

## DO ANY FORMS OF PLAY INDICATE THE PRESENCE OF POSITIVE AFFECTIVE STATES?

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To ensure good or excellent animal well-being, we need objective welfare indicators that are sensitive to positive affective states. Could some forms of play behaviour be useful, valid tools for this job? Researchers wanting to test this hypothesis by validating play behaviours as indicators of positive affective states must overcome two major challenges. The first is that the term 'play' covers a heterogeneous group of behaviours, such that data from one form or species cannot be directly applied to another form or species. The welfare significance of each type of play must therefore be validated *de novo* on its own merits (and furthermore, we already know that some forms of play actually increase rather than decrease in animals and humans in aversive situations). The second challenge is that identifying conditions that induce *absolutely* positive states in animals (rather than merely *relatively* positive states) is surprisingly difficult. To do this, we need clear, objective ways to operationalize 'pleasure', 'happiness' or 'contentment' in animals; and furthermore, we then need to be able to experimentally induce differing degrees of positive affect to assess empirically whether these influence play. The vast majority of welfare-oriented play research has not done this, but instead has compared animals in sub-optimal environments (e.g. those in isolation, or housed in small barren cages) with animals in better ones. However, despite the general lack of relevant data, two possible forms of play *have* plausibly been shown to be sensitive to positive affective states in animals: rough-and-tumble play in rats and locomotor play in piglets. Given this, and also given the great need for indicators of 'positive animal welfare', we will discuss how future validity research could constructively build on these two intriguing cases, including highlighting some welfare-relevant *qualitative* aspects of human play that so far have been over-looked in animal play research (e.g. the degrees to which play behaviour is 'fragmented', oscillating between non-play and play activities). We hope our guidelines will pave the way for more rigorous validity research, some of which might then identify qualitative or quantitative aspects of sub-types of animal play that do indeed indicate positive affective states.

### Measuring Animal Welfare and Applying Scientific Advances - Why Is It Still So Difficult?

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