09

Can we accurately identify 'amicable' dogs?

T. KING[1], L. MARSTON[1], P. BENNETT[2]

(1) Anthrozoology Research Group. Animal Welfare Science Centre. Monash University, Melbourne, Australia. (2) School of Psychological Science, La Trobe University, Bendigo, Australia.

Introduction

Dog ownership is not without its problems. Dogs and their owners face issues associated with increasing urban consolidation, busier lifestyles and government legislation which restrict pet ownership. Reduced access to off leash areas and tighter dog laws all can impact negatively on dog owners. Furthermore, dogs which were once bred to undertake a specific purpose are now expected to fulfill a different role, which may present particular adaptive challenges. For example, dogs specifically bred to herd livestock for hours per day and routinely bark to perform their role of sheepdog, are now expected to remain quiet, calm and well behaved all day, often in small apartments, while their owners are absent for extended periods of time. It is obvious that inappropriate dog-owner matching has great potential to cause problems.

When dogs exhibit behaviour that is unacceptable to their owners or the wider community, the relationship between dog and owner can break down (Serpell, 1996). This can cause significant distress to owners and result in dogs being surrendered to pounds or shelters, where their problematic behaviour often gets worse (Hewson et al., 2007) and where about 30% will be euthanased (Marston et al., 2004). Identifying dogs at risk of being relinquished or abandoned would support the introduction of strategies designed to reduce these statistics. In addition, the general community needs to be protected from dogs that cause disruption or injury to people and/or other animals. Suffering associated with dog-bite injuries is significant, with over 482 hospital admissions annually in Victoria alone (Cassell and Ashby, 2009). Factors such as these mean that Animal Management Officers and welfare shelters have historically been primarily interested in identifying dogs which are at risk of abandonment or which are dangerous to humans and/or other animals in the community. However, there are no reliable objective tests whereby individual dogs can be assessed to determine their level of dangerousness. In addition, there are significant ethical constraints against provoking dogs to the extent required to ensure that they are safe in all

situations, and incorrectly labeling certain dogs or certain dog breeds as more dangerous than others on the basis of invalid tests is both inappropriate and of limited value (Schalke et al., 2008; Cornelissen and Hopster, 2010). It is not an accurate method for protecting members of our community, nor does it help promote a positive relationship between humans and dogs. It is critical that dogs and humans live together harmoniously. An alternative approach may therefore be to develop and utilise assessments which can accurately identify dogs which exhibit desirable behavioural traits. In conjunction with community education about dog behaviour, a scientifically designed canine behaviour assessment for desirable traits would be of great benefit. This paper will discuss the development of the Monash Canine Amicability Assessment (MCAA) in detail and preliminary results of the assessments reliability and validity will be presented. Lastly, the benefits of being able to accurately identify dogs who exhibit desirable behaviours will be discussed.

Which behaviours should be measured?

As previously stated, dogs are primarily kept as human companions. Hence, it is imperative that we identify which canine behaviours are important to ensure this role is a positive one. A survey was conducted in Australia to determine this. Data were collected from 877 participants (79.8% female) aged 18 to 82 years (mean = 34.3, SD = 14.5). The most important behavioural characteristics were; dogs being safe with children, fully housetrained, friendly and obedient. (King et al., 2009).These behaviours comprise a canine personality trait identified as 'amicability' (Ley et al., 2009). The results indicated that, overall, the majority of the Australian public prefer a dog which is amicable.

Not surprisingly, dogs which pose a danger or threat to the public are generally not considered desirable and animal management officers are routinely expected to identify, and deal with, these animals. Often the decision to declare whether a dog is dangerous is based on what the dog has already

done and also what it looks like. This method is problematic and poses a risk to animal management officers and the general public. Therefore, the purpose of this study was to develop a behaviour assessment, aimed at measuring the canine personality trait amicability, using a systematic scientific approach. Presumably, if it is possible to accurately identify amicable dogs then it could be possible to identify those which are dangerous and do not exhibit behavioural characteristics that the majority of the community consider desirable. To make sure the assessment is valid and reliable a number of important steps need to be undertaken. The requirements to develop a valid and reliable canine behaviour assessment were discussed at AIAM 2009 and 2010 so this paper will focus on the data collected and the results obtained after evaluating the reliability and validity of the Monash Canine Amicability Assessment.

