Module 7
Behavioural Measures of Animal Welfare
Student Activities

Questions

1. **Having a good understanding of animal behaviour and how it links with welfare is essential for us to be able to use animal behaviour to measure welfare. Identify three essential aspects of behaviour that we must be aware of before we can use behaviour to measure welfare.**

    (3 marks)

    *   The full behavioural repertoire of the species

    *   The behaviours that are important to the animal to perform (may be referred to as 'behavioural needs')

    *   The normal behaviour of the individual animal

2. **Normal animals who are functioning and feeling well and able to perform behaviours that are important to them will typically show a range of behaviours if they are in an environment that allows them to do so. Identify four general characteristics of normal behaviour you would expect to see an animal demonstrate.**

    (2 marks)

    Any four of the following:

    *   alertness

    *   curiosity

    *   perform a range of activities

    *   interaction with members of the group

    *   interaction with humans

    *   play

3. **Various factors will influence the range of behaviours demonstrated and the way in which they are performed by a group of normal animals. Identify four factors that you need to consider when considering any animal's normal behaviour.**

   (4 marks)

   Four of the following:

   • species (for example, a dog is very different from a chicken)

   • breed

   • age (e.g. young animals are more active, more likely to play and spend more time sleeping)

   • confinement (the animal may be limited in terms of the space available within a pen)

   • group size and interaction (e.g. presence of dominant male and young males)

   • season (e.g. breeding, migration)

4. **The degree to which an animal is used to interacting with humans can influence his/her welfare, as being handled in an unfamiliar way may cause stress. Describe a behaviour we might expect to see in each of the following three scenarios: a) if an animal has never interacted with humans, b) if an animal has had negative interactions with humans, c) if an animal has had positive interactions with humans.**

   (3 marks)

   a) If never handled or wild, the animal is likely to be fearful. May show aggression when cornered.

   b) If previous experience with humans has been positive, the animal is likely to be friendly, curious, and will approach a stationary human after a period of time.

   c) If previous experience with humans has been negative, the animal may be fearful and restless or aggressive.

5. **The degree to which an animal engages in play behaviour may also be monitored to provide information about his/her welfare. Explain three reasons that have been proposed to explain the presence of play behaviour in young animals.**

   (3 marks)

   • To develop activities they will need when older – e.g. young cats learn to hunt by stalking other members of the group or their mother's tail.

   • To develop and strengthen muscles (needed for flight, hunting, fighting, etc.).

   • To strengthen bonds with other members of the group.

6. **Identify six behavioural indicators of poor welfare.**

                                                                    (3 marks)

   - Limited range of activity

   - Abnormal fear of or aggression towards humans

   - Fighting with conspecifics

   - Stereotypic behaviour (also known as 'stereotypies')

   - Redirected behaviours

   - Self-injurious behaviours

7. **What are the animal-based and environmental factors that may cause an animal to display a limited range of activities?**

                                                                    (3 marks)

   - Environmental factors:

     - restricted space in intensive farming or laboratory housing

     - lack of stimulation/barren environment

   - Animal-based factors:

     - presence of disease or injury with associated sickness and pain-related behaviours

8. **It is important for vets to be able to recognise when an animal is demonstrating pain-related behaviour. What four behavioural indicators may be commonly used to determine if an animal is experiencing either acute (short-lived) and chronic (longer-term) pain?**

                                                                    (2 marks)

   - Altered gait

   - Altered demeanour

   - Heightened response to palpation

   - Behavioural changes in response to analgesia

9. **Aggression may form a normal part of the behavioural repertoire in a group of animals. The duration and frequency of fighting behaviour can be used to measure welfare.**

    (a) Identify the main contexts in which there is an increased risk of fighting among animals.

    (2 marks)

    Fighting among animals typically occurs when unfamiliar animals are mixed with each other, for example at post-weaning or markets, and when space is inadequate, due, for example, to high stocking density during transportation.

    (b) Identify the underlying motivations for fighting behaviour in these contexts.

    (4 marks)

    The most common underlying motivation for aggression is thought to be fear, but other motivations include territorial protection, sexual competition or social dominance.

