RSPCA AUSTRALIA

Animal welfare science update

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This is the third Animal welfare science update provided by the RSPCA Australia office. The aim of the update is to keep you informed of developments in animal welfare science that relate to the work of the RSPCA. The update provides summaries of some of the recently published scientific papers that have been received by the RSPCA Australia office in the past few months.

Companion animals

1 The effect of early development on dog temperament

Dogs that are raised within the home (rather than outside in kennels or sheds), and those that have been exposed to an urban environment between 3 and 6 months of age, are less likely to exhibit aggressive or avoidance behaviours. Behavioural problems in dogs are common and it is well known that the experiences of young puppies influence their temperament in later life. These authors compared the experiences in the first six months of life for dogs showing aggressive or avoidance behaviour, with dogs that had other sorts of behavioural problems. They found that dogs that were aggressive towards strangers, and those with avoidance behavioural problems, were significantly less likely to have been raised in the residential part of the breeders home, and significantly less likely to have been exposed to an urban environment at 3-6 months of age. Aggression towards familiar people (family members) was not related to these factors. The authors emphasise that this may not be a cause and effect relationship. It is possible that the effects observed in this study may reflect differences in the way that different breeds of dog are traditionally raised, ie the breeds of dog that are traditionally raised within the breeder's home and in an urban setting may be less aggressive or fearful than breeds that are raised in other ways.

Reference: Appleby DL, Bradshaw JWS and Casey RA (2002) Relationship between aggressive and avoidance behaviour by dogs and their experience in the first six months of life. Veterinary Record 150: 434-438.

Farm animals

2 Providing pigs with straw reduces aggressive behaviour

Straw provides many benefits to pigs. It can improve their physical comfort, provide them with warmth, provide them with entertainment, and they can eat it too. But how much straw should you give them, and how does access to straw affect their behaviour? Groups of pigs that had previously been given straw, and pigs that had not, were divided into groups given either no straw, very little straw, a substantial amount of straw, or deep straw. When the pigs that had previously had access to straw were moved to an enclosure without straw they were significantly more likely to bite each other than pigs that had never had any straw. However, even a small amount of straw helped to overcome aggressive behaviours. Regardless of their previous access to straw, the more straw the pigs were given the more time they spent rooting and ploughing, and the less time they spent biting, nosing, licking, or play-fighting one another.

Reference: Day JEL, Burfoot A, Docking CM, Whittacker X, Spoolder HAM and Edwards SA (2002) The effects of prior experience of straw and the level of straw provision on the behaviour of growing pigs. Applied Animal Behaviour Science 76: 189-202.

3 Comparing different feeding programmes for pigs

Pregnant gilts fed a high fibre diet once daily appear more content than those fed on concentrate or fed twice daily. Pregnant gilts were fed either a high-fibre diet or a concentrated diet containing the same number of calories and the same nutrients. From each group, one half of the gilts were fed once daily and the others twice daily for one month, then this was reversed for the second month. Gilts on the high fibre diet were less likely to spend time drinking, licking the empty feeder, or performing other stereotypies indicating hunger than those fed the concentrate. The same was true when the gilts were fed once daily rather than twice daily. When the gilts were trained to get food rewards by pushing a button, those fed high-fibre diets obtained less of these rewards indicating that they were less motivated to work for food (ie less hungry) but there was no difference depending on the number of meals fed per day. Gilts fed a high fibre diet also had a lower heart-rate when they were fed than those on a concentrated diet.

Reference: Robert S, Bergeron R, Farmer C, Meunier-Salaun MC (2002) Does the number of daily meals affect feeding motivation and behaviour of gilts fed high-fibre diets? Applied Animal Behaviour Science 76: 105-117.

4 Indoor housing for sows and their litters

In order to improve the welfare of sows with litters, some farmers provide the sows with a “get-away area” that allows them to temporarily leave their litters. The welfare benefits of a get-away area are threefold; weight-loss in the sow is limited, the piglets are encouraged to start consuming solid food before they are separated from the sow at weaning, and there is a reduction in the anxiety caused to the sow and piglets by their total separation at weaning. However, there have been some concerns that sows may spend too much time in the get-away area and neglect their piglets. This study compared 96 litters raised in housing with a get-away area and tried to understand the factors that determine how much time a sow will spend in the get-away area. There was an enormous variation in the extent to which individual sows used the get-away area. However, sows that had a low weight when they gave birth, and sows with larger litters, tended to use the get-away area more. Sows using the get-away area did not feed their litters as often. As a result, by the end of the weaning period the sows had lost less weight but their piglets had not gained as much. It is possible however, that the lower weight gain in these piglets is a reflection of larger litter size not the mother's use of the get-away area. Despite feeding their piglets less often, sows that used the get-away area more were more sensitive to distress calls from isolated piglets. Therefore the authors conclude that use of the get-away area does not indicate poor parental motivation in the sow.

