

# **Reducing stress in shelter dogs: Ameliorative effects of the dog-human bond**

**Rosemary Elliott**

## **Introduction**

The dog is a social species and has been bred to form strong bonds with humans (Serpell, 1995). When separated from and reunited with their human caregivers, dogs respond similarly to infants. This activation of attachment behaviours in adult dogs has been explained by the artificial selection of dependency traits over 10,000 years of domestication, resulting in an attachment system analogous to that of the human infant-parent dyad (Topal *et al.*, 1998; 2005). Despite having been bred to depend on human company, many dogs are abandoned. The importance of the dog-human bond to canine welfare is illustrated by the effects of impoundment. Shelter dogs are separated from their attachment figures and exposed to novel surroundings and social isolation. These are the major psychogenic stressors that elicit increased hypothalamic-pituitary-adrenal (HPA) activity (Hennessy *et al.*, 1997). Dogs may become sensitised to abandonment, later showing exaggerated responses to routine separations from new owners. This compromises the success of rehoming (Tuber *et al.*, 1982). Human contact has been proposed to reduce the stress levels of shelter dogs (Wells, 2004). This paper discusses the implications of three recent studies; the first examines the nature of the dog-human bond, and the others explore how this bond can reduce canine stress.

## **Discussion**

Palestrini *et al.* (2005) administered a modified version of Ainsworth's Strange Situation Test (Prato Previde *et al.*, 2003) to study the reactions of 17 adult pet dogs to an unfamiliar environment, an unfamiliar person and separation from their owners. During eight experimental episodes, stress reactions were evaluated with integrated behavioural and physiological measures, video recording the dogs' behaviours and concurrently measuring their heart rates.

Dynamic behaviours, such as exploration and play, were highest in dogs accompanied by their owners. Vocalisation was rare in this situation. Heart rates remained at baseline when a stranger entered, but were elevated when the owner left their dog with the stranger, suggesting the stressor was separation. Dogs reacted to their owners' departures by active and passive proximity seeking. Isolation was characterised by pronounced vocalisation and the lowest level of dynamic behaviours; dogs mostly stood or lay, remaining oriented to the door. Heart rates were elevated, despite lower levels of activity.

The behaviours and accompanying heart rate elevations of these dogs suggest that abandonment was stressful for them. This was exacerbated by isolation.

Shelter dogs demonstrate similar reactions, including excessive barking and listlessness, within the first two weeks of the shelter experience (Stephen and Ledger, 2005). Usually attributed to novel stressors and lack of environmental enrichment, these reactions may also represent a distinct response to separation from attachment figures and minimal contact with other humans.

Coppola *et al.* (2006) examined the impact of a 45-minute human contact session on the stress responses of adult stray dogs recently housed in a shelter, excluding dogs who behaved aggressively toward humans. The session occurred on day 2, and consisted of play, walking, grooming, obedience, verbal and tactile contact and treat rewards. The authors compared the salivary cortisol concentrations of 68 dogs that received the contact session with those of 62 dogs that received no contact. Cortisol concentrations were measured on days 2, 3, 4 and 9.

An interaction between treatment and time emerged. Dogs in the contact group had lower cortisol concentrations than dogs in the no-contact group on day 3. Coppola *et al.* conclude that human interaction can prevent sensitisation of the HPA axis to novel situations, because dogs in the experimental group did not experience the peak in cortisol concentrations typically observed on day 3 of shelter housing (Hennessy *et al.*, 1997). This highlights the potential for a single session of human contact to alleviate the responses of non-aggressive dogs to naturally occurring stressors in the crucial first week of their impoundment. Research into the long-term behaviour of shelter dogs is needed to confirm the preventative benefits of human interaction. This should incorporate an assessment of temperament (De Palma *et al.*, 2005).

Human contact appears to have an ameliorative effect, but one or a range of reinforcers could be responsible. McGreevy *et al.* (2005) cite evidence that physical interactions with humans increase the concentrations of anti-stress hormones such as oxytocin in both species (Odendaal and Meintjes, 2003). They examined the effect of grooming over different anatomical areas on the heart rates of 16 kennelled greyhounds who were rarely petted and 12 trainee guide dogs. The dogs were groomed over four sites, without verbal communication, and heart rates were measured every 30 seconds.

There was no effect of the area of body groomed, but heart rate decreased over time. Groomed greyhounds had lower heart rates than non-groomed greyhounds. Groomed guide dogs had even lower heart rates. The authors conclude that heart rate is reduced by grooming, regardless of the anatomical area, and suggest that lengthy petting of companion dogs enhances the human-animal bond. They speculate that this physical contact becomes reinforcing via its reduction of stress, although grooming is secondary to the primary reinforcement of social affiliation.

These findings may offer a non-invasive intervention into the effects of social isolation on shelter dogs, including strays unused to handling. Research on the shelter dog population with reference to socialisation and attachment histories could predict which dogs would most likely experience the reinforcing effects of grooming. Initial behavioural screening will be necessary to identify dogs that fear human handling and therefore require desensitisation.

## **Conclusion**

The reactions of shelter dogs to their confinement may be partly attributed to social isolation and separation from attachment figures who could buffer them against novel stressors. Human contact early in the shelter experience reduces stress in dogs. Further research is needed to demonstrate the efficacy of this contact for preventing long-term behavioural problems. While it is unclear which factors enhance the developing bond between dog and handler, touch plays a crucial role. The social bond with humans itself is probably the primary reinforcer for dogs, however, so various ways of enhancing this should be explored.

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