International Society for Anthrozoology (ISAZ)

13th Annual Conference

Advances in the Science and Application of Animal Training

6th October 2004

Scottish Exhibition and Conference Centre, Glasgow, UK

Satellite meeting to IAHAIO 2004

Picture in here

In conjunction with the Universities Federation for Animal Welfare

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Science in the Service of Animal Welfare

WELCOME TO GLASGOW

Training has long been recognised as an important component in the successful adaptation of companion animals, their inclusion in sporting events and other recreational activities. An extensive folk literature exists relating to the training of these animals. Knowledge and practice based upon scientific principles, such as classical conditioning and instrumental learning may also be employed. Less recognised is the contribution relevant training can have on the management and husbandry of other animals *eg.* on farms, in zoos and the laboratory.

This meeting aims to discuss recent developments in learning theory and related fields, in the methodologies and techniques of training. It will also consider the application of these for practical training of animals. It seeks to bring together veterinarians, animal scientists, ethologists, psychologists, animal trainers and others who work with animals to share knowledge and good practice. It hopes to encourage a wider consideration of the ways training can be used to improve the husbandry, management and welfare of animals.

ISAZ 2004 is a satellite meeting to the 2004 world conference of the International Association of Human-Animal Interaction Organisations and we are grateful to IAHAIO for their support of the meeting. We are also grateful for the kind support of the Universities Federation for Animal Welfare in the organisation of the meeting and their help in compiling the programme and preparation of the abstract booklets. We must extend special thanks to Dr Penny Bernstein, Dr James Kirkwood and Dr Debbie Wells for helping to review the abstracts and finally to Neil Smith (Conference Point International) for all his help with registration and accommodation.

We see this meeting as an excellent opportunity for the supporting organisations to present themselves to a broad and international audience and foster useful links with professional researchers, trainers and students interested in applying science to advance both our knowledge and understanding of human-animal interactions and animal welfare.

We hope you have a successful and enjoyable meeting.

Debbie Goodwin BSc, PhD
University of Southampton

ISAZ 2004 co-organiser

Stephen Wickens BSc, PhD
Universities Federation for Animal Welfare

ISAZ/UFAW 2004 co-organiser

ISAZ 2004: Advances in the Science and Application of Animal Training

Date:	**Wednesday 6th October 2004**
Venue:	**Alsh Room, Loch Suite, Scottish Exhibition and Conference Centre, Glasgow**
Start:	**9.10am (Registration from 8.40am in Hall One, Loch Suite)**

Programme:

8.45am Registration — **Hall One, Scottish Conference Centre**

Session 1:

9.10am	Welcome
9.20am Professor James Serpell	Breed and gender differences in trainability of dogs
9.40am Dr Elly Hiby	Canine training methods: Their use, effectiveness and interaction with domestic dog behaviour and welfare
10.00am Dr Melissa Bateson	Body condition, motivation and performance
10.20am Dr Francien de Jonge	Preference of dogs to work for food rewards delivered with predictable or unpredictable delays

10.45am Refreshments

Session 2:

11.20am Professor Katherine Houpt	Operant learning as a means of measuring equine motivation to crib: A vice or a need?
11.40am Professor Daniel Mills	What's in a word? Recent findings on the attributes of a command on the performance of pet dogs
12.00pm Dr Candy Rowe	Multisensory' learning: The benefits of using sound in a visual learning task
12.20pm Dr Paul McGreevy	The reinforcing value of physical contact and the effect on canine heart rate of grooming in different anatomical areas

12.40pm Lunch — **Campanile Hotel**

Session 3:

2.00pm Andrew McLean	The positive aspects of correct negative reinforcement
2.20pm Amanda Warren-Smith	Variations in the timing of reinforcement as a training technique for foals (*Equus caballus*)
2.40pm Dr Helen Zulch	The use of positive reinforcement training to facilitate husbandry practices and veterinary procedures at De Wildt Cheetah and Wildlife Centre, a pilot study
3.00pm Professor Clinton Sanders	Interspecies enforcement: The construction and training of the patrol dog/K-9 officer team

3.20pm Refreshments

Session 4:

4.00pm Dr Jane Orihel	A survey of the management of inter-dog aggression by animal shelters in Canada
4.20pm Dr Mark Prescott	Training laboratory-housed primates: A survey of current practice in the UK
4.40pm Dr Vicky Melfi	Can training zoo-housed primates compromise their conservation? A case study using Abyssinian colobus monkeys (*Colobus guereza*)
5.00pm Dr Marie Suthers-McCabe	Evaluation of stress response of horses in equine assisted therapy programmes

ISAZ 2004: Advances in the Science and Application of Animal Training

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Posters:

Verity Bowell, H. Buchanan-Smith and R. Rumble
Identifying factors which influence the time investment required for the positive reinforcement training of the common marmoset

Sabrina Brando
The alphabet soup: The use of LRS, DRO, DRI and DRA in a proactive training program

Sabrina Brando
Animal management through training and enrichment

Kayce Cover
The 'Intermediate Bridge', a training innovation

Ilona Gunsser
Training of llamas and alpacas for animal-assisted activities and therapy

Anouck Haverbeke, C. Diederich and J. M. Giffroy
What are the problems of the Belgian Military Working Dogs (MWD's)?

Tanya Jeffery, E. A. McBride and G. Marvin
DIY for problem pets: A possible welfare issue

Mary Lee Jensvold, S. A. Baeckler, R. S. Fouts and D. H. Fouts
Their own terms: Techniques in humane caregiving of captive chimpanzees

Mark Kennedy
Intensively managed mating in Thoroughbreds: Effects of stallion and mare behaviour on conception

Rebecca Ledger, J. Stephen and M. von Keyserlingk
How reliable is the behaviour information provided by relinquishing dog owners for determining rehabilitation needs required for successful adoption?

Locksley L. McV. Messam, P. H. Kass, B. B. Chomel and L. A. Hart
Human-animal interactions: A factor in dog bites?

Jacqueline Stephen, R. Ledger and M. von Keyserlingk
Selective stress reduction for shelter dogs

Hsin-Yi Weng, L. A. Hart, B. B. Chomel and P. H. Kass
An educational intervention on pet dog sterilization and retention in Taiwan

Bethan Whitham and D. S. Mills
The effect of different methods of successive approximation on the initial stages of target training using a clicker

Mary W. Wood and L. A. Hart
Training and welfare implications for companion animals

Session abstracts

Breed and gender differences in trainability in dogs

James A. Serpell[*] *and Yuying Hsu*[†]

[*] School of Veterinary Medicine, University of Pennsylvania, USA
[†] Dept of Biology, National Taiwan Normal University, Taiwan

In a previous study, Hsu & Serpell[1] identified a distinct temperament factor or trait—dubbed 'trainability'—characterized by dogs' willingness to attend to their owners and obey simple commands, combined with high 'fetch' motivations and low levels of distractibility and/or resistance to correction. This paper will examine the distribution of this trait in a large sample (n=998) of ten common breeds of dog, in relation to their sex, neuter status, and early experience.

