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Review

Equine learning behaviour

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Abstract

Scientists and equestrians continually seek to achieve a clearer understanding of equine learning behaviour and its implications for training. Behavioural and learning processes in the horse are likely to influence not only equine athletic success but also the usefulness of the horse as a domesticated species. However given the status and commercial importance of the animal, equine learning behaviour has received only limited investigation. Indeed most experimental studies on equine cognitive function to date have addressed behaviour, learning and conceptualisation processes at a moderately basic cognitive level compared to studies in other species. It is however, likely that the horses with the greatest ability to learn and form/understand concepts are those, which are better equipped to succeed in terms of the human–horse relationship and the contemporary training environment. Within equitation generally, interpretation of the behavioural processes and training of the desired responses in the horse are normally attempted using negative reinforcement strategies. On the other hand, experimental designs to actually induce and/or measure equine learning rely almost exclusively on primary positive reinforcement regimes. Employing two such different approaches may complicate interpretation and lead to difficulties in identifying problematic or undesirable behaviours in the horse. The visual system provides the horse with direct access to immediate environmental stimuli that affect behaviour but vision in the horse is of yet not fully investigated or understood. Further investigations of the equine visual system will benefit our understanding of equine perception, cognitive function and the subsequent link with learning and training. More detailed comparative investigations of feral or free-ranging and domestic horses may provide useful evidence of attention, stress and motivational issues affecting behavioural and learning processes in the horse. The challenge for scientists is, as always, to design and commission experiments that will investigate and provide insight into these processes in a manner that withstands scientific scrutiny.

Keywords: Horse; Behaviour; Learning; Processes; Memory

Contents

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1. Introduction

The horse has evolved through domestication to adapt to man and the environment he provides (Price, 1999). Adaptation to domestication in any of the animal species has been largely dependant on the degree of developmental plasticity of the animal and the typical behavioural and learning patterns compatible with the husbandry techniques utilised during the domestication process (Price, 1999). Neurobiological and behavioural factors influence several aspects of equine learning and ultimately athletic ability and success in the horse (Visser et al., 2003). It is likely that the horses with the greatest ability to understand or conceptualise are those, which are better equipped to deal with the demands of contemporary and future training schemes. There is also general consensus among scientists and lay practitioners that equine training regimes and welfare programmes associated with the horse should continually strive to match the complexity, levels of comprehension and learning intensity that is innate to the horse. However, even with the importance attributed to the role of the horse in human society, it has been reported that surprisingly little scientific research has addressed the issue of equine learning and its implications (Nicol, 2002).

Historically, difficulties have arisen with the elucidation of many equine learning and behavioural processes and some notable inconsistencies regarding terminology and the interpretation of subsequent equine behaviour have been reported (Mills, 1998a,b). In an attempt to appraise and categorise equine behavioural terminology and its meanings, this inconsistency in terminology issue has been recently addressed and as a result more helpful ethograms detailing inventories of specific behaviours in the horse have been completed (McDonnell and Poulin, 2002). Nevertheless, even following further attempts at producing unequivocal descriptive terminology and definitive analysis of equine behaviour and learning processes, some difficulties with interpretation still remain (McGreevy et al., 2005). This situation may lead to a lack of rigor in attempting to identify and control problem behaviours in the horse. However, equine ethology and investigation of equine behaviour under experimental conditions are subject areas of research that are currently becoming more popular under a number of general categories. The areas of interest that have been targeted for detailed investigative research in the horse include: learning, training, feral behaviour, stereotypies, breeding behaviour and temperament assessment (Houpt and Rudman, 2002).

The primary goal, for those interested in equine behavioural and learning processes in the horse, and how this affects human–horse relationships, should be to maximise the potential benefits for both man and animal. One of the very earliest acknowledged authorities, Xenophon, ca. 400 BC declared that ‘what we need is that the horse should of its ‘own accord’ exhibit his finest airs and paces at set signals. . . such are the horses on which gods and heroes ride’ (Rees, 1997). While Xenophon referred to the outward expression of athleticism in the horse, one inference is that the horse would also learn and perhaps more importantly understand the signals involved in requesting such behavioural demonstrations in its association with man. Whereas human interaction with the horse and the domestication process have been of enormous benefit to the horse in terms of veterinary care, protection and survival, some potential disadvantages and conflicting practices have also developed in tandem. Because of mans’ often insensitive selection techniques and modern training regimes, the resulting social isolation and the restricted breeding opportunities have regularly been at variance with the evolutionary processes of the ancestors of the modern horse (Goodwin, 1999).

A more detailed understanding of these conflicting practices would help to promote improved equine management interactions and in so doing would likely maximise man’s appreciation of behavioural and learning processes in the horse. Humans have regularly attempted to reinforce dominance strategies on the horses in their care in an attempt to elicit the desired outcomes and responses from the animals (Creigier, 1987). This may be a misguided strategy given that the natural equine response to dominance is likely to be one of avoidance and it has recently been shown that training is actually enhanced when the training methods employed exactly match the mental ability of the horse (McLean and McGreevy, 2004). While their methods may not always have been based on scientific research, some informed trainers have highlighted the importance of a better understanding and appreciation of equine behavioural and learning processes (Roberts, 1996). Given this raised awareness and apparent benefit, it is likely that learning behaviour and the horse–human relationship might be aptly modified with the imposition of a better balanced social interaction between horse and human (Goodwin, 1999).

Several other conditions affecting equine learning behaviour have been reported to induce fearfulness in the horse including isolation from conspecifics, exposure to novel objects or novel conditions and, under certain circumstances, proximity to humans (Lansade et al., 2004). It has been reported that early handling has particularly positive behavioural effects in animals and it has been shown to reduce animals’ fear of humans, while high levels of fearfulness have certainly been shown to impair learning ability in the horse (Fiske and Potter, 1979). Although foal imprint training has been promoted in the equine industry, there are only limited documented scientific studies available regarding this form of training or its efficacy.

In one such study Williams et al. (2002) actually concluded that there was no difference between foals at three months of age between controls (foals on pasture without training) and trained foals (following a three month programme) and therefore, imprint training appeared to have limited effect on the foals