Reference: Pitts AD, Weary DM, Fraser D, Pajor EA, and Kramer DL (2002) Alternative housing for sows and litters Part 5. Individual differences in the maternal behaviour of sows. Applied Animal Behaviour Science 76: 291-306.

5 Enrichment devices for feedlot cattle

Scratching/rubbing devices are good environmental enrichment devices for feedlot cattle. Scent releasing devices are less effective, and cattle quickly lose interest in them. The authors of this paper allowed Charolais cross heifers kept in feedlots to have access to a scratching/rubbing walkway, a moveable scratching/rubbing device, a milk-scent releasing device, a lavender-scent releasing device, and a non-scented device. Not only did more heifers use the scratching/rubbing devices than used the other devices, but they used them more often and over a longer time period (throughout the 22 days of the study).

Reference: Wilson SC, Mitlohner FM, Morrow-Tesch J, Dailey JW, and McGlone JJ (2002) An assessment of several potntial enrichment devices for feedlot cattle. Applied Animal Behaviour Science 76: 259-265.

6 Body temperature as a measure of stress in sheep

The core body temperature of sheep increases during their transportation and this is believed to be a result of stress. However, peripheral temperature measurements do not show an increase, most probably because they are influenced by changes in ambient temperature and by the wind-chill-factor. Many animals (including rats, pigs, and humans) demonstrate an increase in core body temperature as a response to stress. If this temperature change could be recorded over time it would prove a useful way to monitor an animal's stress level. Unfortunately, taking core body temperatures is an invasive procedure. If the same information could be determined from peripheral temperature measurements (from the ear for example) it would be far more easily collected, and would have less of an impact on the welfare of the animals involved. This study

demonstrates that peripheral temperatures taken from the ear canal and on the ear of sheep undergoing transportation do not agree well with the core body temperature and are not a suitable indicator of stress.

Reference: Ingram JR, Cook CJ, and Harris PJ (2002) The effect of transport on core and peripheral body temperatures and heart rate of sheep. Animal Welfare 11: 103-112.

7 Causes of cloacal bleeding in layer hens

It is estimated that in general 2- 5% of overall deaths in commercial flocks are attributable to egg peritonitis, cloacal prolapse, or vent trauma. Cloacal haemorrhage (bleeding from the vent) is often attributed to vet pecking, however this study concludes that up to 50% of cloacal haemorrhages are not caused by vent pecking. Both low body weight in early lay and the production of disproportionately large eggs increase the risk of cloacal haemorrhage in layer hens. Two large Victorian egg farms that do not beak-trim their flocks were included in this study. The annual mortality in these flocks was 5- 7%, and these farms aim to achieve a situation where they get 330 eggs per bird each year with 2– 3% mortality and no beak trimming. The authors conclude that better attention to body weight management with control over the onset of sexual maturity and uniform layer-shed light intensities of 10-20 lux will significantly lower flock mortalities.

Reference: Parkinson G and Cransberg P (2002) Cloacal haemorrhage, vent trauma and beak trimming in laying hens. Rural Industries Research and Development Corporation Publication No 02/012.

8 Broiler hen welfare

By breeding broiler hens for increased growth rate we have reduced their ability to control their appetite. These hens have a tendency to overeat, and as a result they become obese. Unfortunately, not only do obese birds have health problems, they also make poor breeding stock. In order to keep breeders at an acceptable weight their food intake is controlled, but this means that they are chronically hungry. During rearing they receive 60- 80% less than the amount they would choose to eat, and during the laying period they receive 25- 50% less. The birds are either fed only every second day, or are fed a reduced amount every day. Because food-restricted birds have a tendency to overdrink their water is also often restricted. This paper is about the “welfare dilemma” that restricting food intake causes significant improvements in health but results in welfare problems of another kind. It discusses ways of improving the welfare of food-restricted birds. The report does not discuss the possibility of replacing traditional broiler breeds with alternative breeds to avoid this problem.