Highly significant breed differences in trainability were detected in this study. Although male dogs tended to achieve higher scores overall for trainability than females, marked breed differences in gender specific trainability rankings were found. In both sexes, neutering was associated with higher trainability scores, especially in some breeds. Early experience had long-term effects on trainability. Dogs acquired by the owners during the peak of socialization (6–9 weeks of age) tended to obtain significantly higher scores than those acquired either before or after this period.

The findings suggest that there is scope for improving trainability in some breeds of dog, and emphasize the dangers of generalizing among breeds with respect to sex differences in trainability or the benefits of neutering. The biological basis of the trainability trait will also be discussed in light of recent research on canid cognitive evolution.

[1] Hsu, Y. and Serpell, J.A. 2003. Development and validation of a questionnaire for measuring behavior and temperament traits in pet dogs. *Journal of the American Veterinary Medical Association,* 223(9): 1293-1300.

Canine training methods: Their use, effectiveness and interaction with domestic dog behaviour and welfare

Elly F. Hiby, Nicola J. Rooney & John W. S. Bradshaw

Anthrozoology Institute, University of Bristol, UK

The welfare of the domestic dog kept as a pet in the home has received relatively little scientific investigation, and yet is of significant ethical concern. Most pet dogs receive at least rudimentary training and the training methods used may be very important to pet dog welfare. Traditional training techniques have typically utilised negative reinforcement and punishment, however the recent trend is to emphasise the use of positive reinforcement in the shape of rewards. Another factor that may contribute to the welfare state of pet dogs is the performance of behaviour 'problems', which may be caused by, or result in, states of anxiety or fear and may also lead to relinquishment of the dog to re-homing centres or even euthanasia. A questionnaire survey of the general pet dog owning community was conducted to investigate the training methods usually used, dog obedience, dog behaviour and the owner-dog relationship.

The use of punishment and rewards in training was found to be common (80.6% of respondents reported using punishment, 70.2% reported using rewards). Results showed a significant positive correlation between obedience and the use rewards, and no significant correlation between obedience and the use of punishment. A significant positive correlation was also found between obedience and satisfaction with the owner-dog relationship. The use of punishment was found to be significantly correlated with problem dog behaviour, in particular, the incidence of separation related problems and over-excitement. This suggests the use of punishment may represent a welfare concern without concurrent benefits in obedience.

Body condition, motivation and performance

Melissa Bateson

Division of Psychology, Brain and Behaviour, School of Biology, University of Newcastle, UK

It is common practice amongst psychologists training animals with food as a reinforcer to maintain their subjects at a fixed percentage of their free-feeding weights—usually between 80 and 90%. The rationale for this food restriction is that subjects will be more strongly motivated to eat, and will learn tasks reinforced with food faster. It is implicitly assumed that by equalising the percentage of free-feeding weight to which the subjects are deprived, motivation will also be equalised, and thus individual variation in task performance will be minimised. Here I argue that this latter assumption may not be applicable to all species and tasks. I present data showing that starlings (*Sturnus vulgaris*) maintained at 90% of their individual free-feeding weights differed substantially in measures of body condition reflecting fat stores, and discuss explanations for this variation. The condition of individual birds correlated with a range of measures of performance on an operant task designed to study sensitivity to risk in delay to reinforcement. Fatter birds were slower to reach a stability criterion in each treatment. They also differed in both the sensitivity and bias of their psychometric functions, showing lower sensitivity to delay to reward and greater aversion towards risk in delay to reward. These results fit with evolutionary models showing that small birds should be sensitive to their fat stores to maximise their probability of survival. More generally, the results lead to the conclusion that the method chosen to motivate animals for a task should be informed by knowledge of the biology of both the species and the task.

Preference of dogs to work for food rewards delivered with predictable or unpredictable delays

Francien H. de Jonge, Kim van de Put, Roald Maes and Berry M. Spruijt

Ethology and Welfare Group, Dept of Animals, Science and Society, Veterinary Faculty, University of Utrecht, The Netherlands

Both in companion animals and in production animals, much effort has been spent to develop fodders that adequately meet the species-specific nutritional demands under varying conditions. However, relatively little attention has been paid to species-specific behavioural needs that are associated with the consumption of those fodders. Thus, animals may prefer to work for their food, rather than getting it for 'free' ('contrafreeloading') and animals may prefer to show behavioural patterns that are normally associated with species-specific foraging patterns (cf rooting in pigs) rather than eating pellets from a basket.

To disregard the behavioural needs associated with feeding, may have considerable welfare implications. 'Abnormal behaviours' like stereotypies, for instance, often develop in close association to feeding.

Recently, it was shown in birds and insects that animals may prefer to work for food which is delivered with an unpredictable and/or variable delay rather than for food rewards delivered with predictable delays ('risk-sensitive foraging'). If such a preference would be present in companion and/or production animals as well, it should influence the preferred way of food delivery also.

Eight dogs (7 females and 1 male) from varying age (1 to 7 years old) and breed (Flat-Coated Retriever, English Cocker Spaniel, Schnauzer, Welsh Corgi, Samojede, Cairn Terrier, Labrador, Dalmatier) and ranging from 6.1 to 25 kg, were trained to manipulate two Nintendo joysticks in order to earn food rewards on a fixed interval schedule of 10 seconds. Subsequently, they were given the choice to manipulate one of the two available Nintendo joysticks in order to earn food rewards delivered with a predictable 10 seconds delay (joystick 1), while manipulation of the alternative joystick was rewarded with an unpredictable, randomly varied delay of either 4 or 16 seconds (joystick 2). The total amount of rewards earned under either schedule was (on average) the same. These 'choice trials' were run four times a day, four times a week, during two consecutive weeks. A preferred joystick was defined by an 80% preferred responding during 5 consecutive trials.

Preliminary analysis showed that 4 dogs developed a preference for the unpredictable option, 1 dog developed a preference for the constant option, while the remaining 2 dogs did not show any preference. The present experimental results are discussed in relation to the possible effects of age and race on behaviour and the dog's behavioural demands in relation to food presentation.

Operant learning as a means of measuring equine motivation to crib: A vice or a need?

Katherine A. Houpt, Lindsay Crowley and Alban Rousseliere

College of Veterinary Medicine, Cornell University, USA

Crib (biting) is a frequently encountered abnormal behavior of horses. Before cribbing is prevented, one should determine whether the horse 'cares' about whether he can crib or not. In order to measure motivation, we operantly conditioned five horses to press a panel to gain access either to a cribbing surface or to food. We compared the number of responses the horse would make for food (sweet grain 6 hours after the last grain meal) with that for cribbing (after 23 hours wearing a cribbing collar) using a progressive ratio technique which was increased daily (1, 2, 3, 5, 10, 20, 30, 90, 100). One horse worked harder to crib than for food. One worked equally hard for food and cribbing and three worked harder for food. The median values at extinction (horse would not press enough for one reward) were 60 for food and 40 for cribbing. There was no significant difference between the number of responses for food and for cribbing (Wilcoxon signed rank test, $p>0.05$). Horse apparently value cribbing nearly as highly as food. In comparison, horses work significantly harder for food than for exercise or access to another horse ($p<0.03$).

