Review Article

Companion animal welfare and possible implications on the human-pet relationship

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Paper received May 7, 2008; accepted January 17, 2009

ABSTRACT

The role of pets (dogs and cats in particular) in human society has changed in recent years. Nowadays pets are an integral part of the human family and this aspect has many social and emotional implications. For their positive effects on human health, pets are also employed in some special and therapeutic activities known by the generic term of "Pet Therapy". In these programmes the animal becomes an integral part of the therapeutic plan in order to induce some physical, social, emotional, and cognitive improvements in human patients. However, the close bond between companion animals and man is not always the herald of beneficial effects. Sometimes the welfare of pets may be compromised by distress due to many factors, mostly related to the environment and to management by humans. Both behavioural and physiological variables may be analysed in order to evaluate welfare level in pets. Reduced welfare may be indicated by the onset of some behavioural problems, which have usually a multifactorial aetiology, related both to the genetic individual basis and environmental factors. Physiological variables which may be analysed in order to evaluate pet welfare include hormone levels, mainly related to the HPA (hypothalamus-pituitary-adrenal- axis) and to the immune systems activations. Behavioural problems may also lead to the relinquishment of pets to shelters. Animals housed in rescue shelters cannot display their ethogram and show behavioural and physiological signs of distress. Thus it is very important to improve the human-pet relationship both by educating owners and reducing the number of stray animals, in accordance with the indications of the European Convention for the Protection of Pet Animals stated at Strasbourg in 1987, mainly as regards pet breeding and welfare. Humans have to realise that adopting pets implies the responsibility to care for their health and welfare, avoiding undue stress in the living environment and improving the human-pet relationship.

Key words: Companion animals, Welfare’s assessment, Behavioural problems, Shelter.

RIASSUNTO

BENESSERE DEGLI ANIMALI DA COMPAGNIA E POSSIBILI IMPLICAZIONI SULLA RELAZIONE UOMO-ANIMALE

Il rapporto uomo-animale da compagnia si è notevolmente modificato nel corso degli ultimi anni. Oggi infatti l’animale è parte integrante del nucleo familiare e questo aspetto ha comportato notevoli im-
Le applicazioni sia sociali, sia emozionali. Per i loro effetti benefici sulla salute umana, gli animali da compagnia vengono impiegati in alcune specifiche attività terapeutiche note il termine generico “Pet therapy”. Non sempre però il rapporto uomo-animale da compagnia sortisce effetti positivi. In alcuni casi infatti, l’animale può manifestare problemi di scarso benessere, dovuto a risposte di stress cronico (distress), rilevabili tramite indicatori comportamentali e fisiologici. In particolare alcune problematiche comportamentali, spesso ad eziologia multifattoriale sia a livello di caratteristiche genetiche individuali che di fattori ambientali, possono alterare l’equilibrio di questa relazione e portano i proprietari a interromperla, per esempio attraverso l’eutanasia o la cessione del cane a canili. Anche nell’ambito delle strutture di ricovero si possono rilevare problemi di benessere attraverso l’analisi di segni di distress sia fisici sia comportamentali. Da qui la necessità di migliorare i diversi aspetti della relazione tra uomo e animale da compagnia, sia attraverso una maggiore educazione e consapevolezza dei proprietari, sia seguendo le indicazioni fornite nel 1987 dalla Convenzione di Strasburgo sulla protezione degli animali d’affezione, soprattutto in merito al controllo della loro riproduzione ed alla salvaguardia del loro benessere.

L’adozione di un animale da parte dell’uomo implica la consapevolezza di prendersene cura sia dal punto di vista sanitario, sia per quanto riguarda la qualità di vita nel suo complesso.

Parole chiave: Animali da compagnia, Valutazione del benessere, Problemi comportamentali, Canile.

Introduction

The role of pets (dogs and cats in particular) in human society has undergone a radical transformation over the years. A source of food and help in man’s work at the beginning (Bergler, 1988), nowadays companion animals are an integral part of the human family unit. There is an increasing body of literature suggesting that pet ownership may give physical and psychological benefits to people, mainly to subjects more vulnerable due to age, illness or other restriction, temporarily or permanently confined to living in health or social care institutions (hospitals, hospices, penal institutions, etc.) (Friedman et al., 1995; McNicholas and Murray, 2005). Also as respects children’s development, it seems that the interaction with pets may have some benefits (Triebenbacher, 2000). Due to their positive effects on human health, pets are employed in some therapeutic activities known as “Pet therapy”, becoming an invaluable tool to achieve improvements in the patient’s quality of life.

