Is it coping or is it a vice? Cribbing, weaving and other stereotypic behaviors

Overview of Presentation

• Definition of stereotypic behavior
• Types of stereotypic behavior observed in horses
• What do we know about stereotypic behavior in horses (review of recent research)
• Strategies for managing stereotypic behavior in horses

Stereotypic behaviors

• Repetitive, invariant, behavior with no obvious goal or function
• Linked to sub-optimal environments
  • Inability to perform highly motivated behavior patterns
  • Inability to escape or avoid stressful/fearful situations
  • Kept in confinement or social isolation
• Used as an indicator of poor welfare
Stereotypic behavior in horses

• Observed in domestic and captive wild horses

• Greater than 13% of domesticated horses in Canada and the UK exhibit stereotypies

• In the past, referred to as “stable vices”
  – We are moving away from this terminology
  – Research is providing evidence that stereotypic behaviors are not simply the result of “boredom”

Stereotypic behavior in horses

• Classification
  – Oral
    • Cribbing
    • Tongue-rolling
    • Wood-chewing?

Stereotypic behavior in horses

• Classification cont’
  – Locomotor
    • Weaving – shifting weight from LF to RF repeatedly
    • Stall-walking, Box-walking – following a repetitious circuit around their stall
    • Head movements (bobbing, tossing, shaking, swinging, nodding)
    • Passing?
Cribbing and Weaving

Head movements

- Head-shaking
  - Bouts of head tossing accompanied by sneezing or snorting
  - Horse attempts to rub nose on ground, foreleg, nearby objects
  - Often has a physiological component; e.g. sensitivity to sun
  - Subject of recent research, but syndrome not completely understood

Damage caused by stereotypic behaviors

- Horses may lose value
- Sometimes banned from certain boarding facilities
- Cribbing – can cause teeth & gum damage; some evidence supporting an association between cribbing and a specific type of colic
- Weaving – hard on hooves
- Box-walking – can be hard to maintain weight
Owner perceptions of stereotypic behavior

- Cribbing and weaving are recognized as a management and welfare concern
  - Potentially detrimental to horse health
  - Can cause damage to facilities as well

- Many owners attempt to physically prevent stereotypic behavior

Review of literature on equine stereotypies

- Surveys of 12,000 horses: 4% cribbers, 3.3% weavers, 2.2% box-walkers, 12% wood-chewers; classified as redirected behavior (Nicol, 1999)

- Greater prevalence in Thoroughbreds, also in stallions (Lanoue et al., 1998; Bachmeier et al., 2001; Albright et al., 2001)

- Epidemiological study—weanlings: 10.5% started cribbing around time of weaning; Feeding, housing, and weaning practices greatly influenced the development of stereotypies (Waters et al., 2002)
Risk factors for developing stereotypic behaviors

- Low levels of social interaction
- High degree of stalling, especially with solid walls
- Little turn-out
- High concentrate, low forage diet
- Some evidence of genetic relationship
- Stressful competitive life may contribute
- Stressful weaning may contribute

Stereotypies and learning

- Hausberger et al., 2007 demonstrated lower learning ability in stereotypic horses
  - Tested ability of horses to perform an instrumental task (opening a chest by raising the lid with their nose)
  - 36/51 stereotypic horses compared to 3/19 non-stereotypic horses were unsuccessful in learning the task
  - Stereotypic horses took longer to perform the task (368 s vs. 220 s for non-stereotypic horses)
  - Stereotypic horses spent less time lying and sleeping than non-stereotypic horses (may hinder attentional processes)

Stereotypies and temperament

- Nagy et al., 2010 assessed trainability and other characteristics of crib-biting horses
  - Surveyed owners of 50 crib-biting and 50 control horses
  - Horses of similar age, breed, gender, training level and usage
  - Three main factors identified
    - Anxiety (nervousness, excitability, emotionality, timidity)
    - Affability (friendliness toward people and horses, cooperation, docility)
    - Trainability (concentration, memory, perseverance)
  - Level of anxiety was lower in crib-biting horses
  - Trainability and affability did not differ between crib-biting and control horses
What have we learned from cribbing research?

- Numerous studies have investigated potential biological causes of the behavior.

  - Brain chemistry and function
    - Endogenous opioids (beta endorphins)
      (Dodman et al., 1987; Gillham et al., 1994; Lebelt et al., 1998; Pell and McGreevy, 1999)
    - Stress coping hypothesis (reduces stress)
      (Lebelt et al., 1998; Pell and McGreevy, 1999; McHirde and Cadick-Best, 2003)
    - Dopamine
      (McHirde and Honnong, 2005; Parker et al., 2006)

Cribbing frequency in response to feeding

![Graph showing cribbing frequency in response to feeding](image)

Fig. 1: Mean cribbing behavior (±SE) of horses over time during control period and following the consumption of different foods. Baseline cribbing (1), 3 min after zero food (2), 5 min after 10% protein pellets (3), 5 min after alfalfa pelleted (4).

Cribbing and gastric discomfort: Is there a link?

- Gastrointestinal irritation
  - In foals:
    - CB associated with gastric ulceration (Nicol et al., 2002)
    - Oral antacid tended to reduce CB duration (Nicol et al., 2002)

  - In mature horses:
    - CB associated with lower basal and post-feeding gastric pH (Lillie et al., 2003)
    - Oral antacid treatment reduced CB frequency (Mills and MacLoud, 2002)
    - CB stimulated salivation (Mutch et al., 2006)
    - CB may be an attempt to alleviate gastric acidity via production of buffering saliva (Nicol, 1999)
What have we learned from weaving research?

- Provision of mirrors in the stable and stable designs that provide views of adjacent horses and surrounding fields reduce weaving
  - Weaving may be performed in response to social isolation

- Frequency of weaving increases before feeding
  - Weaving may also be performed in an attempt to cope with frustration associated with meal anticipation

What about wood chewing and pawing?

- May be more “natural” than we think
  - For example:
    - Wood chewing is often seen when horses do not have adequate forage
    - On the range, horses will paw in the snow to find grass or paw the ground in search of water
      - Excessive pawing may result when horse is unintentionally rewarded for performing the behavior
      - Very little research conducted specifically on pawing behavior

Suggestions for preventing development of stereotypic behaviors

- As much turn out time as possible
- As much grazing time as possible
- Social interaction opportunity
- Low stress weaning
- Maximize forage
- Visual horizons – windows, walls with partial grilling, etc.
- Horse toys – may help
Suggestions for managing horses with established stereotypies

- Increased turnout time, social interaction & forage may still help
- Cribbing collars, Cribbing muzzles, anti-weave bars
- Cribbing surgery? – modified laser surgery shows some promising results
- Shock collars? (Punishment or aversion therapy)
- Pharmaceuticals used for OCD?

Physical prevention fails to address the underlying cause and may further reduce equine welfare

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Suggestions for managing horses with established stereotypies

Equiball Feeder™ (Henderson and Waran, 2001)

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Suggestions for managing horses with established stereotypies

- Contrary to commonly held belief & many older texts, there is little proof that horses learn stereotypic behavior from one another
  - However, they may share a “stressful” environment
Questions???

References and further reading


References and further reading

• McDonald, S. 1999. Understanding Horse Behavior. The Blood Horse (Horse Health Care Library).
Perceptions about crib-biting

* Denotes significant difference at P < 0.05

Wickens, 2009 Dissertation

Perceptions about weaving

* Denotes significant difference at P < 0.05

Wickens, 2009 Dissertation

Have you tried to stop the behavior?

* Denotes significant difference at P < 0.05

Wickens, 2009 Dissertation