What's in a word? Recent findings on the attributes of a command on the performance of pet dogs

Daniel S. Mills

Animal Behaviour, Cognition and Welfare group, Department of Biological Sciences, University of Lincoln, UK

The training of dogs usually involves the building of an association between a command word and a given behaviour through reinforcement. Whilst the importance of applied learning theory in this process is widely recognised, there has been less emphasis in the scientific literature on the equally important role of interspecific communication in the learning of an instruction. A command is not a simple discriminative stimulus and involves both verbal and non-verbal signals. It is also frequently offered in a variety of environmental contexts which affect its contiguity and the perceived contingency between the verbal element of the message and its consequences during learning. Species specific behavioural tendencies in the human trainers, and perceptual biases in the trainee have been shown empirically to affect performance; for example, short notes are more effective at eliciting motor activity during training. This paper will review the published scientific literature on this aspect of dog training together with work from the author's research group which has started to investigate the effect of kinesics – body language (especially oculesics – eye position and activity), vocalics – non-verbal vocal sounds, physical appearance and proxemics – the structuring of the space at the time of instruction on canine performance. The results suggest that all of these factors are important and that dogs do not generalise the learning of commands as readily as is frequently implied in many texts. This has obvious implications for both the welfare and training of dogs and deserves consideration in the training of other species.

‘Multisensory’ learning: The benefits of using sound in a visual learning task

Candy Rowe

Division of Psychology, Brain and Behaviour, University of Newcastle, UK

Animal learning theory is predominantly based upon experiments conducted in a single sensory modality. For example, Pavlov’s original experiments used dogs salivating in response to a simple bell after associating the sound with food. However, stimuli that animals have to learn about both in their natural environments, and in more modern environments such as those in our homes and farms, are often ‘multisensory’, i.e. they have properties in more than one sensory modality. There are abundant studies in humans, and a slowly increasing number in animals, that stimuli that are multisensory are learned more quickly than stimuli presented in just a single sensory modality. Therefore, there are important psychological interactions between visual and acoustic cues that could potentially make training animals to respond to visual stimuli more effective if sound is also used during training.

In this paper, I will first briefly review the potential benefits of using sound in visual training, and in particular how the timing of a sound alongside the visual stimulus influences the speed of association. I will also present some data from my laboratory experiments on chicks (*Gallus gallus domesticus*) that show how a sound presented after an incorrect response significantly improves birds’ abilities to discriminate between rewarding and non-rewarding visual stimuli. My aim is to raise awareness that animals are constantly combining information from several sensory modalities simultaneously, and suggest ways of using sound that make the most of their multisensory capabilities during training to a visual signal.

The reinforcing value of physical contact and the effect on canine heart rate of grooming in different anatomical areas

Paul D. McGreevy, Joanne Righetti* and Peter C. Thomson†*

* Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia
† Centre for Advanced Technologies in Animal Genetics and Reproduction (ReproGen), Faculty of Veterinary Science, University of Sydney, PMB 3, Camden, NSW 2570, Australia

The human-animal relationship frequently involves physical touch and this may have benefits for both participants. Grooming of horses at the withers has a calming effect on recipients, a phenomenon regularly used to reward horses. No studies on the effect on heart rate of grooming in different anatomical areas have been conducted in dogs, even though they are often given physical contact as a putative reinforcer.

Kenneled greyhounds (n=16) and guide dogs (golden retrievers, Labrador retrievers and their crosses, n=12) were stroked for 8 minutes using a grooming device in each of four areas in random order. These sites were selected on the basis of their being innervated by the dorsal branches of the spinal nerves, lateral branches of the spinal nerves, ventral branches of the spinal nerves and the caudal nerves. Heart rate measurements were taken every 30 seconds using an ECG recorder.

There were no observed differences in the mean heart rate based on the region of the body groomed (p=0.893) nor was any interaction of any other factor with area of the body significant (all p>0.5). However, there was a highly significant trend (overall reduction) over time (p<0.001), with greyhounds having consistently higher mean heart rates than guide dogs (p<0.001), and within greyhounds, groomed dogs had significantly lower mean heart rates than non-groomed animals (n=8, p=0.003). Males have consistently lower heart rates than females (p<0.001).

If having a reduced heart rate is a sign of reduced stress, then we can assume that non-invasive interventions that have this effect are reinforcing. The extent to which all dogs are reinforced by physical contact depends on their socialisation and familiarity with personnel. The intrinsic reinforcing value of physical contact for dogs seems likely to be outweighed by its effect as a secondary reinforcer.

The positive aspects of correct negative reinforcement

Andrew N. McLean

Institute of Land and Food, University of Melbourne, Parkville, Victoria, 3052, Australia

In the scheme of contemporary animal training, horse training is virtually unique because it relies on negative reinforcement (NR) rather than positive reinforcement (PR). Furthermore, horse trainers are largely unaware that they are using NR in training. Instead they believe in the benevolent nature of the horse and see their task in training as one of improving the balance and gymnastic ability of the horse – outcomes that emerge when the rider is similarly properly balanced. Under these conditions it is claimed the willing horse will perform its required manoeuvres. These factors raise several issues:

1. It follows that the absence of release of pressure, the release of pressure at the wrong times, the use of opposing pressures simultaneously and the absence of shaping procedures are central to the development of acute and chronic stress responses in horses.
2. Resultant conflict behaviours contribute to equine wastage statistics and include behaviours that are dangerous to horses and humans.
3. There is a need for research into the mechanics of NR because it is poorly researched compared to PR
4. When NR responses are installed correctly, only mild pressures need to be used, and results are obtained in few trials.
5. Many qualified animal trainers misunderstand NR and confuse it with punishment. They believe that PR has positive welfare implications and thus NR being 'negative', has negative welfare implications. So there is a clear need for horse trainers to understand learning theory and the principles that surround NR.
6. Horse trainers are isolated from advances in animal training. Therefore they increasingly seek knowledge and solutions from the growing number of 'horse whisperers' and unqualified 'horse psychologists'. This is potentially detrimental for the welfare of the horse and the need is urgent for universities throughout the world to become the knowledge bases for equitation science.

Variations in the timing of reinforcement as a training technique for foals (*Equus caballus)*.

