. The extent to which animals actually fulfil this variety of roles is, however, still largely unknown. The one and only qualitative study with farm animals in a therapeutic role suggested some social, emotional and physical benefits for children that interact with farm animals in a residential treatment centre (Mallon 1994).

Farm animals are bigger than pets in general and seem to be less attractive to touch and have a close relationship with at first sight. Farm animals are not used to

be in close contact with humans besides the farmer, his family and his employees. This implies risks for inexperienced and unfamiliar people trying to interact with these farm animals. Farm animals prefer to keep a distance to unfamiliar persons (Waiblinger et al. 2003). Inexperienced people do not know how to react to an animal and do not know how an animal reacts to their presence and behaviour. Unfamiliar people may have experience with (certain) animals, but the animal they would like to interact with does not know them. This may result in aggressive or unexpected behaviour of the animal. Furthermore, in several studies it is shown that even the farmer and his family are at a relatively high risk of becoming victim of an accident or attack by a farm animal (Rasmussen et al. 2000; Stallones and Beseler 2003; Bancej and Arbuckle 2000; Rautiainen and Reynolds 2002; Hendricks and Adekoya 2001; Rissanen and Taattola 2003; Gerberich et al. 2001). Allowing inexperienced and unfamiliar people to come in close contact with farm animals means that measures have to be taken to prevent accidents. These measures can include rules and safe enclosures, but also teaching people about behaviour and characteristics of different farm animals and how to handle them.

There are a large number of studies, especially in the field of farm animals, showing that human-animal interactions may result in profound behavioural and physiological changes in the animal, with consequences for the animals' behaviour, performance, health and welfare (see Hemsworth 2003 for a review). Approach and avoidance behaviour of (farm) animals are the best indicators of how animals feel about humans. The fear level of farm animals has to decrease in most cases to let them have close interactions with unfamiliar people. This will be a matter of training. Anecdotal stories illustrate, for example, that pigs or chicken can be kept as pet. Furthermore, farm animals can be stroked and people can talk to them. Thus, when interactions with animals have an effect on humans, it may be expected that this will be similar in pets and farm animals.

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