



(74), squirrels (60) with less than 20 reports of other items. 66% of dogs scored tended to chase two or more classes of object.

Owners were asked how they tended to reward their dog (n= 502). 286 used food, 216 verbal praise, 215 physical contact e.g. patting or stroking and 102 social interaction e.g. play, fussing etc. By contrast 373 used verbal forms of admonishment, 163 admitted using physical punishment, 74 instructive reprimands e.g. "go to bed", 43 forced isolation and 13 threatening gestures.

### Aggression

Owners were not asked directly if their dog was aggressive, but when they tended to growl snap or bite. The results for responses relating to aggression in the home are summarised in table 2.

**Table 2. Target of aggressive behaviour of dogs and their response to owner intervention .**

Target	No of dogs (%)	Stops when told	Stops when given attention
Adult male household members	45 (6.2)	39	30
Male children in the household	22 (3.0)	19	21
Adult female household members	31 (4.3)	27	22
Female children in the household	18 (2.5)	17	15
Familiar adult male visitors	48 (6.6)	36	40
Familiar male child visitors	25 (3.5)	21	19
Familiar adult female visitors	41 (5.7)	32	37
Familiar female child visitors	30 (4.2)	24	24
Unknown adult male visitors	233 (32.3)	205	200
Unknown male child visitors	106 (14.7)	96	91
Unknown adult female visitors	191 (26.4)	165	164
Unknown female child visitors	108 (14.0)	98	93

132 (18.3) dogs would reportedly appear aggressive at other times in the home: in the presence of other dogs (43), when playing (41) and a minority of other occasions (e.g towards specific people, when punished etc. Overall, 48% showed aggressive behaviour in 3 or more of the above contexts. 171 dogs were said to growl to keep possession, but 133 would stop when told to. 75 would snap, bite or growl to protect their food bowl. 120 growled and 74 snap or bite to obstruct people from doing things; 78 would growl to stop people going somewhere and 28 snap or bite at this time. 93 dogs had attempted to or succeeded in biting an adult male, 46 a male child, 57 a female adult and 40 a female child and 201 another dog, of whom 87 of the targets were male and 66 female. 79

attacks on other animals were reported, 27 on cats, 20 on livestock, 18 on wild mammals, 9 on horses and the remaining on wild birds and other pets.

### Other behaviours

91% of animals had been known to soil in the house since they had been supposedly housetrained. 161/123 (22.3% dogs) defecated, but only in the owner's absence. 90/79 (12.5% dogs) urinated when excited and 27/17 (3.7% dogs) small spots when rolled over. 67 (9.3%) dogs from 62 households would reportedly mount their owner's legs, 50 would stop when told and 42 if given some other form of attention. 40/38 would try to mount furnishings, with 31 stopping when told and 32 if given attention.

433 (86.2%) households reported that their dogs engaged in some form of attention seeking behaviour. The most commonly described tactics were: nudging (149), pawing/scratching (121), vocalising (112), 74 jumping up, 66 staring at the owner and 61 presenting an item to the owner. Overall, 58.4% engaged in 3 or more attention seeking behaviours.

### Grouping of behaviours

Many of the item responses were classified according to their demographic characteristics and into groups of "behavioural signs" relating to obedience, tendency to chase, general activity, attention seeking behaviour, vocalisation, urination, housoiling, aggressivity, owner absent problems, submissiveness, sexual behaviour, coprophagia, fussy eating, greediness and unusual appetite. Simple correlations between these were then determined. Categories were recoded into high and low score subsets centred on the median values for the category in order to determine their significance and examine potential higher order relationships. This revealed only significant pairwise associations. These were: activity and attention seeking (positive), activity and aggression (positive), activity and chasing (positive), activity and obedience (negative), obedience and housetraining (negative), housetraining and chasing (positive), housetraining and aggression (positive).

