

Who's A Good Dyad?

Examining the Perceptions and Dynamics of Undesirable Behaviour in Dog-Guardian Pairs

Hannah M. R. Burrows & Valerie A. Kuhlmeier
Department of Psychology, Queen's University, Canada

Queen's University is situated on traditional Anishinaabe and Haudenosaunee territory. We are grateful to be able to live, learn and play on these lands.

Background & Aims

Breakdowns in dog-guardian interactions are a major contributor to stress, behaviour problems, and welfare concerns.^{1,2} However, most research relies on static measures that cannot capture how these interactions unfold and change in real time.³

Dog-human relationships are better understood as dynamic systems, in which behaviour emerges through ongoing feedback between partners.⁴ Guardians' responses shape their dogs' behaviour, while those responses are themselves guided by pre-existing beliefs and expectations about the dog.^{5,6}

Despite this, existing approaches measure guardian perceptions without linking them to interaction, or assess dog behaviour in isolation, leaving a gap between how behaviour is evaluated and how it is regulated in real time.

To address this, we developed the Perceptions of Undesirable Pet Behaviours Survey (PUPS) to measure guardian beliefs about behaviour across contexts. In the present study, we:

- 1) Examine the factorial and convergent/divergent validity of the PUPS
- 2) Examine the relationship between PUPS and behavioural regulation within dyadic interaction

Methods

Study 1: Construct Validity of PUPS

- N = 374 dog guardians
- 20-item Likert-scale (5 = Strongly Agree and 1 = Strongly Disagree) assessing concern, comfort, and confidence across everyday behavioural contexts

To examine construct validity:

- Factor analysis was used to identify underlying structure
- Convergent and discriminant validity was assessed via associations with the DIAS⁷

Study 2: Ecological Validity in Dyadic Interaction

- N = 109 dog-guardian dyads
- In-lab behavioural session designed to elicit real-time regulatory interaction

Behavioural Coding: Free Play Sessions

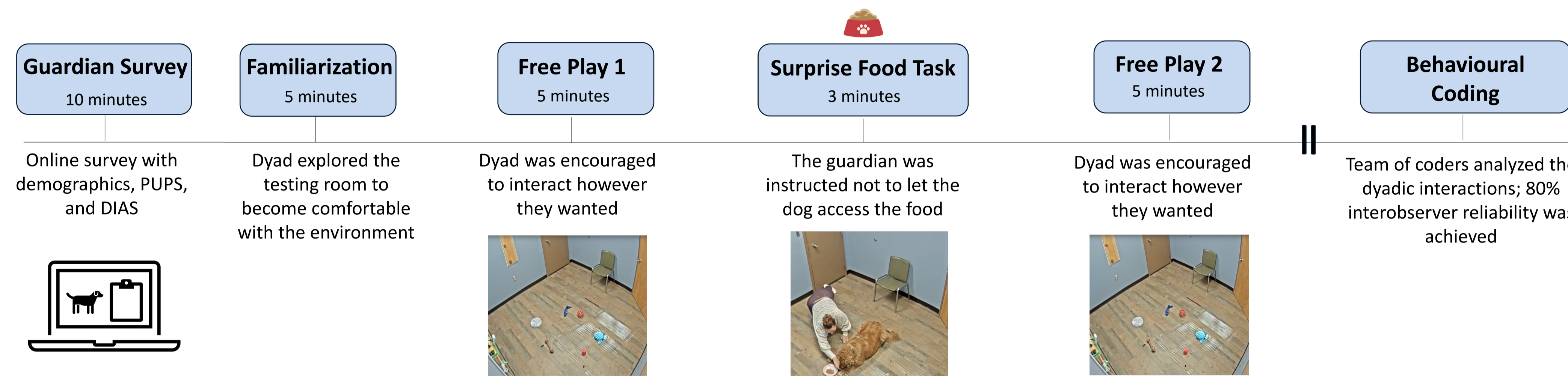
- All behaviours were coded as proportion of task duration