Monash Canine Amicability Assessment (MCAA)

The MCAA protocol was designed using a modified version of Ainsworth's Strange Situation Test. It is a standardised protocol which measures a dog's behaviour in response to a choreographed sequence of events, involving meeting an unknown person and being separated from and then reunited with the owner. The assessment consists of sub-tests where the dog is both on and off lead in the presence, then absence, of the owner. A person who is unknown to the dog is present throughout and attempts to interact with the dog during the assessment. The test duration is approximately 10 minutes. For the purpose of this study all assessments were held outdoors in a portable wooden-walled room measuring 6.0m (L) x 3.6m (W) x 2.4m (H). Two chairs were placed in the room for the dog owner and stranger. Gridlines were marked on the ground using chalk spray and four CCTV cameras were mounted, one on each wall, to video record each dog's behaviour.

PILOT STUDY

The pilot study process was explained in full at AIAM 2010 and was conducted to determine if the assessment protocol needed to be modified. Twelve dog/owner pairs participated and video footage of the behaviour assessments were viewed by a panel of dog behaviour experts. A few changes were made to the assessment protocol and a number of potential behavioural measures were identified.

MAIN STUDY

PART A: Two hundred dogs, aged at least 18 months of age, and their owners, who had owned their dog for at least 12 months, participated in the study.

PART B: In addition, fifteen puppies, aged between 6-8 months were recruited and tested. These puppies were tested again once they reached adulthood (18 months).

PROCEDURE

Participants were recruited via online forums, email, word of mouth, print media, radio and from distribution of fliers at a range of dog-related events.

Prior to accompanying their dog through the behaviour assessment, owners completed four questionnaires. These asked questions about: the dog's behaviour, the dog's personality, the relationship between dog and owner as well as owner demographic questions. The validated questionnaires consisted of the Monash Canine Personality Questionnaire (MCPQ-R) (Ley et al., 2009), Monash Dog Owner Relationship Scale (MDORS) (Dwyer et al., 2006) and Canine Behaviour Assessment and Research Questionnaire (CBARQ) (Hsu and Serpell, 2003).

Testing conditions were standardised as much as possible. Each dog wore a flat collar and had the same lead attached. The testing procedure was instructed to participants by means of pre-recorded voice prompts. Each assessment was video recorded and behavioural data were collected by viewing footage at a later date using interval sampling every 5 seconds. Orientation, location, locomotion, vocalisation, tail wagging, frequency of human contact and posture of the dog were measured. In total 209 behavioural variables were measured across the four episodes of the assessment.

Twenty dogs were retested approximately one month after their initial assessment to examine test re-test reliability.

Data analyses

Two dog behaviour experts who had experience evaluating a range of dog breeds were asked to watch each dog's video footage of the behaviour assessment. The experts were asked to independently rate each dog on a scale of 1 to 6 (where 1 = doesn't at all describe the dog and 6 = really describes the dog) for the five attributes (friendly, relaxed, easy going, non aggressive and sociable) that constitute the canine personality trait, amicability. The scores were collated and an overall amicability rating was given to each dog. These scores were then compared to the amicability rating owners had given their dog.

The next stage of the analyses involved reducing the data set to a more manageable number of behavioural variables and determining which of those variables best predict the construct, amicability. After examining distribution graphs, variables which

had little or no variability were eliminated as they provided no information to distinguish between each individual dog. In addition, variables which had strong correlations with each other were combined as it indicated they were measuring the same thing. Forty-nine behavioural variables remained and regression and correlation analyses were conducted to determine which measures best predict amicability.

Results

EXPERT RATINGS OF AMICABILITY

The first question to answer was 'Can experts agree on how an amicable dog behaves?' After conducting correlation analysis we found there was high agreement between experts (r = 0.84). What this tells us is that the experts are reliably measuring the same thing and are rating dogs similarly. We combined the expert's ratings to get a mean amicability score of 78.6 out of a possible 100.

