Opinion

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Stress, Mental Health, and Performance in Detection Dogs: Conceptual Limits of Anthropomorphism

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ABSTRACT

This article presents a critical opinion on well-being, stress, and mental health in detection dogs, based on principles of ethology, neurobiology, and animal behaviour science. It argues that the indiscriminate rejection of anthropomorphism should not serve as justification for neglecting the intrinsic behavioural and emotional needs of working dogs. Recognizing the dog as a functional operational member implies ensuring adequate conditions of environmental predictability, cognitive stimulation, and behavioural control. It is argued that environmental deprivation, prolonged inactivity, and inconsistent management favour a loss of quality of life and efficiency, with negative neurochemical and behavioural consequences. The text discusses the role of environmental enrichment as a central strategy for mitigating distress and maintaining operational performance. Finally, behavioural indicators are proposed as early signs of deterioration in well-being, reinforcing the need for an ethical and technically informed approach in the management of detection dogs.

Introduction

The growing reconfiguration of the sociocultural perception of companion animals, progressively conceived as integral members of the family unit, has driven scientific interest in investigating their psychophysical health, their states of well-being and, prospectively, their longevity. Concomitantly, the specialized literature has described the interaction between companion animals and their owners as a bidirectional and functionally beneficial relationship, in which the human being experiences measurable physical and psychological benefits, while the animal is provided with essential resources, continuous care and environmental protection [1]. The use of dogs in detection activities represents an essential component of various security, public health, and law enforcement systems. Despite this, the discussion about the well-being and mental health of these animals remains, in many contexts, polarized between inadequate anthropomorphic interpretations and excessively utilitarian approaches. Although dogs do not exhibit typically human secondary emotions, their neurobiological organization makes them extremely sensitive to environmental conditions, the predictability of routines, and the quality of social interactions. Thus, ensuring emotional and cognitive health is not anthropomorphism, but rather a functional and ethical requirement. The deprivation of ethologically relevant behaviours, coupled with chronic exposure to unpredictable or aversive environments, favours states of distress with a direct impact on behaviour and operational performance.

The discussion about the well-being of working dogs needs to be conducted technically and free from misguided anthropomorphic interpretations and ideologies. Anthropomorphism, understood as the attribution of human, cognitive, emotional, or motivational characteristics to other species, is often interpreted as a conceptual error. However, there is an important distinction: respecting the dog as an operational member of the team, ensuring adequate physical, cognitive, and emotional health conditions, is not anthropomorphizing; it is recognizing its functional and ethical importance within the work system. The mistake lies in attributing complex and exclusively human emotions to them, and not in guaranteeing them species-specific rights to well-being. Dogs have intrinsic behavioural needs, related to their biology and ethology, such as exploring the environment with their sense of smell, chewing, digging, moving freely, interacting socially with humans and other dogs, expressing innate behaviours such as hunting instinct. Systematically preventing the expression of these behaviours constitutes environmental deprivation and, there-

fore, a form of behavioural abuse. Similarly, practices such as treating them like human babies, restricting natural autonomy, or imposing unnecessary accessories (clothes, perfumes, aesthetics incompatible with their species) are forms of harmful anthropomorphism.

From a neuro-emotional standpoint, dogs do not exhibit secondary emotions dependent on an advanced neocortex—such as pride, revenge, guilt, or jealousy in the human sense. Their emotions are predominantly primary, coordinated by subcortical systems related to fear, defensive aggression, primary affect, and motivational arousal. However, dogs are extremely sensitive to the social environment and routine contingencies; irregularity, unpredictability, and constant threats can lead to the development of behavioural disorders, hyperexcitability, anticipatory anxiety, and exaggerated reactivity. For detection dogs, for example, operational work and the act of sniffing itself constitute significant forms of cognitive and motor enrichment. However, the reality of many public institutions includes kennels with periods of inactivity or service schedules that leave the dog without stimulation for long hours; this also happens in homes where the owner leaves their dog inactive for extended periods. For this reason, the implementation of formal environmental enrichment protocols is indispensable. Enrichment should encompass multiple dimensions; In sensory enrichment (olfactory, tactile, and visual), the olfactory system should be stimulated with neutral smells, new objects, different surfaces, and activities that promote free exploration. Interactive toys that stimulate instincts such as running and fetching should be used. Walks interspersed with playful activities promote well-being.