Reference: Mench JA (2002) Broiler breeders: feed restriction and welfare. World's Poultry Science journal 58: 23-29.

9 Stocking densities for broiler hens

This study investigates the impact of stocking density on broiler hen welfare. Unfortunately, serious flaws with the design of the experiments make the authors' conclusions doubtful. This paper finds no evidence that the welfare of broiler hens is compromised at a stocking density of 40 kg/ m^2 any more than at 34 kg/ m^2, although thermal stress appears to be reduced at densities below 34 kg/ m^2. The experiment took place in a modern, controlled-environment shed with 24 floor pens (each 11.4m^2). A large flock of broiler chicks was separated into males and females and then allocated to 3 different stocking densities (based on the anticipated final stocking density in week 6). The same standard husbandry procedures were used for all groups. Stocking density did not affect mortality, weight gain, food conversion ratio, leg health, or general behaviour. As might be expected the litter condition was significantly better in pens stocked at low density. Birds spent significantly less time panting deeply (a sign of heat stress) in weeks 5 and 6 when kept at the lowest density of 28 kg/ m^2. Female broilers were affected by heat stress at a younger age, and more severely, than male broilers (initial onset in week 2 compared to week 5 in males). There was no significant difference in the welfare of birds kept at 34 kg/ m^2 and 40 kg/ m^2. However, the sex of the chicks, and their age had a significant impact on the welfare of the birds and the authors suggest that birds that are intended to be slaughtered at 5 weeks of age may be kept at a higher density than those to be killed at six weeks of age, while females should be kept at a lower stocking density than males.

There are some significant problems with the experimental design of this project. For example, comparisons between the behaviour of the birds were based on 576 observations spread over the full 6 weeks. As the

effective stocking density in weeks 1-4 is relatively low this has probably masked any differences between the groups in weeks 5-6, the period during which we would expect to observe an impact on behaviour caused by high stocking density. For mortality, weight gain, and food conversion ratio trends indicating that stocking density has an effect began to appear only in the final eight days of the study. This suggests that stocking density does have a significant effect, but only when relatively high.

Reference: McLean JA, Savory CJ, and Sparks NHC (2002) Welfare of male and female broiler chickens in relation to stocking density, as indicated by performance, health and behaviour. Animal Welfare 11: 55- 73.

10 Aggression and cannibalism in caged layer hens

Caging layer hens in groups where individuals are unfamiliar with one-another results in increased aggression but does not change the rate of cannibalism. However, the act of moving hens into new cages does increase the incidence of cannibalistic injuries to the head and neck. In this study White Leghorn chickens with intact beaks were kept in 16 groups of 4 from the day of hatching until they were 18 months old. At this time 8 of these groups of 4 were moved into new cages and the remaining hens were sorted into 8 new groups of 4, then placed into new cages. The mixed groups of hens were more aggressive than the groups of familiar hens for one week after they were re-caged. Both groups of hens exhibited the same amount of cannibalistic attacks, but the incidence of injuries to the head and neck increased after the birds were re-caged while there were less injuries to other body parts. This increase in attacks to the head and neck regions lasted for one month.

Reference: Cloutier S, and Newberry RC (2002) A note on aggression and cannibalism in laying hens following re-housing and re-grouping. Applied Animal Behaviour Science 76: 157-163.

11 Assessing pain in animals

The ability to assess the amount of pain that an animal feels is important to animal welfare research and also to veterinary medicine. This article is a review of pain and the different ways in which it is measured. There is a special emphasis on castration and tail docking in lambs, beak trimming in commercial poultry, and postoperative recovery in dogs. The author suggests that pain assessment should involve a variety of observations including, behavioural changes, physiological changes, and a range of other techniques.

Reference: Rutherford KMD (2002) Assessing pain in animals. Animal Welfare 11: 31-53.

Animal Research and Experimentation

12 Ethics committees

Modern technologies have increased our ability to carry out scientific research in a range of areas. However, many of these areas of research rely on the use of experimental animals. In Australia and the UK the welfare of animals used in research is protected by legislation. This paper compares and contrasts the two systems. In Australia research institutions must have an Animal Ethics Committee that reviews all proposed research involving animals, and must adhere to the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes. In the UK research institutions must have an Ethical Review Process while the Home Office directly administers the law regarding to research animals by carrying out inspections. Both countries emphasise the principles of replacement, reduction and refinement (that where possible procedures should be replaced with those that do not use animals, the number of animals should be reduced as far as practicable, and that the procedures used should be refined to minimise pain and suffering). The author, who is British, proposes ways in which the Australian experience can be used to improve the UK ethical review process.