The different roles of pets in the life of humans are the result of man’s cultural and biological evolution.

In this perspective, domestication can be explained as a bi-directional process in which pets and men have wielded deep mutual influences, although in different proportions. The domestication of dogs began when the animals joined human society. The combined effect of the natural and artificial selection then transformed a non domestic carnivore into a component of society with physical and behavioural traits suitable for the needs of humankind. Clutton-Brock (1997) emphasises the importance of the dog’s domestication as a cultural event in the history of Homo sapiens. The dog is the first domestic animal (100,000 years ago) (Vila et al., 1997) and it has an innate ability to understand human postural language. In fact, during the domestication process man has selected some social-cognitive skills that enable dogs to communicate with man in a preferential way (Hare et al., 2002). Thanks to this kind of social learning, dogs were rapidly admitted into the human
Companion animal welfare: problems and evaluation

However, in spite of their long lasting interaction with humans, also pet animals, like other domesticated species, may suffer from distress problems which may dramatically reduce their level of welfare. It is rather well known that the stress response is an adaptive mechanism that enables an animal to react to an event that changes its homeostatic status (Moberg et al., 2000). When the stressors act continuously or are too intense, they may overcome the organism’s coping systems thus inducing distress reactions (Moberg, et al., 2000). Stress responses can become a problem in pets either where the learned behavioural response to an acute stressor is inappropriate within a human environment (e.g. aggression) or where individuals are unable to perform a behavioural response to resolve their situation and the stress response becomes chronic.

Distress may be a consequence of the environment where the animal lives, including the human – pet relationship, which has taken on a considerable social and emotional significance.

Companion animal welfare may be evaluated, as in other species, through behavioural, physiological and health status indicators (Bohus et al., 1993; Beerda et al., 1997; Beerda et al., 1999). Measures include abnormal behaviours, physiology, immune system function and injury level (Broom, 2001; Broom, 2006).

Abnormal behaviour (evaluation and causes)

Behavioural problems can be summed up in two types of responses:

- reactions that seem to be “abnormal” or “pathological”, but on the contrary are a part of the ethogram of the animal. These reactions have a sound causal reason when put in their context of emission;

- reactions that suggest inability to adjust to a stressful environment. These responses can result in “primary disorders” (without a pathological basis) and in “secondary disorders” (connected to an organic cause and to a modification of the internal environment of the animal).

All the behavioural disorders have a multi-factorial aetiology, including a genetic individual basis and some environmental factors (i.e. specific stimuli and earlier experiences). Sometimes the problem is not the animal’s behaviour, but the fact that this behaviour causes the owner some inconvenience (Askew, 1996). In fact, behavioural problems can be divided into adaptive behaviours, inopportun for the owner; behaviours that are the results of an animal’s coping attempt to a non optimum environment; and non adaptive behaviours (e.g. compulsive disorders) (Mason, 1991).

One of the most important behavioural disorders is aggression, which may be a normal behaviour trait in dogs and cats (Overall, 2001). It is defined as a behaviour whose apparent aim is to harm the physical and/or psychological integrity or freedom of another individual (Eibl-Eibesfeldt, 1984; Dehasse, 2003). When this normal behaviour becomes excessive or uncontrolled then the dog may become a danger (Dehasse, 2002).

The aggression, which can be defensive (reactive) or offensive (proactive), results from a complex interaction of a number of factors such as genetic inheritance, condi-
tioning and training, environmental factors and hormonal status. Learning plays a key role. Recent studies have also investigated the role of different neurotransmitter systems in the development of aggressive behaviour (Mehlman et al., 1994; Mann, 1995). In evolutionary terms, aggressiveness plays an adaptive function to establish control over some vital resources or situations that cannot be effectively controlled through other means. The meaning of many categories of aggressiveness is associated with fitness, prerogatives of individuals able to adapt their behaviour to suit habitat modifications (Verga et al., 2001). Anxiety seems to play an important role in the origin of intra and inter-specific aggression. In fact a fearful or anxious animal may display aggressiveness in “state of emergency” (Reisner, 2003). Canine aggression directed to human beings is a commonly occurring complaint that causes a great deal of emotional conflict and requires attention to safety issues in order to minimise future risks.

