My Equine Behavior Bucket List: 10 Important Concepts of Horse Behavior with Everyday Relevance to Horse Owners and Veterinarians

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After 35 years of focus on horse behavior research, teaching, and clinical work alongside equine veterinarians in an educational setting, I have accumulated a list of equine behavior concepts for helping horse owners and veterinarians better understand horse behavior for more efficient, safe, and humane care of horses. This talk will focus on a few items at the top of my horse behavior education "bucket list" with particular relevance to equine practice.

1. Horses Move A Lot

When living in natural social groups, horses move a lot. Typical 24-hour movement during simple maintenance activities (grazing, trekking to water or shade) adds up to at least 10 miles. When forage becomes sparse, more miles are accumulated finding adequate nutrition. On top of that, the full complement social interactions of foals, yearlings, bachelor stallions, harem stallions, cycling and foaling mares, adds considerable daily mileage, depending on the season. For example, during the socially busy spring months the accumulated miles can quickly multiply to near 10 times the basic minimum foraging rate, particularly for harem stallions looking after their mares and foals from bachelor stallions with an aim to acquire a mare or two. Mares generally accumulate the lowest mileage, except for the week or two just before and just after foaling. Modern GPS loggers and trackers have confirmed in several populations that, and for the busiest bands, their activities can on occasion add up to near 100 miles in 24 hours. This continuous movement probably contributes to their overall health and fitness, as well as to their natural hoof wear.

a. Horses Evolved to Never Stop Moving or Eating for Long

While it is fascinating to think about the daily accumulated mileage of horses, what is even more conspicuous and likely more important, is that when they doo stand still, it's not for long. The time spent not moving rarely exceeds an hour. In fact, rest and loafing periods typically last only 20 to 40 minutes. After that time, they appear compelled to move, usually to resume foraging. This rhythm of alternating periods of eating and resting, with very fixed brief periods without movement, persists even in some stalled horses. Upon rising, or stirring from a standing rest bout, stalled horses almost always return to eating or foraging around as if looking for something to put in their belly.

b. Horses Evolved to Move Whenever Foraging

Grazing animals are always moving when they are ingesting food. Even when forage is abundant such that the horse could eat for many minutes without moving, they rather take a few bites, take a couple steps, take a few bites, take a couple steps. This natural behavior likely helps food move through the digestive tract. By providing hay and feed in one location of the stall or paddock, movement while ingesting is discouraged, and this is likely one of the many aspects to modern horse management that leads to colic and other digestive disorders.

c. Horses Evolved to Chew and Swallow with Their Heads Near the Ground.

As a grazing species, horses' visual system for monitoring the periphery for potential predators and other dangers, as well as their mastication and swallowing mechanics function best when eating at ground level.

2. Horses Evolved as Trickle Feeders

Horses have evolved in environments where the available forages were fairly low calorie and high fiber. Accordingly, their digestive system is adapted for continuous input, processing and frequent output, and especially to be moving as they ingest. Feeding our horses in concentrated meals more like we (omnivores) eat than as grazing animals has long been known to be a large factor all sorts of gastrointestinal and behavior problems, the big examples would be gastric ulcers, colic, and all sorts of bothersome behaviors such as cribbing, pacing, weaving, and food-related aggression. It's no secret

continuous access to low to medium quality forage, with no calorie dense grains and sweet feeds, lowers the risk of these health and behavior problems.

3. Horses Evolved to be Slow to Show Discomfort

Having evolved as an open plains grazing prey species, horses can be considered relatively "hard-wired" to be slow to show discomfort, especially in threatening situations. It is not that they are not uncomfortable, it is that their behavior has evolved to be relatively inconspicuous to other species until fairly late in the game. When watching horses on video obtained when the horse is alone and "at ease" to let down their guard, you can often appreciate how uncomfortable they appear, and as soon as people approach, they no longer show their discomfort. The sad reality for domestically managed horses is that this natural muted behavioral expression of discomfort and the instantaneous "improvement response" often delay our appreciation of their discomfort. It is not unusual in these situations to interpret behavior changes to misbehavior or poor temperament. For the same reasons, humans tend to anthropomorphically misinterpret fear-based behavior as misbehavior and simple confusion as stubbornness. Simple solid academic animal behavior information (now somewhat available electronically) on principles of species variation as well as species-specific subtle behaviors indicating comfort and discomfort can be enormously helpful to animal owners and health care professionals.