Amanda K. Warren-Smith[*, ††], *Andrew N. McLean*[†], *Helen I. Nicol*[*] *and Paul D. McGreevy*[††]

[*] Faculty of Rural Management, University of Sydney, PO Box 883, Orange, NSW 2800, Australia
[†] Australian Equine Behaviour Centre, 730 Clonbinane Rd, Broadford, Victoria 3658, Australia
[††] Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia

Horses are used worldwide for a range of activities. Their usefulness and welfare in these pursuits are strongly influenced by their trainability which may be influenced by learning ability. Handling and riding horses can expose both handler and horse to a considerable risk of injury but this risk can be reduced by employing correct handling procedures that can facilitate learning in horses. As with all training, efficacy is influenced by consistency and timing. To determine the optimum timing of reinforcement, sixteen unweaned naïve foals of warmblood (WB), thoroughbred (TB) or warmblood x thoroughbred (WB x TB) breeding were randomly assigned to three treatment groups for testing on ten training days at approximately 14-day intervals. Pressure applied to a headcollar via a lead rope was used as the stimulus for each foal to walk forward and this was repeated until the foal had walked a distance of 8 m. The effects of three different latencies of negative reinforcement were evaluated by releasing the pressure immediately: as the first step commenced (Treatment 1); as the second step commenced (Treatment 2) and as the fourth step commenced (Treatment 3). Each foal's rate of learning was measured by the proportion of correct responses relative to the total number of responses performed. Behavioural responses exhibited (rears, strikes, head shakes, falls, sideways movement and hops) and the steps taken over the distance were also recorded.

The foals in Treatment 3 achieved significantly ($p<0.001$) more correct responses, indicating that the longer delay of reinforcement may enhance learning in foals. While some conflict behaviours were shown by all treatment groups, most were exhibited on training day 2. This was reflected in the analysis of composite behaviours performed, with training days 1 and 2 being different ($p<0.001$) from training day 3 and training days 1 - 3 being different ($p<0.001$) from training days 4 – 10. These changes indicate that learning occurred in all treatment groups.

The use of positive reinforcement training to facilitate husbandry practices and veterinary procedures at De Wildt Cheetah and Wildlife Centre, a pilot study

Helen E. Zulch[*] *and Graham Harman*[†]

[*] Department of Companion Animal Clinical Studies, Faculty of Veterinary Science, University of Pretoria, South Africa
[†] BVSc VI, Faculty of Veterinary Science, University of Pretoria, South Africa

Veterinarians working with captive wild animals occasionally need to perform procedures. Handling is difficult and often involves sedation or anaesthesia.

Animals were trained using positive reinforcement to co-operate with procedures at De Wildt Cheetah and Wildlife Centre to enter and remain calmly within a crush cage.

Two adult wild caught male cheetah (*Acinonyx jubatus*) and a pair of African wild dog (*Lycaon pictus*) were trained. A clicker was used as a conditioned reinforcer with food from their normal ration. Principles of successive approximation and targeting were used to teach behaviours.

Training occurred on 28 occasions and average training time per animal was under five hours. Both cheetahs would enter the crush, remain and leave calmly once the gate was opened. They would also tolerate spraying with water from a bottle.

Although the female wild dog entered the crush on a number of occasions, the extreme timidity of the male wild dog, meant the behaviour could not be completed. Training time was used to teach the female to approach a specific trainer when cued and to paw target (a behaviour which could be shaped to present a foreleg to access the cephalic vein), accept spraying with water and to stand stationary at a target for longer periods. A reduction in fear was seen in the male dog by the end of the training period.

After a demonstration of the learnt behaviours, the management at De Wildt Cheetah and Wildlife Centre agreed that training the animals to expedite handling was successful.

Interspecies enforcement: The construction and training of the patrol dog/K-9 officer team

Clinton R. Sanders

Department of Sociology, University of Connecticut, USA

This discussion is based on 15 months of ethnographic fieldwork conducted with a K-9 training program operated by a law enforcement agency in a northeastern state. During this period I observed 2 series of 15 week classes for novice officers and 1 5 week training sequence for experienced officers acquiring new dogs. In addition, I collected data at an all-day workshop for trainers and during 3 officer graduation ceremonies. Observational data and field conversations were supplemented by lengthy, semi-structured interviews with 5 experienced officers and 2 trainers conducted following the fieldwork phase of the research.

As is conventional with sociological ethnography, I did not enter the research setting having constructed a priori hypotheses to be tested. Instead, my research was directed at inductively exploring a situation in which interactions between humans and nonhuman animals and intense interspecies relationships were central components. As data collection and analysis proceeded in tandem, key issues and research questions were identified. These issues and questions then became the focus of systematic data collection.

The paper focuses, first, on what participants saw as the ideal characteristics of patrol dogs and the police officers with whom they were partnered. Next, I discuss the process by which dog/officer teams are constructed and the training process whereby dogs and officers come to learn to work in concert. Here I introduce the concept of 'militaristic behaviorism' to orient the discussion of the conventional approach to training. I then examine the key problems encountered in the training process– problems related to characteristics of both dogs and officers and issues of incompatibility within the dog/officer relationship. I conclude with a discussion of the issue of ambivalence central to the police officer's definition of the relationship between the officer and his or her canine partner. This ambivalence hinges upon the requirement that the patrol dog be either docile or aggressive depending upon the nature of the situation encountered.

A survey of the management of inter-dog aggression by animal shelters in Canada

Jane S. Orihel, Rebecca Ledger, David Fraser and Marina von Keyserlingk

Animal Welfare Program, University of British Columbia, Canada

Animal shelters are faced with the problem of ensuring animals released from their agencies do not pose a danger to the public. However, shelters are often constrained by available resources and access to scientific tools necessary to reduce aggression in surrendered dogs. To gain insight into the management of dogs with inter-dog aggression within shelters, a questionnaire was administered to members of the Canadian Federation of Humane Societies with shelter facilities for dogs (n=97). The questionnaire consisted of 24 open and closed questions on shelter protocols for managing aggressive dogs, and opinions on the effectiveness and feasibility of various treatments for reducing inter-dog aggression. Preliminary results (n=30) show that 73% of shelters admit dogs reported by owners as aggressive to other dogs. 57% indicated that inter-dog aggression was moderately common within their shelter. The most frequently cited management practice for aggressive dogs was humane destruction (90%), followed by rehabilitation within the shelter (40%). While over half of shelters (61%) reported performing rehabilitation, treatment descriptions were varied and unstructured, and respondents expressed uncertainty in the success of their program. Desensitization, counter-conditioning and positive reinforcement were perceived as likely to be effective at reducing inter-dog aggression, with less support for correction and distraction. The findings suggest that shelters may be more likely to provide rehabilitation for aggressive dogs rather than euthanasia if a standard program for modifying aggression were available. Therefore, there is a need for the development of a practical, scientifically validated rehabilitation program for reducing inter-dog aggression within the shelter.

Training laboratory-housed primates: A survey of current practice in the UK

Mark J. Prescott[*]*, Hannah M. Buchanan-Smith*[†] *and Anita Rennie*[†]

[*] Research Animals Department, RSPCA, Horsham, West Sussex, UK
[†] Department of Psychology, University of Stirling, Stirling, UK

Around 3,000 primates are used in about 4,000 scientific procedures every year in the UK. In addition, large numbers of primates, particularly marmosets, are held in UK breeding colonies. Primates in research and breeding establishments may experience a range of potential stressors, including physical and chemical restraint, venipuncture, injection, catching and cage-change. Training them to co-operate, using positive reinforcement training (PRT) techniques, is one means of significantly reducing the adverse impact of such procedures and husbandry routines upon them, especially when combined with appropriate socialisation, habituation and desensitisation. Furthermore, the additional time that staff spend with the primates, the need for individual recognition, and the fact that training is voluntary and based upon trust, means that the trainer develops a relationship with each individual animal which can be beneficial for animal welfare.