Other frequently displayed behavioural problems are anxiety-related disorders, such as generalised anxiety, separation anxiety, fears and phobias, stereotypies/compulsions. Anxiety, fears and phobias reflect the capacity of the animal to cope and maintain emotional homeostasis. Emotional homeostasis is defined as neurophysiological stability in the autonomic nervous system in a changing environment, providing the organism with an independent capacity to cope and adapt (Vincent, 1986). Although we tend to look at fear as a negative aspect and cause of problems, it is a highly adaptive response that is essential for survival. In fact, it induces an adaptive response enabling an animal to avoid situations and activities that could be dangerous. The emotional response is initiated when an animal perceives a stimulus that is interpreted as potentially harmful, and results in the initiation of the stress response and appropriate motor activity. Fear is the direct emotional response to a potentially harmful stimulus, while anxiety is the emotional response to a stimulus that predicts a harmful or dangerous stimulus (Casey, 2004). The symptoms of anxiety are excessive activity, panting, salivation, pacing, vocalization, trembling, lip licking, yawning, excessive attention seeking, pica, etc. The majority of fear or anxiety-related “behavioural problems” that are encountered in dogs and cats actually fall into the category of “normal adaptive” responses; hence, they are not abnormal, or pathological. However, a smaller proportion of fear or anxiety-related clinical cases can be described as “abnormal”, because the behaviour pattern is not adaptive for the species. In this case the neuroanatomical and physiological changes in the brain have reached a point where the fear response is initiated “automatically” whenever the particular stimulus is encountered (Casey, 2004). The fear response is also often generalised to other similar stimuli. Pet animals may exhibit fear to a range of stimuli (fireworks, gunfire, thunder, traffic, unfamiliar people or dogs). If these fears are not treated, they will often develop into phobias. Fear can be an adaptive response, while phobias cannot because they interfere with normal functions. Noise phobias may be the most common phobic response in dogs and cats. It is a sudden and profound non graded, extreme response to noise, and the animal manifests an intense active avoidance, escape or anxiety behaviours associated with the activation of the sympathetic branch of the autonomic nervous system (Overall, 1997). Phobic dogs generally show particular behaviours like panting, pacing, trembling, remaining near the caregiver, hiding, excessive of salivation and vocalization, destructiveness, inappropriate elimination, self-traumas, and also aggression.

In normal conditions, reacting to novel or loud noises is an adaptive response because
some noises could indicate something dangerous to an animal. However, in some circumstances the emotional response can become extreme and precipitated by even low levels of noise. This type of “all or nothing” response is termed phobia and is maladaptive for the animal. The development of severe fears and phobias in pets seems to occur, as a stress reaction, through a combination of genetic factors and early experiences (lack of habituation to different aversive stimuli during the early sensitive period).

Another factor which, in some cases, may induce stress in pets is the effect of separation from the owner. Domestic dogs include the human family in their social group and become bonded to the family members. When separate from the family members, dogs present extreme distress and display some behaviours (like excessive vocalisation, anorexia, house soiling and/or destructiveness) during the owner’s absence (whether partial or complete). This behavioural problem, known by the name of separation anxiety, is commonly seen in veterinary practice (Horwitz, 2005). It may have different underlying motivations such as fear, boredom, traumatic experiences, over-attachment. Also an adoption from animal shelters may be associated with separation anxiety (McCrave, 1991). This behavioural disorder can have deep implications for the human-animal bond and pet welfare. In fact, animals can do damage to themselves in attempting to escape from the home, and they are quite anxious. Moreover, the destruction, vocalization and elimination in the home are frustrating to owners and may contribute to pet relinquishment to shelters or euthanasia (Houpt et al., 1996).

