The impact of change and the ability to deal with it on an individual's affective state and welfare

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Project description:
Unexpected change exerts a potent influence on an organism's emotional (affective) state and welfare. In both humans and animals, recent research indicates that mismatches between an individual's predictions about its environment and the actual environment are key drivers of its wellbeing.

In the short-term, unexpected rewards and losses can lead to states of 'elation' and 'disappointment' respectively. Moreover, recent computational analyses of human learning and decision-making suggest that decision outcomes that are better than predicted have a stronger influence on 'happiness' than the total experience of positive outcomes per se. In the longer-term, the loss of desired resources from an animal's environment appears to be a potent cause of negative states and poor welfare, whilst addition of such resources has the opposite effect.

An individual's ability to track and respond to change in the environment may also be an important determinant of wellbeing. Fast learners who readily update their decisions when unexpected outcomes are encountered may be at an advantage when dealing with sustained changes to their environments but fare less well in circumstances where changes are erratic and transient, than those who update their decisions more slowly.

This project will investigate the influence of short- and longer-term change on affective state and welfare in humans (short-term) and rodents (short- and long-term). Subjects will be studied in short-term (e.g. learning and decision-making tasks) and long-term (e.g. housing) environments characterised by high or low rates of change, matched for absolute levels of reward and loss which in turn may be high or low. Measures of affective state and wellbeing will be recorded, including subjective report (humans), preference for environments, and behavioural and physiological markers of affect and welfare. The interplay between cumulative experience of reward and whether things are going better or worse than predicted will thus be dissected. The influence of individual differences in how subjects update behaviour when faced with change (e.g. in learning tasks) on their responses to the different environments will also be investigated.

Findings will have theoretical impact, and also practical implications for the design and management of animal housing which typically involves periods of minimal change punctuated by occasional major upheavals or husbandry events. The student will receive training in animal behaviour and welfare science, decision-making psychology, and computational analyses of response to change. They will learn experimental design, behaviour and welfare research methods, and statistical / computational analysis approaches.