Guardian		Dog	
0 = Gives Up Food	1 = No Interest	2 = Oriented/Monitoring	3 = Attempt to Access Food
1 = Disengaged/Inattentive	2 = Passive Presence	3 = Attempt to Access Food	4 = High Arousal/Distress
2 = Intervention	3 = Intervention		
Verbal			
Gestural			
Physical			

Behavioural Coding: Surprise (Challenging) Food Task

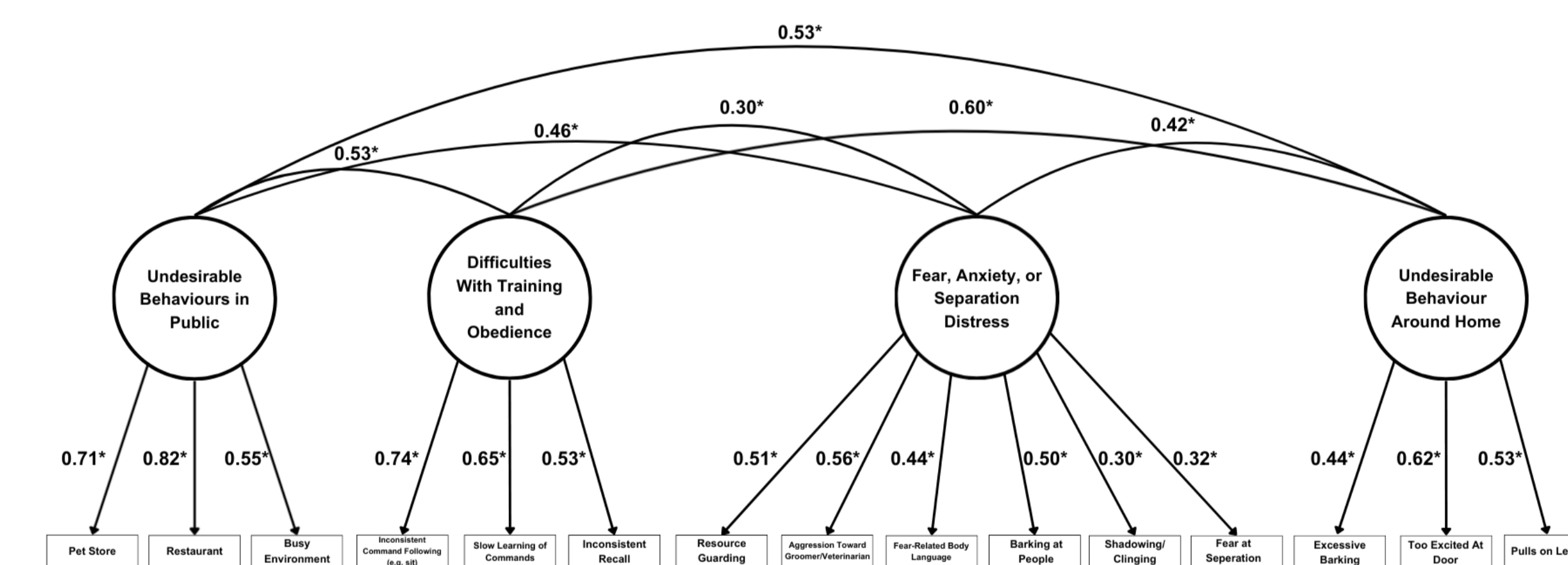
- The highest level of conflict observed was coded

Procedure



Results

1. Factorial and Convergent/Divergent Validity of the PUPS



Confirmatory factor analysis supported a four-factor structure (RMSEA = .059, CFI = .886, TLI = .857), with acceptable scale reliability ($\omega_s = .80$).

PUPS scores showed convergent relationships with the DIAS while remaining non-redundant, indicating that the PUPS captures a distinct, context-specific evaluation of behaviour.