10. **Research exists concerning the performance and potential causes of stereotypic behaviour in a variety of species. Select one of the following species and explain a stereotypic behaviour that it may commonly perform in captivity. Choose between horses, bears and laying hens.**

    (3 marks)

    One of the following:

    - Horses develop a stereotypic behaviour called crib-biting whereby they rest their top teeth on a solid horizontal service and perform swallowing movements. This can lead to weight loss and marked over-development of neck muscles. It is likely that the behaviour results from a combination of the animals' genetic predisposition and lack of opportunities to forage. The behaviour is not seen in horses living wild, and seems to develop when horses are kept in stalls where they cannot move around or select from various forages.

    - Many captive bears develop locomotory stereotypic behaviour, for example, pacing. It seems likely that these behaviours develop because enclosures are too small to permit the normal ranging behaviour that bears perform as part of their food-seeking behaviour.

    - Laying hens kept in cages may start feather-pecking, whereby they may fiercely peck at the plumage and limbs of other birds in the cage, removing their plumage and injuring them. This stereotypic behaviour has a strong genetic component and is also associated with high stocking density and activity levels.

11. **In practice, vets may have a sub-optimal amount of time to quantify the different behavioural signs of illness and poor welfare. A technique known as 'qualitative behaviour assessment' (QBA) has been developed and used to assess welfare more formally in research. Briefly describe what this technique involves, and comment on the scientific validity of this approach.**

    (6 marks)

    QBA involves different observers using spontaneous descriptive terms to summarise a live animal's emotional state and the animal's manner of interacting with his/her environment. For example: they might rate the animal in its surroundings as 'content' or 'passive'. The researchers then use statistical processes to summarise those terms into an overall assessment of the animal's welfare. The assessments are then compared with known quantitative indicators of the animal's welfare. The approach is subjective, and there is a concern that it emphasises anthropomorphism; however, research on its validity indicates that descriptive terms often correlate well with quantitative measures of welfare.

In-class activity

Discussion

We suggest you allow 45 minutes for this activity.

This discussion will focus on behavioural indicators of pain (and therefore welfare) in the context of pain associated with castration procedures in various species. This activity can be carried out as a whole-class discussion, or in small groups.

Freedom from pain, injury and disease is one of the criteria commonly used in relation to animal welfare. However, there are some necessary procedures that humans need to perform on animals that are associated with the onset of pain, such as castration.

- Briefly identify what is known about the routine castration methods used for species such as horses, cows, pigs, sheep, dogs, cats and rabbits.

- Outline the behaviours you could monitor in order to assess the amount of post-castration pain an animal may be experiencing.

- Identify and briefly discuss the welfare consequences of experiencing pain for the animal.

- Identify the advantages and disadvantages of using behavioural measures to assess pain.

- Discuss the factors which may influence a vet's ability to use behavioural measures to monitor pain in animals.

- Compare the findings in relation to each species, and discuss which types of behaviours may give a more reliable indication of pain in some species rather than others.

If the class has been divided into smaller groups, each group should report back to the rest of the class after 20 minutes of discussion time.

Notes to lecturer:

Expression of pain-related behaviour may vary according to:

- the age of the animal

- whether the animal is a prey or predator species

- whether the animal is in a familiar or unfamiliar environment

- whether the animal is familiar with handling procedures and specific people

- whether the animal is social-living or not, and has access to conspecifics

- the method of castration – this varies widely between farm and companion animals

- the provision of analgesia – this varies widely between farm and companion animals and between practitioners

- the side-effects associated with any analgesics that may have been used.

Factors that may influence a person's ability to use behaviour measures to assess pain:

- his/her awareness of normal behaviour of the individual animal and his/her amount of experience with individual animals of differing species

- his/her awareness of existing research validating various behavioural indicators of pain in animals

- variation in existing research validating behavioural indicators of pain in different species.

Reflective exercise

Consider your own view of the ability of different animal species to experience pain and engage in pain-related behaviour. Do you have any personal experience to reflect on? Does the scientific evidence presented here convince you of animal sentience or are you sceptical?

Notes to lecturer:

Reflective exercises encourage students to spend time considering the subject, and question their own morals and ethics. Personal reflection is a valuable tool for personal and professional development, but it cannot be judged or assessed. You may wish to see evidence of thoughts in a notebook, in which case you should encourage students to keep a welfare diary. You should be sure to clarify that you will want to see evidence that the reflective exercises have been completed without reading any contents which the student may wish to keep private.

