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Roles for referential focus in effective and efficient canine signaling: Do pet and working dogs differ?

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1 **Roles for referential focus in effective and efficient canine signaling: Do pet and working**
2 **dogs differ?**

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8 **Abstract:**

9 Working dogs trained to be detection/sniffer dogs must work closely with their human partners.
10 Pet dogs are also often asked to perform tasks, whether in a casual context (e.g., going for a
11 walk) or as part of more formal activity (e.g., competitive sport). For the best performance
12 outcomes, each partner must signal well to the other, and accurately read and respond to the
13 other's signals. As part of a larger study comparing problem solving behavior and information
14 use in working dogs and pet dogs, we compared the detailed responses of 40 detection dogs and
15 80 pet dogs to verbal signals under 2 conditions: when the handler was facing the dog (front
16 facing condition) versus when the handler had his back to the dog while giving a verbal request
17 (back facing condition). We hypothesize that: (1) both groups of dogs would be more accurate
18 and faster in response when they could see the humans' faces and anterior bodies (front facing
19 condition) than in the back facing condition; (2) dogs who did not respond immediately and
20 correctly to the signal would exhibit behavioral signs of anxiety, uncertainty and possibly
21 distress, and such signals would be more common in the back facing condition; (3) the working
22 dogs would be more consistent and successful as a group when compared to the pet dogs because
23 working dogs have been specifically trained to do a job, in joint collaboration with humans who
24 signal to them when and where to do the job and when they are successful. As such, clear
25 signaling and response was already part of their practiced and tested daily life, and so should be
26 reflected in their testing in this study.

27 All testing was video recorded using the same test design and same order of tests. Neither pet nor
28 working dogs were familiar with the test before initial testing and neither were tested in a
29 physical space that was familiar to them. Video analysis determined latency to response, time to
30 completion of requested task, and identification of behaviors exhibited during the two conditions
31 (human facing the dog/front facing condition, or with the human's back turned to the dog/back
32 facing condition). Requests were given verbally using a normal tone of voice. Handlers were
33 asked not to use hand signals. The three requests used were 'sit', 'down', and 'stay'. For most
34 comparisons, dogs were slower to respond and took longer to complete each request when they
35 were unable to see the handler's face (back facing condition) (all $p < 0.05$).

36 The behaviors exhibited when the working dogs could not see their handler's face were largely
37 associated with seeking further information that would allow the dog to comply with the request.
38 This pattern of response suggests that improvements in signaling behavior and understanding for

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