For these reasons, when evaluating undesirable or abnormal behavior it can be challenging to sort out physical from psychological primary and secondary factors. Almost any physical discomfort can result in behavior changes that are easily interpreted as primarily psychological (social, learned, or "normal" adaptation to suboptimal environmental conditions). Common example complaints include a negative change in attitude toward work or a general drop in athletic performance without recognized sign of a physical cause, a variety of types of episodes of hyper-reactivity, spookiness, or apparent panic with bolting or "freezing," and any of a variety of specific undesirable behaviors such as kicking, stomping, pawing, biting, tail-wringing or slapping, teeth-grinding, head-tossing, or self-mutilation at work and/or at rest without a readily apparent source of physical discomfort.

Whether or not the causes can be determined and whether or not the root cause is physical or psychological, behavioral abnormalities provide an excellent opportunity for the veterinarian to recommend detailed monitoring of the behavior, and, if indicated, involve the professional assistance of an equine behavior specialist. In many cases, detailed review of videotaped samples of the horse undisturbed in its stall or paddock ("stall video") can be an efficient aid in identification of physical

discomfort. [excerpted from 2005 *AAEP Proceedings 51:* 231-238 McDonnell SM, Is it physical, psychological, or both?]

4. Serious Injuries are Rare in Horses Living under Natural Social Conditions
Under natural social and environmental conditions, injuries resulting from social interactions are very rare, and almost always minor. This is in spite of the enormous opportunity for and high frequency of interactions among stallions, mares, foals, juveniles and maturing yearlings with continuously evolving and changing social relationships. One clear factor in fewer injuries is the less ambiguous and stable natural social order with all intact animals in family groups. For domestic horses, the practice of grouping and re-grouping horses according to our needs and available facilities, without regard to the disruption of order within the group, no doubt leads to the all too common social aggression that leads to serious injuries.

5. Horses Use Distance to Signal of Submission
Under typical domestic confinement horses often don't have the ability to express submission by moving far enough away, or get cornered, and so can never "say uncle." On top of that domestic feeding schemes often centralize the limited resources (water and highly palatable feeds), such that dominant and submissive horses must be too close for comfort, inducing food related aggression. On farms, much can done with paddock size and design, as well as pasture supplementation strategies and feeding locations and feeders, to accommodate expression of submission and so reduce injuries and improve the quality of life for both the dominant and the submissive horse.

6. Horses Naturally Follow the Laws of Learning
In our referral equine behavior practice we frequently become involved in the rehabilitation of horses that are perceived by their owners and veterinarians as intractably non-compliant with one or more veterinary procedures—such as injections, nasogastric tubing, genital examination, washing of the penis for breeding, or other manipulation about the head, legs, genitals, or hind quarters. We have found that a combination of straightforward behavior modification techniques adapted to the horse, including classical conditioning, operant conditioning, systematic desensitization, and counter conditioning are highly effective in regaining and maintaining compliance, even in once dangerously resistant animals. The methods we use rely mostly on positive reinforcement. Excessive restraint and punishment are specifically avoided. Occasionally, counter-conditioning is required to eliminate a specific undesirable avoidance behavior. After initial training, and with consistent handling and intermittent reinforcement, clients and referring veterinarians typically describe the patients as now "enjoying" veterinary visits and appearing to solicit procedures. [excerpted from McDonnell SM (2000) How to rehabilitate horses with injection shyness (or any procedure non-compliance). *AAEP Proceedings 46:* 168-172]

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Veterinary behavior society announces position on punishment

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In response to the popularity of television shows such as "The Dog Whisperer," the American Veterinary Society of Animal Behavior has issued a position statement and guidelines on the use of punishment for dealing with behavior problems in animals.

The guidelines clarify that while punishment can be effective in specific contexts, it also has an association with many adverse effects.

"A major problem with using punishment is that it suppresses behavior temporarily but does not necessarily modify the underlying cause of the behavior," said Dr. John Ciribassi, AVSAB president.

Also, punishment may interfere with the human-animal bond. Owners tend to punish pets inconsistently and as a consequence of anger, so punishment may occur long after the bad behavior and may be intense. Dr. Ciribassi said, "We can have a problem with the pet not trusting the owner because it is unable to consistently anticipate what the owner is going to do in any given situation."