EXPERT VERSUS OWNER RATINGS OF AMICABILITY

The mean amicability score that owners gave their dog was 82.2 out of a possible 100 rating. (n = 204, SD: 14.8) while the mean amicability score experts gave was 78.6 (n = 207, SD: 13.5). Therefore, owners tend to perceive their dogs to be more amicable than what experts believe.

We also found that owners don't just tend to rate their dogs more highly than experts, but they also rate them differently – dogs who get high scores from owners don't necessarily get high scores from experts. When correlation analyses were conducted comparing the expert and owners rating we found that there was a very weak correlation indicating that there is a low level of agreement between owners and experts when it comes to rating a dogs amicability. (r = 0.19)

Possible explanations for these results could be that the owners are biased. They think their dog is more friendly, relaxed, sociable, non aggressive than it really is or perhaps they have nothing to compare it to. Most of the participants had owned 2-3 dogs over their entire lifetime and therefore would have had minimal experience with a large number of dogs or dog breeds.

Since there was a reasonable level of variability in the sample, with dogs receiving a range of amicability ratings, it is possible to see how these scores correlate with the more objective measures. As owners are potentially biased, we used the expert's amicability ratings as a measure for which we could determine which behaviors exhibited in the assessment best predict amicability.

Which behaviours best predict amicability?

Correlation analyses of the 49 behavioral variables against expert amicability ratings identified 10 which correlated moderately well with expert amicability ratings. These variables were then used to conduct a regression analysis.

The regression analysis determined which of the behavioural variables best predicted 'amicability'. The results indicate that seven behavioral variables explain 56% of the total variance in expert rated amicability. Overall, five of these variables made a statistically significant contribution.

- Average percentage of time in contact with stranger (ß = 0.43)
- Average percentage of time spent trotting or cantering (ß = - 0.34)
- Average percentage of time low body posture (ß = - 0.19)
- Percentage of time whining when owner absent (ß = - 0.11)
- Percentage of time located at the door when owner absent (ß = - 0.11)

Of these variables, "average percentage of time spent in contact with stranger" made the largest contribution (ß = 0.43) and was positively correlated with expert amicability ratings. The remaining behavioural variables were negatively correlated. For example, dogs who were rated as highly amicable spent more time in contact with the stranger, less time trotting and cantering, less time exhibiting low body posture throughout the MCAA. Highly amicable dogs also spent less time whining or standing by the door when their owner had left the room.

Correlation analyses were also conducted on the questionnaire data owners had provided, with the behavioral variables and the amicability ratings. Dogs who scored *low* on amicability, scored *high* on stranger directed fear and stranger directed aggression (*r = - 0.35, n = 204 p < 0.0001 and r = - 0.27, n = 192, p < 0.0001*). Dogs who scored *high* on stranger directed fear spent *less* time in contact with the stranger and *more* time with a low body posture (*r = - 0.26, n = 204, p < 0.0001 and r = 0.39, n = 204, p < 0.0001*) and dogs who scored *high* on excitability spent more time trotting and cantering (*r = 0.31, n = 204, p < 0.0001*). All this information supports the notion that our assessment is likely to be measuring amicability.

Evaluating the reliability and validity of the Monash Canine Amicability Assessment

The preliminary results presented in this paper indicate the MCAA has some validity to it but further analyses of data is required before any conclusions

can be drawn on the assessment's capabilities. The MCAA has been shown to have good inter and intra-observer reliability. Test-re-test reliability is currently being evaluated.

Conclusions

Any form of assessment which aims to measure animal behaviour must be developed using a systematic and scientific approach to ensure that it is measuring the desired behaviour in a valid and reliable manner. Animal management officers are faced with the regular duty of determining whether or not a dog is dangerous and therefore whether it can exist safely in the general community. Rather than focusing on trying to only identify dangerous dogs, it may also be worthwhile to identify dogs which are amicable. The Monash Canine Amicability Assessment could be a tool which is used by councils to identify amicable dogs. Preliminary data indicates that certain behaviors may predict the amicability of adult dogs.

