



# Horse sense

## Exploring the equine mind

Photo: Michel Dei-Cont

by Anna Mouton

**The results are in – horses prefer country music over punk rock.** Clare Carter and Linda Greening from the Centre for Performance in Equestrian Sports in England tested the response of thoroughbreds to different musical genres. The horses relaxed when listening to Hank Williams and classical music. They snorted at jazz and punk rock. So, choose your station with care before leaving the radio on in the stables.

You may be wondering how the researchers knew that the horses were relaxed. Besides observing body language, scientists measure physiological indicators of stress. We have all experienced the sensation of trying to keep our cool while our heart is racing. Horses sometimes experience the same and researchers can tell by taking their pulse. They also measure stress hormones in the blood and the saliva of horses.

Researchers in Poland showed that listening to music on a regular basis, like every afternoon over a period, lowered the pulse rate of Arabian horses. These horses performed better in races than a control group. The same researchers looked into stress hormone levels of young Arabian horses on arrival at a racing stable. Leaving home for their first assignment is as stressful for a horse as it is for a human. Horses that listened to music, or had a daily massage, had significantly lower levels of stress hormones than the control groups.

### Looking a gift horse in the eye

When a horse looks at the world, what does it see? Horses have excellent eyesight. If you took one to the optometrist to test it with an eye chart, it would do as well as most humans and better than dogs or cats. Horses have a large field of vision of about 350 degrees. Their blind spots are small – in front of their face and right behind their bodies. This is why you should not approach a horse from behind. If you are in its blind spot and you startle it, you can expect to be kicked.

Horses see in panoramas. If you examine a horse's eye you will notice that the pupil has a horizontal slit. This is perfect for scanning the horizon. A horse's pupil remains horizontal whether the head is lowered for grazing or lifted to sniff the air. Like humans, horses are super-sensitive to motion in their peripheral vision which is essential to stay alert and to avoid predators out on the plains.

What about colour in their vision? Humans have three types of colour receptors in our retinas – red, green and blue. Our brains perceive various combinations of red, blue and green light as different colours – yellow, cyan, magenta and many more. Humans can see millions of colours. Horses see two. They have only two types of colour receptors in their eyes. Unlike us, horses don't see different combinations of light as different colours. They see them as versions of blue or yellow with different levels of saturation. Compared to human vision, we would consider the colours a horse sees as washed out.

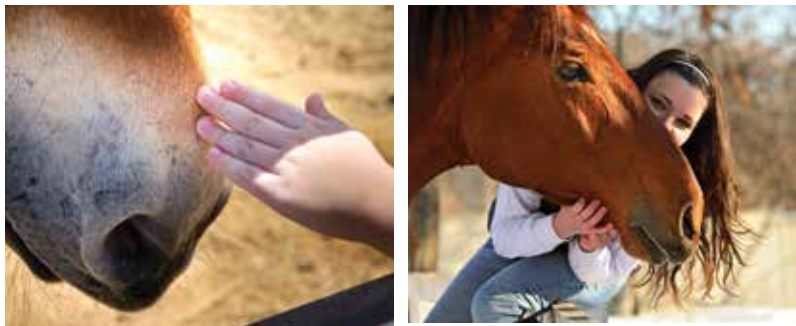
Night vision would matter much more than pretty colours to anyone who has to be on the lookout for predators. Horses have excellent vision in dim light, which is almost as good as a cat's. Large eyes and scope for massive dilation of the pupil allow them to pick up any ray of light. There are exceptions: horses with a blanket pattern – a solid white area over the rump – carry genetic mutations which causes night blindness. The same mutation afflicts humans – something that was first discovered during the study of horses.

### Leading a horse to water

Konstanze Krueger and Jürgen Heinze from the University of Regensburg in Germany were interested in horses that copy other horses. They ran experiments in which they taught one horse to follow a handler while a second horse watched. They soon established that the watching horse would also follow the handler only if the first horse was dominant to the second. Not so if the first horse was either submissive or a stranger to the second. It appears as if horses are as susceptible to influencers and peer pressure as humans are!