Reference: Bradshaw RH (2002) The ethical review process in the UK and Australia: The Australian experience of improved dialogue and communication. Animal Welfare 11: 141-156.

Other Recent Arrivals:

Boyle LA, Leonard FC, Lynch PB and Brophy P (2002) Effect of gestation housing on behaviour and skin lesions of sows in farrowing crates. Applied Animal Behaviour Science 76: 119-134.

Estevez I, Newberry RC, and Keeling LJ (2002) Dynamics of aggression in the domestic fowl. Applied Animal Behaviour Science 76: 307-325.

Gregory NG and Constantine E (1996) Hyperthermia in dogs left in cars. Veterinary Record 139: 349-350.

Ibanez M, De la Fuente J, Thos J, and Gonzalez de Chavarri E (2002) Behavioural and physiological responses of suckling lambs to transport and lairage. Animal Welfare 11: 223-230.

McCowan B, DiLorenzo AM, Abichandani S, Borelli C, and Cullor JS (2002) Bioacoustic tools for enhancing animal management and productivity: effects of recorded calf vocalizations on milk production in dairy cows. Applied Animal Behaviour Science 77: 13-20.

Mellor DJ, Stafford KJ, Todd SE, Lowe TE, Gregory NG, Bruce RA, and Ward RD (2002) A comparison of catecholamine and cortisol responses of young lambs and calves to painful husbandry procedures. Australian Veterinary Journal 80: 228-233.

Mills DS, Cook S, and Jones B (2002) Reported response to treatment among 245 cases of equine headshaking. Veterinary Record 150: 311-313.

Mills DS, Cook S, Taylor K and Jones B (2002) Analysis of the variations in clinical signs shown by 254 cases of equine headshaking. Veterinary Record 150: 236-240.

Molony V, Kent JE, and McKendrick IJ (2002) Validation of a method for assessment of an acute pain in lambs. Applied Animal Behaviour Science 76: 215-238.

Olsen AW, Simonsen HB, and Dybkjar L (2002) Effect of access to roughage and shelter on selected behavioural indicators of welfare in pigs housed in a complex environment. Animal Welfare 11: 75-88.

Pajor EA, Weary DM, Caceres C, Fraser D, and Kramer DL (2002) Alternative housing for sows and litters Part 3. Effects of piglet diet quality and sow-controlled housing on performance and behaviour. Applied Animal behaviour Science 76: 267-277.

Phillips CJC and Morris ID (2002) The ability of cattle to distinguish between, and their preference for, floors with different levels of friction, and their avoidance of floors contaminated with excreta. Animal Welfare 11: 21-30.

Studnitz M, and Hjelholt Jensen K (2002) Expression of rooting motivation in gilts following different lengths of deprivation. Applied Animal Behaviour Science 76: 203-213.

Sutherland MA, Mellor, DJ, Stafford, KJ, Gregory NG, Bruce RA, and Ward RN (2002) Effect of local anaesthetic combined with wound cauterisation on the cortisol response to dehorning in calves. Australian Veterinary Journal 80: 165-167.

Tauson R (2002) Furnished cages and aviaries: production and health. World's Poultry Science Journal 58: 49-63.

Thodberg K, Jensen KH, and Herskin MS (2002) Nest building and farrowing in sows: relation to the reaction pattern during stress, farrowing environment and experience. Applied Animal Behaviour Science 77: 21-42.

Thornton PD and Waterman-Pearson AE (2002) Behavioural responses to castration in lambs. Animal Welfare 11: 203-212.

Valros AE, Rundgren M, Spinka M, Saloniemi H, Rydhmer L, and Algers B (2002) Nursing behaviour of sows during 5 weeks lactation and effects on piglet growth, Applied Animal Behaviour Science 76: 93-104.

Warriss PD, Edwards JE, Brown SN, and Knowles TG (2002) Survey of the stocking densities at which sheep are transported commercially in the United Kingdom. Veterinary Record 150: 233-236.

Weary DM, Pajor EA, Bonenfant M, Fraser D, and Kramer DL (2002) Alternative housing for sows and litters Part 4. Effects of sow-controlled housing combined with a communal piglet area on pre- and post-weaning behaviour and performance. Applied Animal Behaviour Science 76: 279-290.