Journal of Veterinary Behavior 16 (2016) 53–64

Contents lists available at ScienceDirect

Journal of Veterinary Behavior

journal homepage: www.journalvetbehavior.com

Research Paper

Minimizing fear and anxiety in working dogs: A review

Nicola J. Rooney [a,*], Corinna C.A. Clark [b], Rachel A. Casey [c,d]

[a] Animal Welfare and Behaviour Group, University of Bristol, Langford, United Kingdom
[b] Life Sciences, University of Warwick, Coventry, United Kingdom
[c] Dogs Trust, London, United Kingdom
[d] Clinical Science and Services, Royal Veterinary College, Hatfield, Hertfordshire, United Kingdom

ARTICLE INFO

Article history:
Received 25 August 2015
Received in revised form
2 November 2016
Accepted 3 November 2016

Keywords:
fear
anxiety
prevention
working dog
selection test
habituation

ABSTRACT

The causes of fear and anxiety in working dogs are multifactorial and may include inherited characteristics that differ between individuals (e.g. Goddard and Beilharz, 1982; 1984a,b), influences of the environment (Lefebvre et al., 2007), and learned experiences during particular sensitive periods (Appleby et al., 2002) and throughout life. Fear-related behavior compromises performance, leads to significant numbers of dogs failing to complete training (e.g., Murphy, 1995; Batt et al., 2008), early withdrawals from working roles (Caron-Lormier et al., 2016), and can jeopardize dog and handler safety. Hence, amelioration of fear and anxiety is critical to maintain dogs in working roles and to ensure their well-being. Although current methods of selection and training are seemingly effective at producing many dogs which work in a remarkable array of environments, some dogs do not make the grade, and longevity of service is not always maximized. Programs should strive for optimal efficiency and they need to continually analyze the value of each component of their program, seek evidence for its value and explore potential evidence-based improvements. Here we discuss scientific evidence for methods and strategies which may be of value in reducing the risk of fear behaviors developing in the working dog population and suggest potentially valuable techniques and future research to explore the benefit of these approaches. The importance of environmental influences, learning opportunities, and effects of underlying temperament on the outward expression of fear and anxiety should not be underestimated. Identification of characteristics which predict resilience to stress are valuable, both to enable careful breeding for these traits and to develop predictive tests for puppies and procured animals. It is vitally important to rear animals in optimal environments and introduce them to a range of stimuli in a positive, controlled, and gradual way, as these can all help minimize the number of dogs which develop work-inhibiting fears. Future research should explore innovative methods to best measure the relative resilience of dogs to stressful events. This could include developing optimal exposure protocols to minimize the development of fear and anxiety, and exploring the influence of social learning and the most effective elements of stimulus presentation.

© 2016 Elsevier Inc. All rights reserved.

Introduction

Domestic dogs are used for a variety of working roles in which they are required to continue performing trained tasks in environments which may include novel, unexpected, or potentially aversive stimuli. Roles include herding, deterring predators, guarding, transportation, hunting, entertainment/sport (e.g., racing), contraband detection (e.g., police, military, and rescue services, Rooney et al. 2004), emotional therapy, and medical alert (Strong et al., 1999; Rooney et al., 2013). This diverse range of activities can expose dogs to potentially stressful stimuli in their surroundings: high levels of noise from machinery and gunfire explosions (and subsequent shock waves); transportation; variable terrain with unstable and varied surfaces underfoot; high levels of dust and smoke; loud machinery and traffic (Brown, 2011). In addition to this range of physical factors, dogs may need to cope with a variety of people, some behaving in unpredictable ways, the presence of other animals, and variable routines. Dogs can respond

* Address for reprint requests and correspondence: Nicola J. Rooney, Animal Welfare and Behaviour Group, University of Bristol, Langford, United Kingdom. Tel: 0117 928 9469, 0781 841 3310 (mobile); Fax: 0117 928 9582.
E-mail address: Nicola.Rooney@bristol.ac.uk (N.J. Rooney).

http://dx.doi.org/10.1016/j.jveb.2016.11.001
1558-7878/© 2016 Elsevier Inc. All rights reserved.

to these types of situations with behavioral signs of fear or anxiety, including freezing, withdrawing, or showing aggression (Casey, 2010). Such responses are likely to interfere with a dogs' ability to perform its role. In this study fear is defined as the behavioral response shown to actual danger (Boissy, 1998) and anxiety as the emotional state elicited in potentially threatening situations, for example, novelty, or when some elements of the environment predict a negative outcome (Ennaceur et al., 2006; Massar et al., 2011). Both affective states (fear and anxiety) are particularly concerning in roles for which optimal performance is critical for safety. For example, fear-related behaviors on the part of guide dogs or military search dogs can be life-threatening to both dog and handler and are therefore a common reason for failure in these roles (e.g., Murphy, 1995; Rooney et al., 2002; Batt et al., 2008).