Of course, horses are social animals, so it shouldn't be surprising that they recognise other horses and remember relationships. Claudia Feh studied Przewalski's horses in France. Like all wild horses, they





live in groups consisting of a single stallion and several mares. Claudia found that stallions could identify their mares and separate them from a large herd even after not seeing them for a year. Other research showed that horses can tell the difference between friends and strangers based on recordings of their voices.

Horses apply their social skills to their relationships with other species, including humans. They get to know people as individuals and they have long memories. Horses can even recognise people from photographs. In one experiment, horses that were trained to recognise faces were better than humans at telling identical twins apart. Horses also seem to know that photos represent real people. Scientists gave horses treats while showing them photos of a person. When the individual in the photo met the horses in person, the horses quickly cuddled up to them in hope of a treat.

### *“Horses enjoy human company, but they prefer being with other horses”*

Horses enjoy human company, but they prefer being with other horses. When kept on their own, they spend more time moving around and less time eating. An experiment performed at Cornell University put mares by themselves in windowless stables. The stables were fitted with a light that the mares could turn on, and turn it on they did! Similar trials with sheep, pigs, and calves had the same result. All these animals prefer to have the lights on, no doubt to help them look out for any surprise visitors or nasty intruders.

Sleeping long can be life-threatening for horses living outdoors in the wild when they have to be alert to lions or other predators. This may explain why horses hardly sleep at all – only 15 minutes out of every hour during the night – and always laying down. Their total sleep time is about three hours per night. They sleep even less when adapting to a new environment. Being surrounded by other horses that lie down to sleep seems to help newcomers to adjust. Research has shown that horses seem to experience the same type of sleep as humans when they are dreaming which may well mean that horses also dream. There is much speculation what they dream about.

### Teaching an old horse new tricks

Once a horse learns something, it sticks to what it knows. Researchers tested horses by putting a low barrier between the horse and a reward. The horse could see the reward straight ahead but had to detour through a gap on one side of the barrier to reach it. Horses learned to find the gap by trial and error. The scientists then moved the gap to the opposite side of the barrier to test their response. The horses kept returning to where the gap used to be. What was surprising was that donkeys outperformed horses on this test, finding the new gap much quicker.

Besides remembering, horses seem to be able to think conceptually. Evelyn Hanggi from the Equine Research Foundation in California showed horses various pictures of different shapes. The horses were rewarded for choosing the largest shape in a set. They were able to select the largest shape regardless of its actual size or appearance. In other studies, horses were shown groups of dots. They were able to select the group with the most dots. This doesn't mean that horses can count, but it shows that they can understand abstract concepts such as bigger or fewer.

### *“Some equestrian sports discourage horses from thinking”*

Some equestrian sports discourage horses from thinking. Horses at riding schools are better at generalised learning than top dressage horses. The reason is that school horses have to figure out what their inexperienced riders are trying to tell them. These horses become adept at generalising from the rather random cues provided by the learner riders. Dressage horses never generalise, because they have been taught to give an exact response to a specific signal from the rider. The disadvantage is that dressage horses have the poorest cognitive skills of all sporting horses.



Photo: Michel Dei-Cont

Horses enjoy stimulation and variety. A study in France compared Welsh yearlings kept in an enriched environment to control groups. The horses in the enriched environment were quieter and more relaxed than the ones in the control groups. They also ate and learned better and were less fearful, easier to handle and more inquisitive. The enriched environment included a variety of feeds, exposure to novel objects and essential oils. The horses enjoyed plenty of handling and opportunities to socialise with other horses – as well as country music.

You can use environmental enrichment to improve the mood and performance of your own horses. Try to expose them to a little music or something to think about. And remember, if Hank Williams isn't your (their) style, there is always Lance James. 🎵