The ability to accurately assess amicability in dogs has many applications. As genes, in part, control behaviour, potential breeding dogs could be assessed on their level of amicability. Breeders who specifically aim to produce dogs which are primarily human companions and which exhibit friendly, relaxed, sociable behaviours, could be encouraged to select breeding stock which rate highly on their level of amicability. This could be conducted in addition to educating the general public about dog behaviour and training. By producing dogs which are amicable it could be expected that fewer inherently dangerous dogs would be bred, which would then, in turn, reduce the number of dangerous dogs which exist in the community. Accurate information which can be obtained on an individual dog's behaviour would assist with better dog-owner matching. This would mean that people are better informed about the types of dog that would be suitable for them and their family's lifestyle. Rather that restricting breed or breed types, the focus would be on an individual's behaviour. In addition, an accurate assessment could provide more information about a dog's behaviour prior to rehoming from a welfare or rescue shelter. It could also help those in the dog training industry who need to measure a dog's behaviour prior to a training program and then at the conclusion of that program to determine its effectiveness.

These few examples highlight the benefits of being able to accurately measure amicable dog behaviour and therefore identify dogs which possess the attributes associated with this trait. It is anticipated that the Monash Canine Amicability Assessment (MCAA) will provide the first scientifically validated test of canine amicability, which can then be used by trained assessors to evaluate dogs in a transparent and legally defensible manner.

References

Cassell, E., Ashby, K., 2009. Unintentional dog bite injury in Victoria: 2005-7, Hazard, Monash University, Accident Research Centre, pp. 1-24.

Cornelissen, J.M.R., Hopster, H., 2010. Dog bites in The Netherlands: A study of victims, injuries, circumstances and aggressors to support evaluation of breed specific legislation. The Veterinary Journal 186, 292-298.

Dwyer, F., Bennett, P.C., Coleman, G.J., 2006. Development of the Monash Dog Owner Relationship Scale (MDORS). Anthrozoos: A Multidisciplinary Journal of The Interactions of People & Animals 19, 243-256.

Hewson, C.J., Hiby, E.F., Bradshaw, J.W.S., 2007. Assessing quality of life in companion and kennelled dogs: a critical review. Animal Welfare 16, 89-95.

Hsu, Y., Serpell, J., 2003. Development and validation of a questionnaire for measuring behaviour and temperament traits in pet dogs. J Am Vet Med Assoc 223, 1293-1300.

King, T., Marston, L.C., Bennett, P.C., 2009. Describing the ideal Australian companion dog. Applied Animal Behaviour Science In Press, Corrected Proof.

Ley, J.M., Bennett, P.C., Coleman, G.J., 2009. A refinement and validation of the Monash Canine Personality Questionnaire (MCPQ). Applied Animal Behaviour Science 116, 220-227.

Marston, L.C., Bennett, P.C., Coleman, G.J., 2004. What happens to shelter dogs? An analysis of data for 1 year from three Australian shelters. Journal of Applied Animal Welfare Science 7, 27-47.

Schalke, E., Ott, S.A., von Gaertner, A.M., Hackbarth, H., Mittmann, A., 2008. Is breed-specific legislation justified? Study of the results of the temperament test of Lower Saxony. Journal of Veterinary Behavior: Clinical Applications and Research 3, 97-103.

Serpell, J.A., 1996. Evidence for an association between pet behavior and owner attachment levels. Applied Animal Behaviour Science 47, 49-60.

⊙ BIOGRAPHY

Tammie King

Animal Welfare Science Centre, Monash University, Vic

Email: tammie.king@monash.edu

Tammie completed a BSc (Hons) majoring in Zoology at The University of Melbourne and is currently undertaking a PhD as a member of the Anthrozoology Research Group at Monash University. Tammie also works part time as a veterinary nurse and security guard. Tammie is passionate about research involving human-animal interactions, more specifically, studies which involve domestic dog behaviour.