Managing separation anxiety in domestic dogs (*Canis familiaris*)

Discusses the efficacy of behavioural modification, auditory and olfactory stimulation, and intranasal oxytocin to reduce separation anxiety in domestic dogs.

By Laura Gerber

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Introduction

Separation anxiety is fearful, anxious or phobic behaviour expressed when a dog is separated from its owner or carer (Tiira and Lohi 2015). The most common signs are destructive behaviour, excessive vocalisation and inappropriate elimination (Blackwell, Casey and Bradshaw 2016). Separation anxiety affects approximately 30% of dogs and has important implications for their welfare (Howell, Mornement and Bennett 2016). It is a common reason for referral of dogs for behavioural treatment and relinquishment of dogs to shelters (Blackwell, Casey and Bradshaw 2016; Shin and Shin 2016). Separation anxiety also causes physiological stress in dogs, with short-term and long-term effects (Thielke and Udell 2015). This review discusses strategies proposed to reduce the occurrence and severity of separation anxiety in domestic dogs.

Discussion

A readily available strategy for the treatment of separation anxiety in dogs is behavioural modification implemented by the owner. Blackwell, Casey and Bradshaw (2016) investigated whether providing owners with written advice would reduce the occurrence of separation anxiety in newly adopted dogs. Owners were provided at the

time of adoption with a leaflet containing behavioural advice aimed at preventing separation anxiety and completed a postal questionnaire 12 weeks after rehoming. The advice included commonly recommended behavioural modifications such as ignoring the dog when leaving home, leaving food out, and ignoring the dog until calm upon returning home. Behaviour associated with separation anxiety was reported by 38% of owners in the control group and 22% of owners in the treatment group (Blackwell, Casey and Bradshaw 2016). However, the occurrence of separation anxiety was not measured prior to adoption and was potentially over-represented in the sample as all dogs were adopted from a shelter.

Compliance by owners with the written advice was generally poor, particularly for aspects that required lifestyle changes or a significant time investment such as leaving the dog alone for gradually increasing periods (Blackwell, Casey and Bradshaw 2016). Despite the poor compliance, after 12 weeks dogs in the treatment group were significantly less likely to suffer from separation anxiety than dogs in the control group, suggesting that the written advice was to some extent effective (Blackwell, Casey and Bradshaw 2016). The effectiveness of written behavioural advice could be further improved by increasing owner compliance. This study highlights the potential improvements in the occurrence of separation anxiety that can be achieved through behavioural modification, but the results also suggest that management strategies requiring more time investment are less likely to be adopted by owners.

An alternative strategy to reduce separation anxiety is to provide the dog with the owner's scent or voice during the owner's absence. Shin and Shin (2016) investigated the effect of an owner's odour and voice on separation anxiety in dogs by using

salivary cortisol concentration as a measure of acute stress. All dogs in the study were reported by their owners to exhibit separation anxiety and were separated from their owner in an unfamiliar environment for 20 minutes. During the separation period, dogs in the olfactory treatment group were given a T-shirt worn by the owner and dogs in the auditory treatment group had a recording of their owner's voice played. Saliva samples were collected prior to separation, at five-minute intervals during the separation period and five minutes after the return of the owner. Dogs in the control group were separated from their owners without any treatment.

Both treatment groups had significantly reduced increases in cortisol concentration between pre-separation and separation than the control group (Shin and Shin 2016). There was also a significantly reduced difference in cortisol concentration between the separation period and post-separation (Shin and Shin 2016). These results suggest that acute stress associated with separation from the owner is ameliorated by the owner's odour or recorded voice. There was no significant difference between the olfactory and auditory treatment groups, suggesting that either treatment will have a similar effect (Shin and Shin 2016). Providing worn clothing or a voice recording during separation is a relatively simple practice for owners to implement, requiring little time investment or lifestyle change.

An untested strategy for treating separation anxiety in dogs is hormonal treatment. Oxytocin plays an important role in relationship forming and bonding in both humans and dogs. Thielke and Udell (2015) reviewed potential applications of intranasal oxytocin in the treatment of separation anxiety in dogs. Dogs experience increases in oxytocin concentration following positive social experiences and after seeing a

familiar person after a separation period (Mitsui et al. 2011; Rehn et al. 2014). Oxytocin administered intranasally has successfully been used to treat anxiety disorders in humans and has been found to increase affiliative behaviour in dogs towards their owners (Dodhia et al. 2014; Romero et al. 2015). The authors speculated that intranasal oxytocin could be used to help dogs with separation anxiety to form more secure attachments to their owners (Thielke and Udell 2015). This is consistent with the conclusions of Konok et al. (2015) that dogs develop separation anxiety as a result of insecure attachments with their owners. The use of intranasal oxytocin to alleviate separation anxiety in dogs has not been investigated experimentally to date. Caution may be required as intranasal oxytocin has been found to increase social stress in humans and therefore could increase proximity-seeking behaviour in dogs rather than promoting the formation of a secure attachment (Thielke and Udell 2015).

Conclusions

Educating owners about behavioural modification techniques can effectively reduce the occurrence of separation anxiety in newly adopted dogs, although owners are less likely to adopt management strategies that require a significant time investment (Blackwell, Casey and Bradshaw 2016). Providing dogs with their owner's odour or voice during the owner's absence can alleviate acute stress associated with separation anxiety (Shin and Shin 2016). Intranasal oxytocin has the potential to reduce separation anxiety by helping dogs to form more secure attachments to their owners, although there is no experimental research into this application to date (Thielke and Udell 2015).

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