Feeding management that requires searching and manipulation, such as stuffed toys, boxes with holes, and food puzzles. This type of food enrichment increases dopaminergic motivation and brings the dog closer to natural searching behaviours. Cognitive enrichment includes activities that require problem-solving, such as simple olfactory cues, hidden objects, small, motivated obedience tasks, stimulus discrimination, and positive obedience training. This type of stimulation activates the hippocampus and improves synaptic plasticity. Training based on positive reinforcement plays a significant role in promoting canine well-being, even by preventing and mitigating fear responses to aversive stimuli, such as loud noises. Through proper management, contingent positive reinforcement, and, when necessary, pharmacological support, it is possible to reduce traumatic experiences during unavoidable events and, in the long term, promote the establishment of new positive emotional associations through counterconditioning, contributing to stress reduction and maintenance [2]. Social enrichment involves structured interaction with people and other compatible animals, respecting safety rules, and temperament. It allows for adequate emotional regulation and contributes to affective stability [3].

When a dog is repeatedly exposed to aversive, unpredictable situations or situations over which it has no behavioural control, prolonged activation of the Hypothalamus-Pituitary-Adrenal (HPA) axis occurs [4]. The continuous release of cortisol promotes structural changes in the central nervous system, including reduction of dendritic arborization in the hippocampus, decrease in monoamines (serotonin, dopamine, and noradrenaline), impairment of attention, memory and behavioural self-regulation functions, and increased reactivity to stress. Serotonin plays a significant role in modulating mood, sleep, thermoregulation, impulse control, appetite and higher cognitive functions, and chronic reductions in its activity are associated with increased anxiety, irritability, and the emergence of compulsive behaviours. Dopamine is fundamental to the processes of motivation, reward, and maintenance of attentional focus; insufficient levels can result in decreased interest and behavioural persistence, while dopaminergic hyperactivity tends to favour disorganized search patterns and impulsive responses. Noradrenaline, in turn, is primarily related to the response to acute stress, alertness, and energy mobilization, and its excessive activation can compromise the accuracy of olfactory behaviour and the efficiency of functional performance [5].

To assess canine well-being, it is necessary to use multiple physiological and behavioural indicators, since the complexity inherent in the construct of well-being cannot be adequately captured by a single isolated measure. Thus, a robust interpretation of well-being requires the convergence of evidence from different indicators, including, among others, cortisol concentrations, heart rate and variability parameters, immunological markers, and observable behavioural expressions [6]. It is essential to differentiate Eustress: functional, adaptive stress, typical of challenging environments and positive for the individual's performance from Distress: pathological, prolonged stress that results in tissue damage and severe behavioural impairment. Well-being should be understood as a central principle in all interactions between humans and dogs, and the careful and ethically oriented application of behavioural tests can promote superior well-being outcomes by grounding evidence-based behavioural interventions and training strategies, as well as guiding the selection of individuals psychologically compatible with functional demands, thus contributing to the reduction of avoidable stressors throughout the dog's life and to the preservation of its psychophysiological stability [7].

Conclusion

The well-being and behavioural performance of working dogs are based on interdependent pillars, including a genetic foundation—characterized by balanced temperament, low reactivity, high drive, and emotional stability—learning processes, mediated by appropriate and gradual experiences throughout development, and the predictability and controllability of the environment, ensured by consistent routines, stable operational protocols, and opportunities for choice incorporated into training. Violation of these pillars is associated with the emergence of behavioural changes, such as excessive agitation in confinement, repetitive vocalization, stereotyped behaviours (e.g., persistent licking of extremities), operational anxiety,

and impaired focus during work, which should be interpreted as indicators of compromised well-being and not as isolated manifestations of obedience failures.

Conflict of Interest

The author declares no conflicts of interest.

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