Applied Animal Behaviour Science 134 (2011) 56–63

Contents lists available at ScienceDirect

Applied Animal Behaviour Science

journal homepage: www.elsevier.com/locate/applanim

Horses' responses to variation in human approach

Lynda Birke[a,*], Jo Hockenhull[a,1], Emma Creighton[b], Lisa Pinno[c], Jenny Mee[c], Daniel Mills[c]

[a] Dept Biological Sciences, University of Chester, UK
[b] School of Agriculture, Food and Rural Development, Newcastle University, Newcastle upon Tyne, UK
[c] Dept of Biological Sciences, University of Lincoln, Riseholme Park, Lincoln, UK

ARTICLE INFO

Article history:
Accepted 6 June 2011
Available online 2 July 2011

Keywords:
Horse
Flight response
Human approach
Body posture
Approach speed
Natural horsemanship

ABSTRACT

The behaviour of humans around horses is thought to have a substantial impact on how people are perceived in subsequent interactions and many horse trainers give detailed advice on how handlers should behave when initially approaching a loose horse. Here we report on three studies designed to explore the effect of different human approach styles on the behaviour of naïve and experienced horses.

In the first study, the change in flight distance (distance at which horses started to avoid an approaching human) of twelve semi-feral Dartmoor ponies, undergoing training to allow handling, was assessed. Over the 10 handling sessions median flight distance decreased significantly ($p < 0.001$) from 2.38 m to 0.00 m and there was a significant positive shift in the ponies' behaviour following the appearance of the researcher ($p = 0.002$).

In a second study the effect of a direct (vigorous, swinging a lead rope and with eye contact) versus indirect (relaxed, no rope swinging and without eye contact) approach style was assessed on six adult experienced riding horses. The mean flight distance during a direct approach style (6.87 m) was significantly greater than that which occurred during an indirect approach style (2.32 m). Direction of approach was not found to significantly affect flight distance.

In a third study, the effect of the rope was removed and a similar method to the second study applied to a group of naïve, feral ponies. The effect of different components of approach style, speed of approach, handler body posture and direction of gaze, which might contribute to observed differences in behavioural responses, were then examined systematically in this population. This revealed no significant difference in mean flight distance between the two approach styles (2.28 m indirect versus 2.37 m direct approach), but ponies were significantly more likely to move off in trot ($p = 0.025$) and to travel further ($p = 0.001$) when a direct approach was used. Speed of approach was the most salient factor, with a fast approach increasing both the tendency to move off in trot ($p < 0.001$) and distance travelled ($p < 0.001$). Body posture (relaxed or tense) had no effect, while flight distance was significantly greater when the person was looking away ($p = 0.045$).

These results suggest horses may have an important egocentric spatial barrier, which perhaps relates to personal space and triggering of the flight response. Contrary to popular belief, body posture did not appear to be very important in the contexts examined unless accompanied by extraneous aids, while the speed of approach is particularly significant. These results are of important practical relevance in reducing the risk of injury, and the effective management of horses with minimal stress.

* Corresponding author. Tel.: +44 1630 652379.
E-mail addresses: l.birke@chester.ac.uk (L. Birke), Jo.Hockenhull@bristol.ac.uk (J. Hockenhull), emma.creighton@newcastle.ac.uk (E. Creighton), dmills@lincoln.ac.uk (D. Mills).
[1] Now at the School of Veterinary Sciences, University of Bristol, Langford House, Langford, Bristol BS40 5DU UK.

0168-1591/$ – see front matter © 2011 Elsevier B.V. All rights reserved.
doi:10.1016/j.applanim.2011.06.002

1. Introduction

Domestic horses spend their lives in relatively close contact with people, and human behaviour has considerable potential to affect their welfare. Recent work has looked at the effects of handler behaviour on the welfare of a range of captive species in different contexts, e.g. in agriculture, where livestock productivity may be adversely affected (reviewed in Hemsworth, 2003); or in zoos, where the activities of visitors can provoke aversive reactions (Hosey, 2005), while in laboratory animals, differences in physiological reactions to painful stimuli have been demonstrated resulting from different handlers (Chesler et al., 2002).