Dogs and cats may also display behaviours similar to obsessive compulsive disorders in humans and to the stereotypic behaviour of livestock and zoo animals (Luescher et al., 1991). These behaviours are called “compulsive disorders” and are performed out of context, are exaggerated, are directed towards unnatural stimuli or objects, and are often repeated in a constant manner. Compulsive behaviours are first shown in a conflict situation and then, with the prolonged conflict, they may generalise to other contexts in which the animal is excited. From the aetiological point of view, there are many factors that can contribute to developing the compulsive disorders, the first of which are environmental factors. In fact, compulsive disorders are considered expression of stress, frustration or conflict. Genetics can also play a role and some individuals seem to be genetically susceptible to develop this behavioural problem. Breed predispositions are reported for some compulsive disorders (flank sucking in Dobermans and Pinschers; tail chasing in German Shepherds; wool sucking in Siamese and Burmese cats) (Luescher, 2005). In some cases, a physical lesion or irritation (e.g. allergy) may trigger a compulsive disorder in a susceptible animal. The owner’s attention may reinforce a compulsive behaviour and if the animal displays the disorder only when the owner is present, this condition may suggest a conditioned behaviour. In the list of the causes, situations that increase stress and anxiety in the dog play an important role. As regards the diagnosis, there are many behavioural, neurological and dermatological conditions that need to be considered in differential diagnosis. Compulsive behaviours can interfere with normal functions (eating, sleeping, drinking, walking, playing) of the dog and just like the other behavioural disorders seem to have a deep impact on the human-pet relationship.

**Physiological and health indices**

As far as physiological indicators of distress are concerned, the physiological responses and the correlated behavioural manifestations mainly involve the sympa-
thetic nervous system, through the release of catecholamines, and the hypothalamic-pituitary-adrenal axis (HPAA) mainly through the release of cortisol. Neurochemical modifications may also be involved, including the noradrenergic, dopaminergic and serotonergic neurotransmission systems. Stress mediators also modulate the immunitary response bringing on an alteration of the leukocytic formula, of the hematocrit value and the lymphocytic proliferation (Beerda et al., 1997). Many studies have been carried out with the aim to evaluate the dog’s individual stress reactions and anxiety-related disorders by screening some immunological and stress parameters such as cortisol, lysozyme, total IgA, phagocytary capacity of neutrophils (Berteselli, 2005). Some authors (Manteca et al., 2006) have discussed the usefulness of other physiological indicators such as cathecolamines and prolactin when measuring companion animal welfare. As regards cathecolamines, whereas epinephrine (adrenaline) often reflects psychological stress, norepinephrine (noradrenaline) seems to be more closely correlated to the physical activity of the animal (Scheurink et al., 1989). Plasma levels of prolactin have been shown to be affected by environmental challenge in a variety of species and are thought to be a good indicator of the anxiety level (Broom and Johnson, 1993). Moreover, in order to evaluate animal distress, we have also to consider the animal’s health status (the absence of illness, the nutritional state, the death rate, etc.) and some productive and reproductive parameters, such as growth, fertility, and fitness (Askew, 1996).

**Welfare of companion animals in rescue shelters: problems and evaluation**

Animals housed in rescue shelters or in other non optimal conditions from an ethological point of view may suffer from a reduced level of welfare. Conflict and frustration raised by such conditions may lead to an increase in the adrenocortical activity and the final result is a reduction in the immune response inducing a higher susceptibility to certain diseases. Dogs can display different physiological and behavioural responses to confinement in rescue shelters. In these situations animals often show some stereotypical or compulsive behaviours.

In Italy, the national law n° 281 of 1991 asserts that it is illegal to kill stray dogs unless they are dangerous or incurably ill. After a period of 60 days spent in a public short term shelter, dogs move to a long term shelter. The public short term shelter is a structure with a health function, officially managed by the national or local health authorities, while the long term shelter is usually managed privately. According to this law, a shelter is no longer merely a transit point towards the dog’s reinsertion in a new family unit, but a place in which animal could spend a significant part of its life.

Stressors for animals in kennels include physical, emotional and environmental components. Many dogs may be affected by a lack of socialisation; thus they may also be more reactive and susceptible to certain stimuli due to their bad previous experiences. Disease, malnourishment, novelty of the environment, kennel size, different routine, dietary changes, temperature changes, noises and odours can have a negative impact on the dog (Coppola et al., 2006). Also social isolation, lack of exercise and limited environmental stimulation may impair the welfare of shelter dogs and promote behavioural problems (Hetts et al., 1992). Some studies have proven that social contacts with other dogs and human beings are essential for the dog’s well-being and must be considered the most important form of environmental enrichment for confined dogs (Wells, 2004). A dog must be in visual, ol-
factory and auditory contact with other dogs. Positive interaction with humans also allows dogs in shelters to gain greater control over the environment, improving their behavioural and physiological profile, especially in new and stressful situations (Tuber et al., 1999; Hennessy et al., 2002).