We surveyed use of training in half of UK establishments using and breeding primates, utilising a mixed-mode questionnaire. The study showed that most establishments trained their primates, for a variety of purposes, primarily in order to reduce animal suffering. However, training was not used as fully or as widely as it might be and there was considerable variation in training practice. There were a number of reasons for this, including both real and perceived constraints.

We conclude this paper with recommendations based on the survey findings, with respect to best practice, training techniques and staff training issues, with the aim of facilitating more efficient and wider application of PRT to refine further the use and breeding of laboratory-housed primates.

Can training zoo-housed primates compromise their conservation? A case study using Abyssinian colobus monkeys *(Colobus guereza)*

Vicky A. Melf and S Thomas

Paignton Zoo Environmental Park, Totnes Road, Paignton, UK

Training captive non-human primates (NHP) is advocated as an advantageous method/refinement to animal management. Training animals is considered beneficial as it makes the completion of necessary husbandry procedures operate more quickly, more reliably and the animals are considered to exhibit fewer signs of stress. Zoos hold many NHPs primarily to conserve them: animals either act as reintroduction candidates or participants of captive breeding programmes. It is suggested that the success of reintroduction efforts with NHPs may rest on the animals' behavioural competence (their ability to express behaviours that will enable them to survive in the wild). To maintain behavioural competence, zoos aim to exhibit NHPs that express natural (those expressed in the wild) behaviours and activity budgets; indeed deviations from these patterns are frequently interpreted as reflections of poor welfare and potentially poor reintroduction candidates. As training NHPs is generally accepted as a method for promoting welfare, an investigation of whether this practice influences the expression of general behaviour, outside of training, has not been investigated.

In this study we tested the hypothesis that the process of training a NHP species affects its general behaviour patterns, outside of training. A group of zoo housed Abyssinian colobus monkeys (*Colobus guereza,* n=8) were observed in blocks of 10 days periods. Behaviours were noted prior to training and for 4 further periods in the first 5 months after the implementation of training. These data were used to construct daily activity budgets and behavioural diversity indices, which were compared to investigate whether there were behavioural differences before and after training, or as the training process progressed.

The results from this study will be reported in the presentation.

Evaluation of stress response of horses in equine assisted therapy programmes

H. Marie Suthers-McCabe and Lynn Albano

Center for Animal Human Relationships, Virginia-Maryland Regional College of Veterinary Medicine, Blacksburg, USA

There is anecdotal evidence that animal assisted therapy is beneficial to the animal as well as humans, but very little credible scientific research has been performed to substantiate the benefits that are purported for the therapy animals. Even less scientific evidence has been published regarding the potential detrimental effects for animals used for therapy. In light of the growth of the equine assisted therapy industry, it is incumbent on us to evaluate the impact on the horses and to identify short and long-term effects that may result from their participation in this activity.

This exploratory study was designed to measure stress in therapy horses' pre and post therapy session. Plasma cortisol was used as physiological marker of stress. Each horse was also videotaped during the therapy session and tapes were reviewed for behavioral changes that may indicate stress. A correlation was sought between behaviors that are thought to be indicators of stress and physiological markers of stress. Four different programs in Florida volunteered to participate in this study. Two programs were for mental health patients and two programs were for the physically and/or mentally handicapped. Blood was drawn from a total of 28 horses (19 geldings, 9 mares) of approximately 15 different breeds, with 5 horses participating on two separate days for a total of 33 samples. The horse's ages ranged from 5 years old to 26 years old. Of the 33 samples, 3 horses were resting in their normal environment during the therapy session, 6 horses participated in the therapy session but were ridden by able bodied volunteers, and 24 horses participated in the therapy session with patients. Blood was drawn prior to a therapy session and again immediately after the session was completed.

The change in blood cortisol levels in the horse was measured using Coat-A-Count Cortisol radioimmunoassay. Statistical analysis was done using the PROC T-Test of the SAS system to perform paired T-tests. As a group, cortisol levels decreased by a mean of 24.07 nmol/L with a standard error of 5.993 and p=0.0003. When evaluating horses individually, there were only 6 horses, 5 ridden by patients and 1 ridden by a volunteer, who did show increases in blood cortisol levels.

The results indicate that 82% of these therapy horses are not experiencing significant physiological stress, suggesting that Equine Assisted Therapy is potentially good for the horse as well as for the human. These results may also have important implications in identifying those horses that experience a level of stress that may lead to 'burn-out' and associated health and behavioral problems. Further studies could help program operators identify horses that are unsuitable for therapy horses prior to accepting a donated animal, or identification of characteristics early in program participation that suggest a particular horse is getting stressed and needs different management or a different job.

Poster abstracts

Identifying factors which influence the time investment required for the positive reinforcement training of common marmosets

Verity Bowell[*], *Hannah Buchanan-Smith*[*] *and Rob Rumble*[†]

[*] Department of Psychology, University of Stirling, Stirling, FK9 4LA, Scotland
[†] GlaxoSmithKine,Stevenage,Hertfordshire,SG1 2NY

Positive reinforcement training (PRT) is increasingly being recognised as a means of improving the welfare of primates in laboratories. Through the use of PRT it is possible not only to reduce the time it takes to carry out routine husbandry or scientific procedures, but also to encourage a positive human-animal relationship. This in turn reduces the fear and distress experienced by the animals, leading to better scientific data and improved animal well-being. Most of the work on training primates in laboratories has focussed on macaques, with much less focus on marmosets. There is however an increasing amount of evidence that marmosets can be trained using PRT to cooperate with routine procedures. Despite this there is still a paucity of data on what affects the success of a training programme. We present data on how animal age, sex and temperament affect time investment and training success in a laboratory training programme for common marmosets (*Callithrix jacchus*).

The training alphabet soup: The use of LRS, DRO, DRI and DRA in a proactive training program

Sabrina Brando

Animalconcepts, France

When using positive reinforcement training with animals, a variety of techniques can be used. Since reinforcement is a technique for increasing behaviour, people often believe that employing it to decrease behaviour is inappropriate[1]. However, often the main goal of a reinforcement program is to reduce undesirable behaviour. A training technique called Least Reinforcing Scenario, or LRS[2], has been used to reduce the frequency of aggressive or undesirable behaviour that might result from the absence of reinforcement due to inappropriate or incorrect behaviours. Other techniques include Differential Reinforcement of Other behaviour (DRO) and Differential Reinforcement of Incompatible behaviour (DRI). When using DRO or DRI to reduce the frequency of aggressive or undesirable behaviour, LRS functions as a stimulus for calm and attentive behaviour, which is incompatible with aggressive or undesirable behaviour.

