

# Former laboratory dogs' psychological and behavioural characteristics

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## Electronic Supplementary Material (ESM)

The 14 behavioural categories and their definitions, as well as the additional 22 behaviours, assessed by the C-BARQ (Hsu and Serpell 2003; Duffy and Serpell 2012).

1. **Stranger-directed aggression:** Dog shows threatening or aggressive responses to strangers approaching or invading the dog's or the owner's personal space, territory, or home range.
2. **Owner-directed aggression:** Dog shows threatening or aggressive responses to the owner or other members of the household when challenged, manhandled, stared at, stepped over, or when approached while in possession of food or objects.
3. **Dog-directed aggression:** Dog shows threatening or aggressive responses when approached directly by unfamiliar dogs.
4. **Dog rivalry:** Dog shows aggressive or threatening responses to other familiar dogs in the same household.
5. **Stranger-directed fear:** Dog shows fearful or wary responses when approached directly by strangers.
6. **Non-social fear:** Dog shows fearful or wary responses to sudden or loud noises (e.g., thunder), traffic, and unfamiliar objects and situations.
7. **Dog-directed fear:** Dog shows fearful or wary responses when approached directly by unfamiliar dogs.
8. **Touch sensitivity:** Dog shows fearful or wary responses to potentially painful or uncomfortable procedures, including bathing, grooming, nail-clipping, and veterinary examinations.
9. **Separation-related behaviours:** Dog vocalises and/or is destructive when separated from the owner, often accompanied or preceded by behavioural and autonomic signs of anxiety including restlessness, loss of appetite, trembling, and excessive salivation.

- 10. Attachment and attention-seeking:** Dog maintains close proximity to the owner or other members of the household, solicits affection or attention, and displays agitation when the owner gives attention to third parties.
- 11. Trainability:** Dog shows a willingness to attend to the owner and obey simple commands. Dog is not easily distracted, tends to be a fast learner, responds positively to correction, and will fetch or retrieve objects.
- 12. Chasing:** Dog chases cats, birds, and/or other small animals, given the opportunity.
- 13. Excitability:** Dog displays strong reaction to potentially exciting or arousing events, such as going for walks or car trips, doorbells, arrival of visitors, and the owner arriving home; has difficulty calming down after such events.
- 14. Energy level:** Dog is energetic, “always on the go”, and/or playful.
- 15. Escape and roaming**
- 16. Rolling in faeces**
- 17. Coprophagia**
- 18. Chewing objects and self**
- 19. Mounting behaviours**
- 20. Begging**
- 21. Food stealing**
- 22. Fear of stairs**
- 23. Pulling on leash**
- 24. Marking with urine**
- 25. Submissive, emotional urination**
- 26. Separation urination**
- 27. Separation defecation**
- 28. Hyperactivity**
- 29. Compulsive staring**
- 30. Snapping at imaginary flies**
- 31. Tail chasing**
- 32. Shadow chasing**
- 33. Excessive barking**
- 34. Grooming self**
- 35. Allogrooming**
- 36. Other abnormal behaviours**

## REFERENCES

- Duffy DL, Serpell JA. Predictive validity of a method for evaluating temperament in young guide and service dogs. *Appl Anim Behav Sci.* 2012 Apr;138(1-2):99-109.
- Hsu Y, Serpell JA. Development and validation of a questionnaire for measuring behavior and temperament traits in pet dogs. *J Am Vet Med Assoc.* 2003 Nov 1;223(9):1293-300.