

Refinement Through Better Animal Monitoring: How Behavioural Researchers Can Contribute

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ABSTRACT

Researchers who measure animal behaviour have already contributed to the ability to assess animal welfare and recognise indicators of pain, suffering and distress. There are a number of areas where more research is needed to enable further progress to be made. A “wish list” of behavioural research topics can be drawn up on the basis of working group reports and the views of animal users and care staff. This list aims to inform further research directions and collaborations for behavioural researchers.

Author Keywords

Welfare assessment, pain assessment, refinement.

INTRODUCTION

New techniques in behavioural research have provided unprecedented insights into animals’ responses to their housing and care, scientific procedures, interactions with humans and with one another. This has helped to provide a sound, scientific basis for the refinement of husbandry and procedures to reduce suffering and improve welfare, which is an essential component of humane science [1].

Successful refinement also depends upon the ability to assess animal welfare effectively, and detect any signs of pain or distress as rapidly as possible, so that any suffering can be alleviated. Researchers who measure animal behaviour can play an important role in further developing welfare assessment, especially if they collaborate with those who are responsible for monitoring and assessing animals [2].

AN IDEAL WELFARE ASSESSMENT SYSTEM

A survey of researchers, veterinarians, animal technologists and care staff in the UK identified a number of obstacles to

the effective assessment of pain, suffering or distress [3]. These included a strong element of subjectivity when assessing welfare and a lack of time to observe animals properly. On this basis, there is a need for behavioural indicators of welfare that will:

- Be objective – it should be possible to clearly describe and define the indicators, e.g. flank twitch in rodents [4].
- Require minimal training for observers to be able to recognise them reliably [4].
- Complement the clinical judgement of experienced and empathetic staff.
- Save time – the ideal welfare assessment system would include a small number of indicators that occur relatively frequently.

Behavioural researchers have already contributed to defining indicators that fit these criteria. However, there is still an unmet need for more indicators that are tailored to individual species, strains and type of procedure.

A “WISH LIST” OF RESEARCH TOPICS

Several working groups have addressed the issue of pain and distress alleviation in laboratory animals [2,5-8]. Their reports include many common themes relating to pain and distress assessment such as the role of ethics and/or animal care and use committees, training, and ensuring that there are sufficient financial and human resources to observe and monitor animals effectively.

The “wish list” of suggested research topics relating to pain and distress assessment below is drawn from recent working group reports [2,5-8], a survey of animal users and care staff [3], and recommendations in a new Joint Working Group on Refinement (JWGR)¹ report on defining and

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¹ The JWGR comprises the British Veterinary Association Animal Welfare Foundation, Fund for the Replacement of Animals in Medical Experiments, Royal Society for the Prevention of Cruelty to Animals and Universities Federation for Animal Welfare.

<http://www.rspca.org.uk/sciencegroup/researchanimals/implementing3rs/refinement>

implementing protocols for the welfare assessment of laboratory animals [1].

- Define behaviours that are indicative of discomfort, pain or distress and that occur frequently and are easy for human observers to assess.
- Develop possible distress predictors to be used as outcome scores for laboratory animals, i.e. to predict severity in clinical outcomes and help to implement humane endpoints.
- Evaluate possible associations between disease behaviours or abnormal behaviours (e.g. stereotypies) and pain, suffering or distress.
- Evaluate physiological correlates of suffering that may provide useful adjuncts to behavioural observations, for example where heart rate or body temperature are available from telemetry transmitters that have been implanted for experimental purposes.
- Study the influence of an animal's characteristics (e.g. gender, age, genetic makeup) on indicators of pain or distress.
- Determine which easily assessable parameters provide the most useful information for the welfare assessment of genetically altered (GA) animals.
- Identify refinements in euthanasia methods.
- Determine optimum times for welfare assessment for different species and strains with respect to circadian rhythms, e.g. what difference it makes to the quality of the assessment when rodents are disturbed during their sleep phase or observed when they would usually be active.
- Define behaviours that could be used as indicators of positive welfare.

These suggested topics could all be progressed by researchers with expertise in measuring animal behaviour. As with the requirement for more generic indicator evaluation studies above, it should be possible to conduct these studies using animals involved in ongoing research programmes, leading to benefits for animal welfare and science without imposing any significant additional harms to experimental subjects.

CONCLUSION

The need for good collaboration between different research disciplines as a way of facilitating better welfare assessment was a common theme within the working group reports. For example, the US National Research Council committee stated that "Animal welfare scientists, and researchers and scientists who use animal models, should communicate with each other more frequently in order to compare objectives and progress and to identify opportunities for collaboration" [2]. This presentation aims to stimulate further dialogue and discussion so that behavioural researchers wishing to carry out applied research can help to fill outstanding knowledge gaps in the field of pain and distress assessment, enabling better science and animal welfare.

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