The pitfalls and possible adverse effects of punishment include the following:

- Timing punishment correctly is difficult
- Punishment can strengthen the undesirable behavior.
- The punishment must be strong enough to be effective, but intense punishment can lead to physical harm.
- Regardless of the strength, punishment can cause some animals to become extremely fearful, and this fear can generalize to other contexts.
- Punishment can facilitate or even cause aggressive behavior.
- Punishment can suppress behaviors, including those behaviors that warn of aggression.
- Punishment can teach the animal to associate the owners, other animals, specific contexts, or environments with bad experiences.
- Punishment often does not address the underlying cause of behaviors or teach alternate behaviors.

The AVSAB's position is that punishment is not appropriate as a first-line or early-use treatment for behavior problems. Modification should focus on reinforcing desirable behaviors, removing reinforcement for inappropriate behaviors, and addressing the emotional state and environmental conditions driving undesirable behavior.

7. Foals are Precocious to the Max.

As an open-plains grazing prey species, horses are among the most precocious of domestic species. We consider our domestically managed foals as very quick to develop, but for foals born in natural environmental and social conditions, this is to an extreme. Parturition is typically far faster and almost always easier on natural terrain and with the social support and protection of the stallion and other band members than in a foaling stall. Especially with the stallion present, foals are up and running far sooner than our farm management condition. That's because a birth with all the fetal fluids and membranes puts the entire band at risk of attracting predators. Every prey species has some sort of behavior to avoid attracting predators to the birth site. Cattle for example, clean up the birth site. In the horse, the strategy is to move away from the birth site ASAP. So minutes after the foal is out, typically the stallion urges the mare and foal to get up and move away to a clean area. In this context, stallions have even been observed to assist the foal in its first standing. Once away from the fluids, the mare will then pass the membranes, and again the stallion moves them away to another clean area for the foal's first suckle and rest. This all can occur within the first 10 minutes of the foal on the ground. And then soon after birth, all the other foals, yearlings, and other juveniles within the band and in neighboring bands, stimulate the foal's activities. In fact, foals born within a natural harem social environment are far more advanced, and continue to develop behaviorally more rapidly than foals born into modern farm social conditions where are isolated with just their dam or are pastured with only other mares and foals. Many studies of horses, for example from Michigan State University, have established that movement and activity promotes physical development. Increments of stall confinement, for example, was associated with correspondingly reduced bone growth and development.

8. Stallions are Active Parents. While the dam is the source of early nutrition, under natural social conditions the harem stallion clearly does most of what we think of as parenting behavior. Once the mare is again in foal, typically within a couple weeks, her primary compulsion seems to be grazing to support the nutrition of this year's and next year's foals. After that, most mares seem quite comfortable for the stallion, as well as sometimes older siblings in the band, to take over the other parenting

functions. Most harem stallions do most of the protection and retrieval of wandering foals. Thhe may even engage in and actually be the instigator of additional play behavior among the foals and yearlings, thus adding to their extraordinary daily accumulation of mileage.

9. Weaning is Very Gradual. While the most frequent and regular suckling is by foals up to about 6 months of age, yearlings and 2-year olds as well as any older offspring that have not yet left their natal band are typically welcome at the dam's udder now and again. Nursing by older offspring seems to serve an ameliorative or consoling function in the moments following a stressful or threatening event. This fact is important in light of what is known for mammals in general about the adverse psychological effects of early or stressful weaning and separation from the dam. Early or stressful separation from the dam leads to changes in the structure and neurochemistry of the brain that predispose the individual to later behavior disorders, including separation anxiety, panic disorders, and other neuroses. And in fact, what is known specifically about horses regarding the association of weaning age and stress with behavior and related physical disorders, fits with this current understanding of mammals in general. Most farms can accommodate strategies for less stressful weaning.

10. Many Behaviors of Horses Once Considered Abnormal are Actually Quite Normal

Many behaviors once considered abnormal or undesirable are now known to be normal. Examples include coprophagy in foals, play sexual behavior in fillies and colts, and periodic spontaneous erection and penile movements (masturbation) in stallions and geldings.

SUGGESTED FURTHER READING

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