

Making Life Better for Sheep: Advances in the Science of Sheep Welfare Assessment

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Introduction

An increase in consumer awareness and concern for farm animal welfare has provided the impetus for research into scientific, evidence-based assessment of animal welfare. Sheep welfare – in fact the welfare of all animals – is a complex and abstract construct. Consequently, the science of sheep welfare is a constantly evolving field, with the articles discussed below outlining some of the most current advances.

Discussion

Valid welfare indicators are required in order to measure and monitor the on-farm welfare standards of livestock. Phythian *et al.* (2010) recognised that animal welfare can be considered to be the outcome of the interaction between genotype, management and the environment. For Phythian *et al.* (2010), a valid assessment of welfare should therefore include animal-based welfare indicators. This differs from the past, where the assessment of sheep welfare has focused solely upon resource and management-based indicators (Mullan *et al.*, 2009). Using the National Institute of Health (NIH) consensus development program (NIH, 1990), Phythian *et al.* (2010) employed an expert panel to identify and categorise a list of sheep welfare issues into a “Five Freedoms” framework. They then identified a list of physical and behavioural animal-based indicators of sheep welfare that addressed those issues. This study endeavoured to view welfare from the sheep’s perspective by classifying animal-based indicators that encompass both physical and mental elements – as detailed in the Five Freedoms (FAWC, 1994). The use of a consensus of expert opinion, providing consensual validity (Phythian *et al.*, 2010), reinforces the authority of these indicators. They may now be used in conjunction with previous management and resource-based indicators to improve the assessment of sheep welfare. The possibility of a standardised reference system for measuring on-farm welfare may even be suggested. However, these welfare indicators remain in their early stages and an investigation of the diagnostic validity and feasibility of these measures using field studies is required.

Gougoulis *et al.* (2010) contend that sheep are relatively stoic creatures, and do not always display obvious signs of distress or pain. Although the physical and behavioural animal-based indicators proposed by Phythian *et al.* (2010) remain valid, the measurement of affective or emotional states is increasingly considered to be an important part of animal-welfare assessment. Doyle *et al.* (2011) have recognised this, combining cognitive measures with existing behavioural and physiological measures in an attempt to strengthen assessment of sheep welfare.

Doyle *et al.* (2011) trained 26 Romane ewe lambs to perform in a spatial location task. Half (n=13) of the sheep were then subjected to chronic, intermittent treatment that consisted of stressful events common to production systems. The spatial awareness task was altered to include several ambiguous locations, the judgement bias of the sheep was monitored by assessing their attitude toward each ambiguous location. The study demonstrated that exposure to unpredictable, aversive events over a long period seemed to generate a negative judgement bias in sheep, as reflected by the lower number of approaches of stressed sheep to an ambiguous location (Doyle *et al.*, 2011). However, there were no statistically significant differences between the judgement bias of the stressed sheep and the non-stressed sheep. This may be due to poor experiment design, which exposed the stressed sheep to too many novel situations, allowing opportunity for habituation to novelty itself (Doyle *et al.*, 2011). This study, although inconclusive, showed evidence that judgement bias and emotional reactivity could be useful cognitive measures of welfare in sheep, and further research in this field is warranted. Ideally, this should see a strengthening of scientific, evidence-based indicators of

sheep welfare, which could be incorporated into matrices such as that created by Phythian *et al.* (2010).

Animal-based, on-farm welfare assessments such as that developed by Phythian *et al.* (2010) will probably become important evaluators of sheep welfare for both industry and welfare activists alike. However, in order for these assessments to truly bring about any change, it is imperative to understand producers' attitudes toward both their stock and current welfare issues. Phillips & Phillips (2010) conducted semi-structured interviews with a nominated sample of 22 Australian sheep farmers to re-evaluate these attitudes. The interviews focused upon the major welfare problems on the properties, as well as factors influencing their sensitivity to animal-welfare issues. Phillips & Phillips (2010) found that most of the interviewed farmers emphasised a strong empathy with their stock. One farmer indicated that if his stock were suffering that, he would "agonize about them and worry" (Phillips & Phillips, 2010). Another stressed how important he believed it was to keep his "animals in a natural environment" (Phillips & Phillips, 2010). If scientific, evidence-based assessment of the welfare of their sheep demonstrated suffering on the part of the livestock, it is likely that these empathetic producers would be willing to change their husbandry practices.

Previous research also indicated an incongruity between the welfare issues that Australian livestock farmers believe to be most serious and those that are the focus of activist campaigns (Phillips & Phillips, 2010). Phillips & Phillips (2010) found a belief on the part of farmers that parasite control, flystrike and nutrition were more important welfare problems for sheep compared to short-term painful procedures such as mulesing or castration. With appropriate animal-based indicators, especially evidence-based indicators such as those explored by Doyle *et al.* (2011), not only will the welfare of sheep be greatly improved, but there may be opportunities to correct the discrepancy between the attitudes of producers and activists.

Conclusion

The three papers discussed, although different in their approaches, make a valuable contribution to the science of sheep welfare. When these papers are considered together, it is clear that many opportunities for advancement in this field exist. Continuing research and development will not only improve the lives of sheep, but will also put the minds of consumers at ease.

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