

## Improving the Welfare of Australian Stock-herding Dogs

*An investigation into improving stock herding-dog welfare by using environmental factors and genetics to predict training success rates, thereby minimising wastage.*

**By Rosemary Davis**

Word count: 998

### Introduction

Stock-herding dogs are of vital importance to the Australian livestock industry, but the welfare of these dogs is compromised as many are rejected because they do not reach the required working standards. The “Farm Dog Survey” (2013) revealed 20% of dogs are unsuccessful, with 89% of these rejections due to behavioural problems rather than being health-related (Arnott *et al.*, 2014a). Both genetic and environmental factors influence behaviour – Udell *et al.* (2014) highlighted the importance of a genetic predisposition to herding behaviour, while Arnott *et al.* (2014a) discussed the value of environmental factors, such as training, husbandry and owner attitudes, in allowing herding dogs to reach their full potential. Currently, owners underestimate the economic value of their dogs (Arnott *et al.*, 2014b), so defining value objectively may help strengthen the human-dog bond, reducing wastage and improving welfare.

### Discussion

Udell *et al.* (2014) described the significance of genetics in influencing the suitability of particular dogs. This study observed the difference in the tendency of three different breeds, Border collies (herding), Airedale terriers (hunting) and Anatolian shepherds (livestock-guarding), to follow a human cue in an object-choice task. This involved an experimenter pointing to an object and then testing the dogs by seeing if they went to the object that was pointed to first. The variation in responses showed a breed predisposition to emphasise or ignore parts of the canine predatory motor sequence (Udell *et al.*, 2014), making each suitable in their working role. For each breed, 12 dogs were tested. Every dog had always been treated as a pet, therefore ensuring responses were not due to prior working training. Each dog was observed as the experimenter pointed to 1 of 2 metal paint cans. Once released, the dog was rewarded with food if it went to the can that was pointed to first, regarded as a correct response. Border collies performed significantly better than both other breeds, demonstrating a breed-specific exaggeration of the “orient > eye > stalk > chase” component of the motor sequence that probably helps make them successful herding dogs (Udell *et al.*, 2014). While among working breeds this study tested only Border collies, it highlights the significance of using genetics to produce superior herding dogs. This means that dogs more likely to be successful in reaching working standards could be bred. Currently, there has been limited success in identifying genetic markers that correspond to these desired behaviours, meaning that further research is required (Cobb *et al.*, 2014). However, this study also showed that the performance of Anatolian shepherds could be improved by further training, thereby highlighting the importance of environmental factors in improving performance.

Environmental factors that influence the success rates of herding dogs were revealed through the “Farm Dog Survey” conducted in 2013. This survey collected information from 812 Australian herding-dog owners and included data for 4,027 dogs (Arnott *et al.*, 2014a). Statistical analysis revealed factors that were significant in influencing the success rate of herding dogs, which can be used to improve their welfare. One factor was breed, further emphasising the importance of genetics. Housing methods were also shown to be significant, with dogs housed in a group yard or pen having the highest probability of average or greater than average success (Arnott *et al.*, 2014a). This form of housing also improves welfare standards because dogs are more readily able to engage in natural social behaviours.

One important environmental factor that has implications for both the welfare and success of herding dogs is the quality of the human-dog bond. This is revealed by the survey through the significance of: trial participation, age of dog at acquisition, owner conscientiousness score and hypothetical maximum treatment expenditure (Arnott *et al.*, 2014a). Dogs that underwent trial participation and were acquired when less than six months old (or were bred by the owner), had greater success rates, which may be due to the strengthening of the human-dog bond because of increased time spent together (Arnott *et al.*, 2014a). Furthermore, use of the Big Five Inventory personality test showed that success rates increased when owners had a higher conscientiousness score (Rammstedt *et al.*, 2007; Arnott *et al.*, 2014a). According to Arnott *et al.* (2014a), because this trait is associated with perseverance it “may lead a handler to work harder to make a dog a success”. Continued strengthening of this bond will thus help ensure that dogs are able to reach their full potential through training.

The owners’ perceived value of their dogs as working animals may also influence the strength of human-dog bonds. A paper by Arnott *et al.* (2014b) showed that currently many owners are underestimating the value of their dogs. This means they are less likely to invest in a successful dog when it comes to injury or general husbandry (such as housing), so this is another factor causing wastage and compromising welfare. The “Farm Dog Survey” was used to estimate the

economic worth of the average herding dog over its working lifetime. The median cost of ownership was \$7,763, while the work performed by the dog was valued at \$40,000. This meant that owners were receiving a 5.2-fold return on investment, but on average, owners would spend only \$1,001-\$2,000 as a one-off veterinary cost to return an injured dog to work (Arnott *et al.*, 2014b). By understanding their economic value objectively, owners may be more likely to increase such expenditure on their dogs. The study by Arnott *et al.* (2014b) was limited by the number of assumptions made, such as the number of each dog's working hours and valuing this work at \$20/hour. However, despite this, it still emphasises their significant economic value.

## Conclusion

There are numerous ways to improve the welfare of Australia's herding dogs. The genetic predisposition of particular breeds to herding work means certain behavioural traits can be selected for when breeding to produce dogs more able to be trained successfully. However, environmental factors are also important. Both husbandry practices and the human-dog bond play a role in improving success rates and welfare standards.

## References

- Arnott, E., Early, J., Wade, C., McGreevy, P. 2014 Environmental factors associated with success rates of Australian stock herding dogs. *PLoS ONE*, 9:8, 1-13.
- Arnott, E., Early, J., Wade, C., McGreevy, P. 2014 Estimating the economic value of Australian stock herding dog. *Animal Welfare*, 23:2, 189-197.
- Cobb, M., Branson, N., McGreevy, P., Lill, A., Bennet, P. 2014 The advent of canine performance science: offering a sustainable future for working dog. *Behavioural Processes*, 110, 96-104.
- Rammstedt, J., Oliver, J. 2007. Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, 41, 203-212.
- Udell, M., Ewald, M., Dorey, N., Wynne, C. 2014 Exploring breed differences in dogs (*Canis familiaris*): does exaggeration or inhibition of predatory response predict performance on human-guided tasks? *Animal Behaviour*, 89, 99-105.