Despite the importance of human-horse interaction to the utility of horses, there is relatively little research on human interactive behaviour towards them, such as effects of posture and direction of gaze (Hausberger et al., 2008). Also, with increasing numbers of leisure horses in recent years, comes considerable variation in conditions of husbandry and expertise of handlers (British Horse Industry Confederation, 2005), with implications for both equine welfare and human safety. The review by Hausberger et al. (2008) identified research on horses' reactions to a motionless human, to human approach and touch. They note that direction of gaze, posture, positioning and speed of approach of the human are often poorly specified in these studies, and call for further research detailing how these specific variables affect horses' reactions. Such research has important applications in handler education to minimise the risk of injury, and in horse welfare where handler confidence may promote greater cooperation from the horse (Chamove et al., 2002).

The body posture adopted by a handler towards a horse is an explicit consideration in what has been called "natural horsemanship", which is becoming increasingly popular (Birke, 2007); natural horsemanship trainers frequently suggest approaching horses in a "soft", relaxed manner. For example Roberts (1996) claims that approaching naïve horses face-on with direct eye contact encourages them to flee, whereas a person approaching obliquely, at 45°, and not looking directly at the horse invites contact. Some trainers suggest that looking directly at the horse allows the human handler to maintain control, while others argue that direct gaze should be avoided (Verrill and McDonnell, 2008).

The degree to which horses respond to specific human body postures, movement or direction of gaze by an approaching person has been little studied, in either naïve animals or those habituated to frequent handling. This paper reports three small studies, done in separate locations, each of which investigated horses' responses to different human approach style, particularly differences between direct and indirect approach. Study 1 used semi-feral native Dartmoor ponies to examine flight responses before and after human handling. This study tested the hypothesis that the flight distance (that is, the distance from an approaching human at which the ponies would take flight) would decrease after handling. An "indirect" approach was used, which involved moving towards the ponies with the person's body angled, and no direct eye contact. Studies 2 and 3a, by contrast, compared effects of a similar indirect approach to a direct one, in which the person approaching faced the animals, with an upright stance and looking at them. These studies tested the hypothesis that a direct approach would lead to stronger flight responses, using adult, well-handled horses (Study 2), or naive semi-feral Welsh Mountain ponies (Study 3a). However, approach style, whether direct or indirect, is in effect a compound stimulus comprised of three different components of handler behaviour: body posture, direction of eye gaze and speed of approach. Study 3b aimed to dissociate these three parts of the compound stimulus and examined the effect of each component on the flight response and behaviour of naive semi-feral Welsh Mountain ponies.

2. Methods and results

2.1. Study 1

2.1.1. Materials and methods

2.1.1.1. Subjects and housing. Twelve feral Dartmoor ponies were used (7 fillies; 5 geldings). They were taken from the moor in the autumn, and housed at a lairage on the edge of Dartmoor prior to testing and preparation for sale. Prior handling varied between subjects and included gelding or identification procedures such as branding and ear tagging on a previous occasion, but this was a considerable time earlier and at other sites, so they were naïve about the test site per se. The ponies received no other scheduled handling, and had not previously encountered the researcher. They were between 12 and 24 months at the time of testing.

2.1.1.2. Procedure and design. On arrival at the lairage, ponies were released into a pen as a group. For testing, individual ponies were separated and moved by an experienced researcher using just their body language and positioning to direct the selected animal through a gate into an empty adjacent high-sided pen (3.5 m × 8 m) for measuring and handling. This restricted visual but not auditory contact between subjects. After 2 h acclimatisation, during which animals were left without human contact, and appeared to become more relaxed, the controlled handling procedure began: on entering the pen, the researcher stood motionless for 30 s, with a relaxed, indirect stance (body slightly angled, no direct eye contact). The orientation of the horse's head relative to the researcher, and the direction of any movement in response to the entry of the researcher, was noted at this time. Head and feet movements were scored as no response (neutral), turned away from the human (avoidance), or towards (investigatory). The horse was thus given the opportunity to move to whatever distance from the researcher it preferred during this initial 30-s period. The next stage was not commenced until after the 30 s of exposure to the researcher, and the horse was stationary. Then the researcher began to approach in a line towards the horse's right shoulder, using an indirect stance. Approach stopped once the pony moved its feet to take a step, and flight distance in response to researcher approach was then measured at this time, using a Trimble HD360 handheld laser as the distance from researcher hip to horse shoulder at the time when the pony first moved off. The researcher continued to approach and pause until she was