The experience of fear is aversive (Grandin and Deesing, 2002), and by analogy with the experience of humans, it is likely that anxiety is similarly aversive because it too functions to promote avoidance of eliciting stimuli. Individual dogs which show fearful behaviors in a rehoming kennel environment appear to have an impaired ability to learn operant tasks (Blackwell et al., 2010), with similar effects demonstrated in a range of species (e.g., Shors 2004). This potentially makes training more time consuming and costly. Research has also suggested that high levels of fear-related behaviors can lead to increased disease risk (Terlouw et al., 1997) through modulation of immune responses, and possibly ultimately lead to a reduced lifespan (Dreschel, 2010). Particularly relevant to dog programs with breeding schemes is the finding that decreased sperm quality is associated with anxiety in dogs (Memon, 2007). Fear and anxiety can inhibit complete erection and ejaculation (Kutzler, 2012, cited in Mills et al., 2014), and reduce proceptive and receptive behaviors in bitches resulting in a failure to breed (Grundy et al., 2002). Hence, in addition to welfare concerns arising from exposing working dogs to fear-provoking situations for which they are poorly prepared, and the issue of handler safety when dogs perform poorly, there are potential economic consequences. Fear and anxiety can lead to the loss of dogs from programs at assessment, during training, or later through early withdrawal from active working roles (Caron-Lormier et al., 2016), with an associated loss of the potential contribution they could make during their working lives.

Fear responses develop when animals are exposed to events or stimuli that they perceive as negative and salient (i.e., above their individual threshold of tolerance). On first exposure, animals will tend to show a startle response toward a novel stimulus and orientate toward it. This is an adaptive response to a change in their environment. On subsequent exposures, this response may either increase or decrease. Habituation is the process whereby a response gradually reduces with repeated presentation of the eliciting stimulus, and the threshold increases (Grissom and Bhatnagar, 2009). In contrast, sensitization is the process whereby an animal's response increases on presentation of a stimulus (Davis, 1974). Having been sensitized to a stimulus and identified it as a threat, the animal will attempt to both identify predictors for the stimulus and develop a response to avoid it (e.g., to flee). In the working and companion dog, the aim is to manipulate factors both in the dog and its environment to maximize the chance that habituation occurs, while minimizing the risk of sensitization.

Multiple factors influence the development of behaviors associated with anxiety and fear across species and specifically in dogs. The nature of the stimuli and the manner in which it is first presented, including the social context, are both important. High-intensity stimuli (e.g., explosions), or situations where aversive events occur consecutively without allowing animals a chance to recover, are very likely to provoke a response in most animals. Sensitization is more likely to occur when the presented stimulus is of high intensity or low predictability (Gray, 1971). Risk is increased where animals have had prior exposure to other negative events in their general environment or within the specific context. Individual differences in response thresholds mean that even seemingly benign stimuli will provoke a fear response in some individuals, a response that may be due to inherited characteristics, previous environmental influences, learned experiences, and to interactions between these effects.

Studies on personality may shed light on individual differences for the likelihood of animals developing fears. The "shy-bold" continuum has been demonstrated in a wide range of species (Jones and Gosling 2005). Murphree and Dykman (1965) developed a population of pointer dogs that showed extreme fear by selecting for those which reacted most to a range of standardized fear-inducing tests. The relevance of the "shy-bold" continuum in dogs is supported by Svartberg and Forkman (2002) who identified 5 underlying factors of which 4 appeared to form a higher order factor analogous to the shy-bold characteristic.

If we simply test for the appearance of fear behaviors in an individual, we cannot be sure of the extent to which observed behavior is a manifestation of previous experience or underlying personality. What need to assess "resilience" to withstand stressful circumstances. Measuring contributing characteristics may be a promising approach to identifying risk factors for fear. Resilience (Yehuda et al., 2006a) is defined as the extent to which an individual is able to adapt in the face of adversity, trauma, or risk of threat. Coping strategies are well studied and have been defined in terms of approach (active or proactive coping) or avoidance (passive or reactive coping) styles (Roth and Cohen, 1986). In humans, active coping strategies improve individuals' ability to manage stressful situations and reduce their risk of psychiatric illness (Valentiner et al., 1994). People who showed active coping strategies had lower levels of distress and post-traumatic stress disorder 6 months after the New York World Trade Center attacks (Silver et al., 2002).

Proactive and reactive types of responding have been well documented in laboratory rodents (de Boer et al., 2003) and in other species (see review, Koolhaas et al., 1999; but see also Forkman et al., 1995, and Jensen et al., 1995). Attempts have been made to characterize "coping styles" in dogs in rehoming centers, based on their physiological and behavioral responses to kenneling and their ability to learn an operant task. These responses suggest a "reactive" style of responding, or a more "proactive" style (Blackwell et al., 2010). A study of police dogs found 3, not 2, categories of dogs (Horvath et al., 2007). Coping responses are not immune to environmental influences or circumstantial changes in emotion, and individuals will often learn to show different behaviors in response to different situations (Roth and Cohen, 1986). In a working dog context, we may be inadvertently selecting for dogs with specific coping styles. However some coping responses, such as avoidance, may not be possible, and so we may also be causing stress by not enabling dogs to perform their preferred response.

Variation in coping styles suggests that the outward manifestation of the same inner emotional state will differ between animals. Some dogs may appear less overtly fearful than others because their coping strategy is more passive or reactive rather than proactive. This pattern presents a challenge for identifying signs of fear and anxiety when testing individuals and for deciding at what intensity to introduce new stimuli.

There are 3 potential approaches to reducing the risk of these fear- and anxiety-related behaviors developing in working dog populations:

a) select and breed individual dogs with the lowest risk of developing these behaviors,

Download English Version:

https://daneshyari.com/en/article/5535883

Download Persian Version:

https://daneshyari.com/article/5535883

Daneshyari.com