



Dr Liz Paul
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Summary

Emotion and Cognition, Empathy, Animal Welfare.

My research focuses on the study of emotion, the processing of reward in reinforcement learning, and in the psychological mechanisms by which emotions and moods influence decision making in both humans and non-human animals. Topics of particular interest include: Moods, dimensional and discrete theories of emotion, defining animal emotion, subjective emotions, animal consciousness, the measurement of emotion in animals, animal welfare, people's beliefs about animal sentience and companion animal attachment.

Emotions and moods, as we define them in humans, have counterparts in animals that can be investigated by observing behaviour and studying behavioural decisions made in a range of circumstances. My main interest over the past few years has been the development of novel methods for assessing the emotional states and welfare of animals using techniques such as the "cognitive bias" paradigm. I am also interested in humans' and animals' vicarious use of emotional information. I have studied empathic processing in humans and domestic hens, and investigated the role played by empathy and other factors in determining people's beliefs and attitudes towards animal sentience and welfare. My work is conducted in collaboration with a number of colleagues, including Prof Mike Mendl and Prof. Christine Nicol at the University of Bristol.

Animal and Human Emotion

While the word "emotion" is a human-based construct, "emotional" or "affective" processes also exist in various forms in non-human animals. Some of these may be consciously experienced (as in humans), while some may not be consciously experienced, or experienced in a different way to humans. Taking as a starting point the roles played by emotions in learning and decision making, I and my colleagues have argued that although it is not possible to obtain subjective reports of (consciously experienced) emotional states from non-human animals, other facets of emotional processing can be observed and measured. A key aim of my research is to understand how emotions can be conceptualized and measured across different species.

Research Keywords

- *Emotion*
- *Mood*
- *Decision-making*
- *Animal welfare*

- *Empathy*

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Research Findings

Affect-induced judgement biases found in response to affectively ambiguous stimuli in a range of species (e.g. dogs, rats).

Demonstration that decision-times regarding opportunities and threats are differentially influenced by mood in humans.

Integration of dimensional and discrete theories of emotion in a framework for understanding animal emotion.

Evidence of mother hens detecting distress in their chicks, but not of full emotional empathy.

Modelling of threat-detection decisions using fast (sub-cortical) and slower (cortical) decision processes.

Finding that the psychological phenomenon of Subliminal Affective Priming (SAP) is modulated by trait social anxiety.

Demonstration that human empathy towards animals and other humans has both shared and non-shared components.

Activities/Findings

The development of theoretical frameworks for defining animal emotions and moods, and for investigating the structure of affect in non-human animals.

Development of the "cognitive bias" technique for the measurement of emotion or mood in non-human animals (including rats, dogs and domestic hens).

Investigations of empathy and empathic-like responding to conspecifics and chicks in domestic hens.

Psychological investigations of the effects of subliminal affective priming on decision making in humans.

Investigations of variation in people's beliefs about animal sentience and welfare.

Measurement of veterinary students' beliefs about animal welfare.

Collaborators

Prof. Mike Mendl

Prof. Christine Nicol

Prof. Bill Browne

Dr Suzanne Held

Prof David Main

Dr Jo Edgar

Prof. John McNamara

Prof Alasdair Houston

Dr Pete Trimmer

Dr Jane Murray

Prof John Henderson

Dr Simon Collin

Prof. Peter Dayan, University College London

Prof. Melissa Bateson, University of Newcastle

Prof. Bjorn Forkman, University of Copenhagen, Denmark

Prof Georgia Mason, University of Guelph, Canada

Further information about Dr Liz Paul can be found [here](#).

Biography

Teaches

BVSc Veterinary Science

Liz's first degree was in Psychology at the University of Bristol, where she developed an interest in the links between human psychology and animal behaviour. She started her research career observing house mice at the University of Groningen and studied for her PhD at the University of Cambridge, investigating the psychology of childhood pet ownership. This led on to research into the sources of variation in people's attitudes towards animal welfare and animal rights, and an RSPCA Fellowship in the Department of Psychology at the University of Edinburgh. For the past sixteen years she has been based at the University of Bristol, researching animal and human emotion, animal welfare, and the psychology of empathy and people's attitudes towards animals.

Memberships

Organisations

[Bristol Veterinary School](#)

[Companion Animal Studies](#)

[Farm Animal Science](#)

[Langford Clinical Veterinary Service](#)

[Langford Farm](#)

[Veterinary General](#)

[Veterinary Pathology and Infection and Immunity](#)

Research areas

- [Animal Welfare and Behaviour](#)

Research: Animal Welfare and Behaviour

- [Fundamental behaviour, cognition and stress](#)
- [Human-animal interactions and companion animal welfare](#)

Recent publications

- Jones, S, Neville, V, Higgs, L, Paul, ES, Dayan, P, Robinson, ES & Mendl, M, 2018, '[Assessing animal affect: an automated and self-initiated judgement bias task based on natural investigative behaviour](#)'. *Scientific Reports*, vol 8.
- Paul, ES, Edgar, JL, Caplen, G & Nicol, CJ, 2018, '[Examining affective structure in chickens: valence, intensity, persistence and generalization measured using a Conditioned Place Preference Test](#)'. *Applied Animal Behaviour Science*, vol 207., pp. 39-48
- Deakin, A, Mendl, M, Browne, W, Paul, L & Hodge, J, 2018, '[State-dependent judgement bias in Drosophila: evidence for evolutionarily primitive affective processes](#)'. *Biology Letters*, vol 14.
- Paul, ES & Mendl, MT, 2018, '[Animal emotion: Descriptive and prescriptive definitions and their implications for a comparative perspective](#)'. *Applied Animal Behaviour Science*, vol 205., pp. 202-209
- Cockburn, A, Smith, M, Rusbridge, C, Fowler, C, Paul, ES, Murrell, JC, Blackwell, EJ, Casey, RA, Whay, HR & Mendl, M, 2018, '[Evidence of negative affective state in Cavalier King Charles Spaniels with syringomyelia](#)'. *Applied Animal Behaviour Science*, vol 201., pp. 77-84
- Jones, S, Paul, L, Dayan, P, Robinson, E & Mendl, M, 2017, '[Pavlovian influences on learning differ between rats and mice in a counterbalanced Go/NoGo judgement bias task](#)'. *Behavioural Brain Research*, vol 331., pp. 214-224
- Clarke, N, Main, D & Paul, L, 2017, '[Students' beliefs in animal sentience: No decline across veterinary education](#)'. *Veterinary Record*, vol 180.
- Mendl, MT, Mason, G & Paul, ES, 2017, '[Animal Welfare Science](#)'. in: Josep Call (eds) *APA Handbook of Comparative Psychology*. American Psychological Association
- Mendl, M & Paul, L, 2017, '[Getting to the heart of animal welfare. The study of animal emotion](#)'. Stichting Animales, Netherlands
- Deakin, AI, Browne, WJ, Hodge, J, Paul, ES & Mendl, MT, 2016, '[A Screen-Peck Task for Investigating Cognitive Bias in Laying Hens](#)'. *PLoS ONE*, vol 11.

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