As respects the physiological indicators of distress in sheltered companion animals, glucocorticoids and cathecolamines can be useful. Glucocorticoids can be measured in plasma, saliva and urine. The most commonly used parameter for the assessment of animal welfare is salivary or plasma cortisol. Many studies in shelter animals used this measure that showed an increase in plasma cortisol levels in dogs for a period of up to five days after the dog’s admission to the shelter (Hennessy, 1997).

As far as behavioural indicators are used, a complete ethogram has to be assessed. Behavioural signs of distress include body postures, the occurrence of some particular behaviours, such as low tail posture, ears flattened caudally, lip licking, yawing, self-grooming, and the occurrence of injury through certain behavioural patterns or the animals’ inability to engage typical behaviours. The behavioural changes may include avoidance behaviour or protective reactions, anorexia, changes in sleep wake cycle, or grooming activity. Some problems may be expressed in decreased overall activity or complete suppression of certain behaviours (e.g. exploration). Animals that are housed in suboptimal conditions may show behaviours more ritualized and increased in frequency that occur out of their normal context. These kinds of behaviours are known as stereotypic behaviour and they commonly lead to injuries or other secondary physical problems (Mertens, 2006). The presence of behavioural problems (such as aggression) in dogs housed in kennels makes it difficult to place the dogs with new families. This kind of problems is also the first reason for relinquishing dogs to an animal shelter (Mondelli et al., 2004). In order to avoid the negative consequences on the dogs’ welfare, a good option could be to prevent the causes that lead to the animals’ relinquishment, such as over-population and behavioural problems. Many indications on this issue have been given by the Convention for the Protection of Pet Animals stated at Strasbourg in 1987.

Welfare problems and evaluation of companion animals in Animal Assisted Activity (AAA) and Animal Assisted Therapy (AAT) programs

The generic word “Pet Therapy” has been replaced with the terms Animal Assisted Activity (AAA), Animal Assisted Therapy (AAT) and Animal Assisted Education (AAE) which better describe a targeted intervention with a specific goal (Fine, 2000). In these programmes the animal becomes an integral part of the therapeutic plan in order to induce some physical, social, emotional, and cognitive improvements in human patients (Corson et al., 1981).

The selection of the right animal for the programme is essential for its success because the outcome of every therapeutic project depends on the introduction of an appropriate animal in a suitable environment (Verga, 1993).

In all the AAT, AAA and AAE activities, the welfare of the animals involved has to be monitored and evaluated. In fact, according to the latest research, the human-pet (dog in particular) relationship may have positive effects not only for the man but also for the animal (Odendaal, 2000). Yet, we know very little of the impact on animal welfare resulting from being in contact with people in institutions (Serpell et al., 2000). Thus current research tries to assess some behavioural and
physiological variables in order to verify the absence of stress and the welfare in dogs that attend the therapeutic sessions. Variables to be monitored include arterial pressure, heart rate, haematic values, as well as behavioural parameters such as facial expression and postural language. In a study designed to investigate the lack of stress in some co-therapeutic dogs during AAA and AAT projects in a geriatric institute, the dog’s mean heart rate was always in the physiological range (70-160 bpm for adult large breed dogs). Heart rate values did not change at the conclusion of the activity. Furthermore, the analysis of the postural language and of the facial expression (ears, eyes, mouth) during the interaction with human patients confirmed the dog’s relaxed attitude and the absence of anxiety or stress related-symptoms. Tail wagging, hand-paw touch, looking at and licking the patient are the most frequently observed dog behaviours and they show a high level of human-dog interaction (Michelazzi et al., 2007).

Conclusions

In conclusion, human-pet relationship may give benefits to both humans and animals, provided it finds its basis in a sound knowledge of a pet’s biology and needs. However, pet welfare has to be taken into account in every interaction between animals and humans, always measuring and monitoring it in a scientific way.

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