Applied Learning Opportunities

Welfare assessment exercise

Prepare a welfare assessment protocol that incorporates both quantitative and qualitative behavioural measures of welfare and use it to conduct a welfare assessment for a specific species in a system of your choice that you can visit or are completing work experience with.

Students can complete this exercise individually or in groups.

Students will need to consider what they have learnt about the principles of animal welfare science and use this exercise as an opportunity to apply these principles and gain in-situ experience in assessing the welfare of animal species in the context of farming. Students will need to gain access to animals in order to complete this animal welfare assessment exercise.

The context

Students can choose to conduct their animal welfare assessment exercise in one of the following ways by focussing on:

- One animal species in one situation or context, for example assessing the welfare of:
  - dairy cattle on one farm
  - dogs in one rescue shelter
  - a Polar bear in one zoo
  - sheep at market, during transport to slaughter or in lairage at a slaughter plant
  - rodents used in education
  - rabbits kept as companions
- One animal species in the same context in two different locations, for example comparing the welfare of:
  - dairy cattle on two different farms
  - sheep on two different farms
  - dogs in two different rescue shelters
  - lion welfare in two different zoos

- One animal species in two different systems, for example comparing the welfare of:
  - dairy cattle on one farm with beef cattle on one farm
  - free-range pigs with indoor housed pigs
  - working equines with equines used in entertainment or racing
  - companion dogs with dogs used in racing or research
  - rabbits kept as companions with rabbits in a research laboratory
- Two animal species in one system, for example comparing the welfare of:
  - Dairy cattle on one farm and with dairy goats on one farm
  - working cattle with working equines

Notes to lecturer:

The use of animal-based measures (outcome measures) is thought to afford the clearest information about the actual welfare state of an animal in terms of their behaviour, health and physiology. However, it is also important to consider the aspect of the animal's environment (welfare inputs) that may also affect animal welfare, in terms of housing design and resources for example. Therefore students will need to evaluate the welfare of animals in each situation based on the animals' physical condition and behaviour in association with factors such as housing, nutrition, veterinary care, human-animal interactions.

The data sheet below contains an example of specific measures for use with dairy cattle. Depending on which species and context the students are assessing, they will need to adapt or develop the measures they are going to use.

Welfare assessment protocols (that include that for Qualitative Behaviour Assessment(QBA)) have already been developed for dairy cattle, beef cattle, veal calves, sows, fattening pigs, laying hens and broilers by the Welfare Quality® project (see Welfare Quality® website for further details: www.welfarequality.net/everyone/43148/9/0/22)

Welfare assessment protocols are currently in development for sheep, goats, turkeys, horses and donkeys as part of the Animal Welfare Indicators (AWIN) project (see AWIN website for further details: www.animal-welfare-indicators.net/site/index.php/work-package-1).

Welfare Principle	Welfare Criteria	*Example Measures for dairy cows*
Good feeding	Absence of prolonged hunger	*Body condition score*
	Absence of prolonged thirst	*Water supply*
Good housing	Cleanliness	*Cleanliness*
	Behaviours around resting	*Time needed to lie down % of animals colliding with housing equipment during lying down*
	Ease of movement	*Presence of tethering Access to outdoor loafing area and/ or pasture*
Good health	Absence of injuries	*Lameness score*
	Absence of disease	*Respiratory disorders Enteric disorders Reproductive disorders Other parameters*
	Absence of pain induced by management procedures	*Routine mutilations*
Appropriate behaviour	Expression of social behaviour	*Indices of agonistic behaviours*
	Expression of other behaviours	*Qualitative behaviour assessment*
	Good human-animal relationship	*Avoidance distance at the feeding place*
	Positive emotional state	*Avoidance distance in the home pen*

(from the **Welfare Quality® Assessment Protocol for cattle, available free online as a pdf from the Welfare Quality® website:** www.welfarequality.net/everyone/43148/9/0/22)

Encourage students to consider their findings and how they relate to any welfare criteria included in existing food quality assurance schemes standards or associated legislation. During class time at a later stage of the term when the welfare assessments have been completed, try to encourage students to discuss, compare and contrast their findings and what worked and didn't work with other students/students groups, particularly if students have conducted welfare assessments on one animal species in a specific situation/context.