[1] Kazdin, A.E. 1989. Behaviour Modification in Applied Setting, pp 35, 337-338, 340-341,348-349. Wadsworth, Inc

[2] Scarpuzzi et al. 1991. Decreasing the Frequency of Behaviour through Extinction: An Application for the Training of Marine Mammals, Animal Training by Ken Ramirez p103-107

Animal management through training and enrichment

Sabrina Brando

Animalconcepts, France

Some of the most important aspects of animal training and enrichment are their ability to provide for the animals' overall physical and mental welfare. By providing exercise, mental and sensory stimulation, training and enrichment are cornerstones of good animal care, complemented by a veterinarian and nutritional program. Behavioral management methods as classical and operant conditioning, species specific enrichment programs, together with thorough recordkeeping, observations and continuous overall evaluation of these procedures have been successfully applied to a broad range of species. These methods can be implemented in different settings to prevent or address a variety of problems such as aggression, stereotypic and inappropriate behavior or improve socialization and enhance species specific behavior with a secondary positive outcome of creating a higher quality guest experience. Increased learning and activity, cooperation in voluntary husbandry, veterinarian procedures and daily management are a few of the benefits for the animals in our care. Above all, the realization of a training and enrichment program will increase keeper and animal relationships, and facilitate animal management and care, leaving more time for animal observation and interaction.

The 'Intermediate Bridge', a training innovation

Kayce Cover

Syn Alia Training Systems, 1719D Kingston Avenue, Norfolk, Virginia, USA

An intermediate bridge (IB) is a tertiary reinforcer, conditioned by association with a (terminal) bridge (TB), a secondary reinforcer, and food or other primary reinforcer. Whilst a TB signals an animal that it has correctly finished a behavior, an IB signals an animal that it is not yet finished, but is headed for success. Since 1990, the author has been developing and refining this technique to improve training times. Any type of signal can serve as an IB – gestural, visual, or tactile. The signal should be repeated in a steady stream at the onset of cue response to completion. For example, the spoken sound of the letter "X" has often been used in the IB - TB dyad. The IB is given as a stream of clipped syllables "x", averaging a rate of 7-8 signals per second, and terminating in a more emphatic, sharper "X" (TB) as the animal completes the trainer's request. This is denoted as: "xxxxxxxxxxxxX"[1]. The ceasing of the IB, prior to the TB signal, is used to indicate to the animal that it is moving away from the desired response, and allows it the opportunity to modify its behaviour. Professional trainers using the technique report a 25 - 75% reduction in training time and strong, sustained motivation in the animal.

The same IB signal can be used to teach behaviors, correct the breakdown of behaviors, prevent the breakdown of behaviors, increase the efficiency of proofing behaviors, and support the animal's response to challenges. It can be used to keep an animal from panicking, or to influence an animal to maintain a stance or attitude.

This technique has been successfully applied to a number of different training scenarios, and can overcome longstanding training impasses[2]. For example, using IB pigs have been trained to allow voluntary blood withdrawal from the vena cava, whilst free standing. The average training time per animal, including training individual animals to come on request, was approximately one hour. It has also been used to litter train horses, facilitate handling in zoo animals – eg flushing of an abscess in a rhino, and used to train heifers in the process by which they could indicate preference. Other examples of applications and use of the IB will be demonstrated.

[1] Cover, K. 2002. Syn Alia Series: Volume I: An Introduction to Bridge and Target Technique. Norfolk, Virginia , USA.
[2] Cover, K. 2002. Introducing the Intermediate Bridge. *American Animal Trainer Magazine*. Catherine J. Crawmer, New York. 3(4): 35-39, or click: *http://www.synalia.com/animal_training_bridges_intermediate.htm*)

Training of llamas and alpacas for animal assisted activities and therapy

Ilona Gunsser

Munich, Germany

During the last three years an increasing interest to work with llamas and alpacas in animal-assisted activities and therapies has developed. One of the reasons for this is the characteristic unobtrusive behavior and calming aura of South American camelids, to which many people respond very positively. An indispensable prerequisite for successfully working with these animals in the field of animal-assisted activities and therapies is a thorough understanding of their natural behavior and capabilities as well as their needs.

This poster explains the basics for keeping of llamas and alpacas, their typical behavior, including their acoustical and mimic expressions among their group members and in contact with other species. The education and handling of the animals is described in the various stages of their age, emphasizing possible problems with the animals as a consequence of mistakes committed by the caring persons. Furthermore the visible signs for stress or indisposition of the animals during the practical training and activities are described. As an important selection criterion, the animals intended to work in animal-assisted activities and therapy should pass an aptitude test, which is presented in detail. Finally some examples of the possible interaction in animal assisted therapy are presented.

What are the problems of the Belgian Military Working Dogs (MWD's)?

Anouck Haverbeke, Claire Diederich and J. M. Giffroy

Deptartment of Veterinary Medicine, University of Namur, Belgium

The Belgian Defence is concerned about the MWD's bite accidents. This research aims to improve the efficiency of the military dog handlers and their MWD, the security of all the military personnel and the dogs' welfare. A survey was conducted to identify the problems. Out of 430 questionnaires, 303 (70%) were returned from the dog handlers.

Problems regarding efficiency are dogs fear reactions provoked by the decoy or gunshot (8%) and disobedience (75% of the dogs don't loosen their grip on the person under attack even if the oral order is given). Security problems are shown by the high level of bite-incidents and aggressions: 26% of the dogs have bitten at least one person (89% were military personnel, 11% were civilian), 32% of the dogs are aggressive when another handler approaches and 22% are aggressive against the veterinarian. Welfare problems are indicated by stereotyped behaviours: dogs circle in their kennel (24%), lick their paw (6%) or run after their tail (2%).

These results show that a radical restructuring is needed to solve or at least to reduce these problems. New selection and dogs training processes and new recruitment and handlers formation systems are planned next year. Secondarily the question of post training and formation support has to be considered. The effects of this restructuring will be compared to the actual method (control group = 50 dogs) that is currently tested and whose results are not yet available.

Note: This study has been funded by the Belgian Ministry of Defence.

DIY for problem pets: A possible welfare issue

Tanya Jeffery[*]*, E. Anne McBride*[*] *and Garry Marvin*[†]

[*] School of Psychology, University of Southampton, New College, The Avenue, Southampton, UK
[†] School of Business, Social Sciences and Computing, University of Surrey Roehampton, 80 Roehampton Lane, London UK

The abundance of companion animal behaviour modification and training aids available on the open market offer the potential for misleading those desperate to deal with their animal's behaviour. The quality of product information is varied, as are the scientific facts explaining appropriate and effective use of the aid/s. Potential risks due to unintentional misuse remain high, with associated possibilities for compromising welfare. The result is that symptomatic elements of the behaviour receive prescriptive treatment, without identifying and engaging with the underlying cause of the behaviour.

Attitudes to such items are influenced by perceptions of both human - animal relationships and information obtained from perceived authority figures. The status given to these is questionable as the source may range widely from qualified behaviourists / trainers to other owners and retail assistants. There is a trend towards a 'quick fix' culture through purchasing products. This neglects the importance of building an in-depth understanding of the behaviour, and associated practical skills necessary to implement applied scientific approaches, which are fundamental to treatment.