Average linkage cluster analysis was then used to assess the grouping of behaviour of individuals in single dog homes (n=356). Within the 20 clusters obtained by average linkage, there were some reasonably clear inclusive features for some of the clusters. The first group (with 17 members) consists of individuals who fell below the median level of obedience but were above the median score for activity. They also tended to be attention seekers with a fussy appetite and were more aggressive than typical. In the second group (n=6) individuals were obedient but highly active, housetrained dogs with a greedy appetite and tended to show redirected sexual behaviour. They also tended to be aggressive. In the third group, (n=5) individuals were active chasers with a greedy appetite and a tendency to eat unusual things. They did not show submissive urination nor tend to be aggressive. In the fourth group (n=61) dogs were of above median activity without other consistent defining features. In the fifth group (n=13) members were generally housetrained but disobedient with low activity scores and an absence of submissive urination. The sixth group 6 (n=12) consisted of dogs that tended to be both active and aggressive in a large number of contexts. The seventh group defined (n=162) appeared to represent a population of dogs with no exceptional group features and this variation may represent the central "norm". In the eighth group (n= 46) the main defining feature of individuals was their high level of aggressivity with no consistency in any

other dimension. In the ninth group (n=3) very active, disobedient, aggressive dogs who tended to chase were clustered. In the tenth group (n=8) individuals tended to be characterised by disobedient, aggressive dogs who tended not to be active or chase. The remaining clusters grouped small numbers of dogs and individuals with above median aggression.

When asked to evaluate their dog's behaviour, 260 (51.8%) of owners reported their dog had an annoying habit (primarily related to vocalisation or obedience problems) and 324 (64.5%) described endearing habits (primarily affectionate behaviours directed towards the owner, greeting behaviour and obedience). 127 (25.3%) of owners described at least one behaviour as a problem. The most common of these were aggression and predation (48), 27 related to obedience and control, 21 to barking and vocalisation, 13 to overexcitability / activity level and 11 to nervousness.

### Discussion

These data not only provide a benchmark for the norm but also provide an initial suggestion at the potential groups of behaviours which may commonly be seen in pet dogs. The norm provides a point of reference for the prevalence of problem behaviours relative to those for whom assistance is sought. Such data also provided an initial basis for advising potential dog owners on what behaviour they might expect from their pet. The overall impression gained from the data is that the majority of dogs appear to show more difficulty in completely adapting to the domestic environment than is generally recognised, as evidenced by their behaviour. Thus even dogs without overt manifestations of stress which are reported to be a problem by their owners, may be struggle to cope. Further research is clearly needed into the psychological needs and limits of the domestic pet dog. The discrepancy between what dogs actually do and what is reported to be a problem is also highlighted in this work, with owner tolerance being central to this. Thus only 27 owners reported an obedience problem despite the widespread prevalence of disobedience, and whilst 348 dogs were reportedly easily overexcited only 13 owners considered this a problem; 39 animals were reported to chew furnishings in the house but only 11 owners complained of a destructiveness problem and although 67 dogs mounted their owners only 8 reported a problem related to inappropriate sexual behaviour. Greater awareness of these findings may also help guide the development of rational preventive strategies which will help optimise canine welfare and reduce the risk of surrender to rehoming centres.

### References

- Askew H R 1996 Treatment of Behavior Problems in Dogs and Cats, A guide for the small animal veterinarian. Blackwell Science, Oxford
- Landsberg G, Hunthausen W, Ackerman L, 1997 Handbook of Behaviour Problems of the Dog and Cat. Butterworth-Heinemann, Oxford

### Acknowledgements

The authors would like to thank all of the students involved in gathering the data for this work and Ceva Animal Health for sponsoring the work.

Key words: activity, adaptation, aggression, dog, survey.

### Daniel Mills

Daniel Mills graduated from Bristol University in 1990 before going into small animal and then mixed practice. In 1994, he joined De Montfort University where he established the animal behaviour referral service in the university to support their animal science programmes. In 2001, the Department transferred to the University of Lincoln, and he is now based at their Riseholme Campus. He has written one book and co-edited three others including the new BSAVA Manual of Canine and Feline Behavioural Medicine and he frequently publishes articles in both the popular and scientific press. His research group has been at the forefront of the development of the use of pheromones in clinical practice and other novel treatments of behaviour problems in companion animals. His other research interests include psychopharmacology, psychobiological models of behaviour problems and animal training and cognition. Daniel Mills is the first vet to in the United Kingdom to be recognised as a Specialist in veterinary behavioural medicine by the RCVS.