2a. Relationship between PUPS and Guardian Behaviour

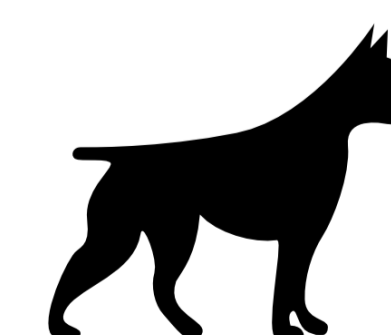
Behaviour	Scale	r	p
Guardian: Gives Up Food	PUPS: Fear, Anxiety or Separation Distress	.27	.005
Guardian: Gestural Intervention	PUPS Total Score	-.23	.018
Guardian: Gestural Intervention	PUPS: Fear, Anxiety or Separation Distress	-.22	.024



Guardian disengagement (giving up the food) was associated with higher PUPS ratings of fear, anxiety, and separation distress. In contrast, greater use of gestural intervention was associated with lower overall PUPS scores, indicating fewer perceived behavioural concerns.

2b. Relationship between PUPS and Dog Behaviour

Behaviour	Scale	r	p
Dog: Monitoring	PUPS: Total Score	-.25	.008
Dog: Monitoring	PUPS: Undesirable Behaviours in Public	-.20	.039
Dog: Monitoring	PUPS: Difficulties With Training and Obedience	-.22	.024
Dog: Distress	PUPS: Undesirable Behaviours in Public	.29	.002



Dog behavior varied systematically with guardian beliefs: monitoring behaviour was associated with lower overall perceived concern, whereas distress behaviours (e.g., barking, whining, pacing) were associated with higher concern.

Conclusions

1. The PUPS demonstrates factorial and convergent/divergent validity

The PUPS captures meaningful variation in how guardians evaluate behaviour across contexts, providing a validated, context-sensitive measure of belief that is distinct from trait-based impulsivity.

2. Guardian beliefs are associated with behavioural regulation in interaction

Differences in guardian concern were associated with systematic differences in both guardian and dog behaviour, indicating that beliefs function as inputs that shape how behavioural challenges are managed in real time.

3. Behaviour reflects dynamic interaction rather than independent traits

Behavioural outcomes emerged through ongoing feedback between partners, demonstrating that behaviour is best understood as a property of the dyadic system rather than the dog alone.

4. Studying interaction is critical for understanding behavioural outcomes and welfare

By linking a validated belief measure to real-time interaction, this work provides a framework for identifying interaction associated with flexibility, breakdown as risk, with direct relevance for training, intervention and canine welfare.

References

1. Barcelos, A., Kargas, N., & Mills, D. (2024). The Effects of Dog Behavioural Problems on Owner Well-Being: A Review of the Literature and Future Directions. *Pets*.
2. Powell L, Lee B, Reinhard CL, et al. Returning a shelter dog: the role of owner expectations and dog behavior. *Animals*.
3. Samet, L. E. et al. (2022). Exploring and Developing the Questions to Measure the Human-Dog Bond: New and Existing Themes. *Animals*, 12(7), 805.
4. Purdue University College of Veterinary Medicine. Center for the Human-Animal Bond. What is the human-animal bond?
5. Koskela, A. et al. (2024). Behavioral and emotional co-modulation during dog-owner interaction measured by heart rate variability and activity. *Scientific Reports*, 14.
6. Schneider, A., & Bräuer, J. (2024). Exploring Levels of Interspecies Interaction: Expectations, Knowledge, and Empathy in Human-Dog Relationships. *Animals: an Open Access Journal from MDPI*, 14.
7. Wright, H.F., Mills, D.S., & Pollux, P.M.J. (2011). Development and validation of a psychometric tool for assessing impulsivity in the domestic dog (*Canis familiaris*). *International Journal of Comparative Psychology*, 24(2), 210-255.

Acknowledgments

We are grateful to the dog guardians and the dogs who participated in this study. We thank all the Social Cognition Lab members, including R. Thompson, G. Pinder, K. Bruce, and E. Knox for their help with video coding. This work was funded by an operating grant from NSERC (V. Kuhlmeier) and a graduate fellowship from SSHRC (H. Burrows).