Potential for damage through the misuse of dog training and behaviour modification devices has been documented, but as yet not extensively researched. This paper will consider four anti-barking devices; a spray, an ultra-sonic and a shock collar and an anti-barking muzzle as examples of products available on the open market. It will analyse the content of accompanying product literature and alternative sources of support available at point of purchase.

Their own terms: Techniques in humane caregiving of captive chimpanzees

Mary Lee Jensvold[*], *Sarah A. Baeckler*[†], *Roger S. Fouts*[*] *and Deborah H. Fouts*[*]

[*] Chimpanzee & Human Communication Institute, Central Washington University, Ellensburg, WA, USA
[†] Chimpanzee Collaboratory, 227 Massachusetts Ave NE, Suite 100, Washington, DC, USA

The relationships between captive chimpanzees and their caregivers are important ones and can affect the behaviors of the chimpanzees and their quality of life. This poster describes the approach to caring for chimpanzees used at the Chimpanzee & Human Communication Institute (CHCI), home to 4 chimpanzees who use the signs of American Sign Language. This approach is based upon cooperation, respect, and friendship, rather than obedience, fear, and domination and an understanding of the nature of chimpanzees. Operant techniques are never used. Instead, caregivers act as domestique - reliable, predictable, respectful, and trusted. Caregivers understand and integrate chimpanzee behaviors, blend into the group's social hierarchy, and create a routine that gives the chimpanzees choices. Several studies support the claim that this approach improves quality of life for the chimpanzees. The CHCI chimpanzees directed more aggressive behaviors towards humans rather than the other chimpanzees during chimpanzee conflicts. The overall wounding rates of the chimpanzees at CHCI were lower than those at a facility that used standard practice. The CHCI chimpanzees had more play and affiliative interactions and were more cooperative with caregivers as compared to two zoological facilities where caregivers showed dominant and condescending behaviors. Finally, this approach is compared to the approach used at a facility that trains chimpanzees for film and television. The use of domination and physical punishment at the film facility resulted in an agonistic and uncooperative relationship between the chimpanzees and their caregivers.

Intensively managed mating in Thoroughbreds: Effects of stallion and mare behaviour on conception

Mark Kennedy

Department of Life Sciences, Anglia Polytechnic University, Cambridge, UK

19 matings across 3 stallions were observed at a Thoroughbred stud. Before mating, mares were assessed for oestrus through their behaviour on presentation to a stallion and veterinary examination. For mating an upper-lip twitch, bridle and felt boots were applied to all mares, and stallions wore bridles. One handler controlled the stallion, another restrained the mare, and a third assisted intromission. Lutenising hormone was administered after mating in an attempt to ensure ovulation.

Ultrasound scanning at 16 days post-mating identified 10 successful conceptions. 2 of 5 matings to stallion A resulted in conception, as did 3 of 9 to stallion B and 5 of 5 to stallion C. This suggests an effect of stallion on success of breeding.

There was a non-significant trend for increased clamping of the tail over the perineum where mares did not conceive (p=0.079, mean frequency = 2.2 vs. 1.0, Mann-Whitney U test), suggesting that they were not in full behavioural oestrus. Stallions exhibited a significantly greater latency to ejaculation after the final mount where mares did conceive (p<0.05, mean and standard deviation = 18.3s ± 2.7 vs 16.0s ± 2.8, Mann-Whitney U test). This may be due to longer stimulation of the mare's reproductive tract facilitating successful conception. There was no significant difference across stallions in latency to ejaculate after the final mount.

Low conception rates for matings to 2 stallions, the suggestion that some mares were mated when not in full oestrus and the observation that a longer latency to ejaculation was related to greater success of conception, indicate that improved training rather than restraint may be beneficial in Thoroughbred breeding.

How reliable is the behaviour information provided by relinquishing dog owners for determining rehabilitation needs required for successful adoption?

Rebecca Ledger[*]*, Jacqueline Stephen*[†] *and Marina von Keyserlingk*[*]

[*] Animal Welfare Program, University of British Columbia, Vancouver, British Columbia, Canada
[†] Design For Animal Welfare, Brunel University, Egham, Surrey, UK

Rescue shelters routinely receive unwanted dogs from members of the public. Most owners are interviewed at the time of relinquishment in order that shelters can determine each dog's rehabilitation and training needs. However, shelters express concern that owners occasionally misrepresent behaviour problems in order to protect the dog from humane destruction or to justify relinquishment. This study seeks to assess the usefulness of reports from relinquishing owners by comparing their insights with those provided by new owners.

The behaviour of 30 dogs (18 male) admitted to Battersea Dogs' Home was rated by their previous owners at relinquishment and by their new owners five weeks following adoption. The prevalence of 20 situation-specific behaviour problems was compared between successive households using Spearman rank order tests. Seven significant, moderate correlations were found ($p<0.05$ with adjustments for multiple analyses): fear towards unfamiliar people (rho=0.474), fear towards the vet (rho=0.404), aggression towards unfamiliar people (rho=0.349), anxiety when alone (rho=0.699), chewing furniture when alone (rho=0.463), anxiety at the vets (rho=0.536) and sexual mounting (rho=0.429). Items relating to fear (towards dogs, loud noise), aggression (dogs, people, vets), over-excitement (familiar and unfamiliar visitors), training (sit, stay, come, heel), stealing food and barking, were not correlated significantly between successive homes.

The information provided by relinquishing dog owners is of some value when determining which behaviour problems are likely to require rehabilitation in a new home. Disparity is likely to arise from environmental factors affecting the expression of behaviour between households, and differences in how behaviour problems are reported.

Human-animal interactions: A factor in dog bites?

Locksley L. McV. Messam[*], *Philip H. Kass*[†], *Bruno B. Chomel*[†] *and Lynette A. Hart*[*]

[*]School of Veterinary Medicine, UC Center for Animal Alternatives,
University of California Davis, USA
[†] School of Veterinary Medicine, Department of Population Health and Reproduction,
University of California Davis, USA

The role of human-animal interactions in predisposing human beings to zoonotic or other animal-associated disease has not been studied. The specific aim of this study is to compare incidences of dog bites modeled as a function of a specific set of manifestations of human-animal interactions, in an attempt to identify those most closely associated (positively or negatively) with dog bites among pet owners in urban settings. The research is multicentered, taking place in three distinct cultural environments represented by the USA and Jamaica.

In each location, two retrospective cohort studies are being performed on the following populations: a) children between the ages of 5 and 15 years, living currently with dogs and b) family dogs taken to veterinary clinics. In each case the outcome in question is a dog-bite. Participants are drawn from the clientele of veterinary clinics in San Francisco and Kingston. Risk factor information is collected in the waiting rooms of the clinics by interviewer administered questionnaire, from clients serving as proxy respondents.

Data collection revealed marked differences in human-dog interaction patterns between the two countries, in particular as it pertained to reasons for having the dogs and the average number of hours per day that the dog spent inside the owner's house. Analysis shows that in Jamaica, of 698 eligible dogs, 129 (18.5%) had bitten someone in the last two years while in the USA, of 498 eligible dogs, 135 (27%) had bitten in the same time period. The crude relative risk of a dog in San Francisco biting compared to one in Kingston was 1.47 with a 95% Confidence Interval of 1.43 – 1.5. Of 238 eligible Jamaican children, 21 (9%) had experienced a dog bite in the last two years while in the USA, of 60 eligible children, 8 (13%) had been bitten in the same time period. The crude relative risk of a San Franciscan child being bitten compared to a Kingstonian child was 1.67 with a 95% Confidence Interval of 1.23 - 2.27. The results show that patterns of family-dog interaction vary between comparable populations of different countries and might explain differences in dog-bite incidence among dogs that are well taken care of. This has implications for the development of dog-bite prevention strategies, as they may require modification from location to location based on differences in the specifics of the established norms for human–dog interaction.

Selective stress reduction for shelter dogs

Jacqueline Stephen[*]*, Rebecca Ledger*[†] *and Marina von Keyserlingk*[†]

[*] Design For Animal Welfare, Brunel University, Egham, Surrey, UK
[†] Animal Welfare Program, University of British Columbia, Vancouver, British Columbia, Canada

A recent audit of shelters noted that almost two-thirds of dogs exhibited potential behavioural indicators of stress within the first two weeks in kennels[1]. A common dilemma for shelter staff is to decide which dogs are most likely to become stressed, so that their limited resources can be targeted at those individuals that are most susceptible.

A study is underway that attempts to use a range of behaviour tests to predict which dogs are most likely to become stressed in the short and long term. The behaviour of 96 dogs in a rescue shelter was tested on day 2 and then monitored daily throughout their stay in kennels. Preliminary results indicate that responses to behaviour testing on day 2 are associated with later behavioural signs of stress. For example, dogs that panted excessively when an unfamiliar female tester entered the kennel were likely to pant excessively 2 weeks later (χ^2=7.74, p<0.05). Those dogs that jumped up on the tester were likely to display signs of frustration during the second week (χ^2=5.41, p<0.05) by pacing around their kennels.

Dogs that display high levels of anxiety during initial testing may benefit most from gentle handling, desensitisation and socialization. Dogs that exhibit high levels of exploration and activity during initial testing may benefit most from obedience training, agility and environmental enrichment. The implications for this selective management technique are that the incidence of stress will decline, which in turn will expedite the re-homing of shelter dogs.

[1] Stephen, J.M., Ledger, R.A. & Stanton, N. 2002. Individual differences in the behavioural signs of stress in kennelled dogs. *36th International Congress of ISAE*, 6-10th August, Netherlands.

An educational intervention on pet dog sterilization and retention in Taiwan

Hsin-Yi Weng, Lynette A. Hart, Bruno B. Chomel and Philip H. Kass

Graduate Group in Epidemiology, University of California, Davis, USA.

Stray dogs are currently Taiwan's most serious animal-related problem. Besides suffering from poor health while living on the streets, many strays, once impounded, suffer subsequent inhumane treatment leading to their deaths. Stray dog overpopulation in Taiwan is a complex web of multifaceted problems for which there is no simple resolution. Abandonment of pet dogs and litters, however, is the most important contributing factor, and preventing dog owners from abandoning their dogs is at the root of alleviating the overpopulation problem.

The goal of this randomized study is to evaluate the effect of an educational intervention regarding canine behavior, pet dog care, and sterilization on the proportions of pet dogs sterilized and retained in Taiwan. One hundred twenty-six dog owners were recruited from fifteen participating clinics in Taiwan. Sixty-seven of them were randomly assigned to the interventional group and received an educational booklet regarding pet dog care, while the other fifty-nine served as controls. Veterinarians were blinded to the assignments. A self-administered questionnaire was completed by each owner at the visit to the clinic. Two telephone interviews were conducted three and twelve months after the recruitment to follow-up on the current status of the dog's ownership and sterilization status, and changes in owner knowledge and attitudes. The effects of educational intervention on sterilization and retention were calculated using statistical models of risk.

The study is in progress till March 2005. One hundred twelve dog owners were successfully interviewed and no significant finding on the effects of education was observed so far.

The effect of different methods of successive approximation on the initial stages of target training using a clicker

Bethan Whitham and Daniel S. Mills

Animal Behaviour, Cognition and Welfare group, Department of Biological Sciences, University of Lincoln, UK

Little scientific attention has been paid to the effects of different successive approximation techniques on a horse's ability to complete increasingly demanding tasks. The aim of this study was to quantify the effect of two methods of successive approximation or 'behavioural shaping' on the rate of learning to touch a target in a group of twelve horses as part of a 'clicker training' programme. Twelve horses were trained in an increasingly demanding reversal discrimination task using two circular wooden targets. In method A, only responses that reached the criterion were reinforced. In method B, if a particular sequence of responses did not reach criterion, then the horse was allowed to 'go back a step' and was reinforced for a touch that did not meet the current criterion. A Wilcoxon Signed Rank Test found no statistical difference between the two methods in terms of the number of rewarded touches, the number of sub-criterion touches to the correct target or the time taken to complete the task. However, horses touched the wrong target on significantly fewer occasions when method B was used ($W=56$, $p=0.045$). This finding was reinforced by the results of a GLM ANOVA examining the effects of method and horse on the (+1 natural log) transformed data which were suitable for parametric analysis ($F^{11,1}=5.96$, $p=0.033$). These results provide scientific support for practical recommendations aimed at improving equine training techniques.

Training and welfare implications for companion animals

Mary W. Wood and Lynette A. Hart

UC Center for Animal Alternatives, School of Veterinary Medicine,
University of California, Davis, USA

Companion animals suffer abandonment, relinquishment, and harsh treatment due to lack of awareness regarding appropriate care of animals. The owner requires an education in the basic behavior of the newly acquired pet, while the pet benefits from clear, patient training for learning what is expected. Current authoritative and scientifically-based information is not easily identified or accessible. Many chronic welfare issues could be addressed by employing improved strategies for animal care, for educating pet owners, and for assisting them in pet selection and training; most people lack this essential information. Concerned owners as well as members of the general public could benefit from timely and accessible information concerning care and training of pets. More awareness of the commonly experienced behavior problems and appropriate methods of training would improve the husbandry, management and welfare of these pets.

To address the need for scientifically reliable information on the training and behavior of companion animals, a web-based resource will be presented. This resource will offer links and annotations to reliable sources and search templates for accessing refereed research literature pertaining to the training and welfare of dogs and cats. The resources will be accessible through a central website: *http://www.vetmed.ucdavis.edu/CCAB/training.html.*

The search templates consist of stored search strategies on relevant topics such as separation anxiety and aggression, allowing the user to conduct new searches in real-time. The templates are embedded in freely-available databases, and links to full-text information will be provided when available. The gateway will also provide links to relevant organizations and training facilities.

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