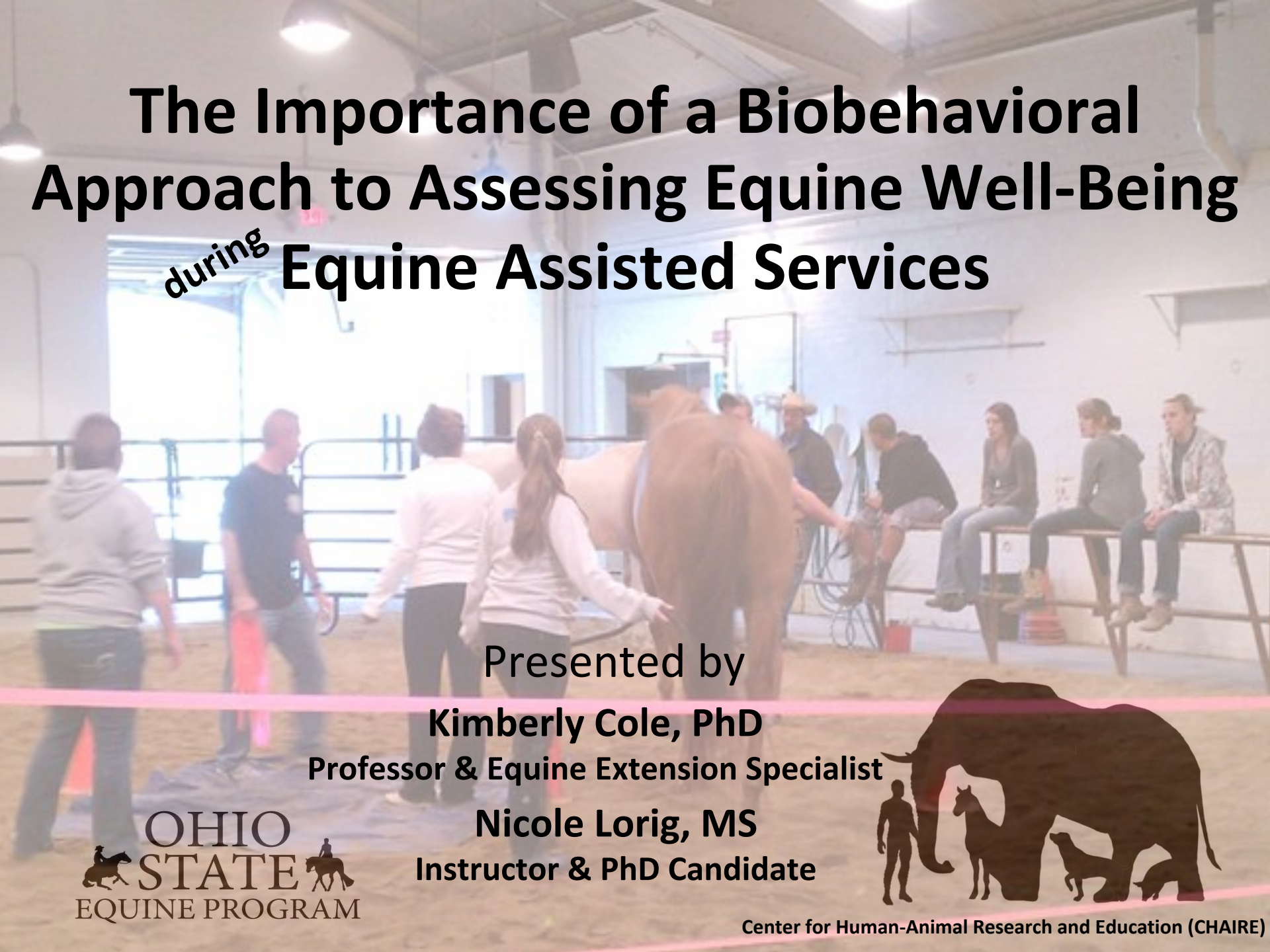


The Importance of a Biobehavioral Approach to Assessing Equine Well-Being during Equine Assisted Services



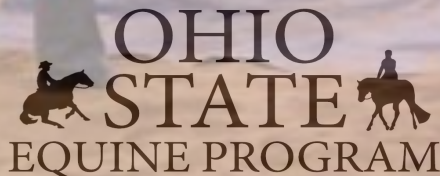
Presented by

Kimberly Cole, PhD

Professor & Equine Extension Specialist

Nicole Lorig, MS

Instructor & PhD Candidate



Equine Assisted Services (EAS)

Optimal Terminology for Services in the United States That Incorporate Horses to Benefit People: A Consensus Document

W. Wood, K. Alm, J. Benjamin, L. Thomas, D. Anderson, L. Pohl, and M. Kane

The Journal of Alternative and Complementary Medicine

Volume: 27 Issue 1: January 2021

Therapy

- ❖ *Counseling*
- ❖ *Occupational Therapy*
- ❖ *Physical Therapy*
- ❖ *Psychotherapy*
- ❖ *Speech-Language Pathology*

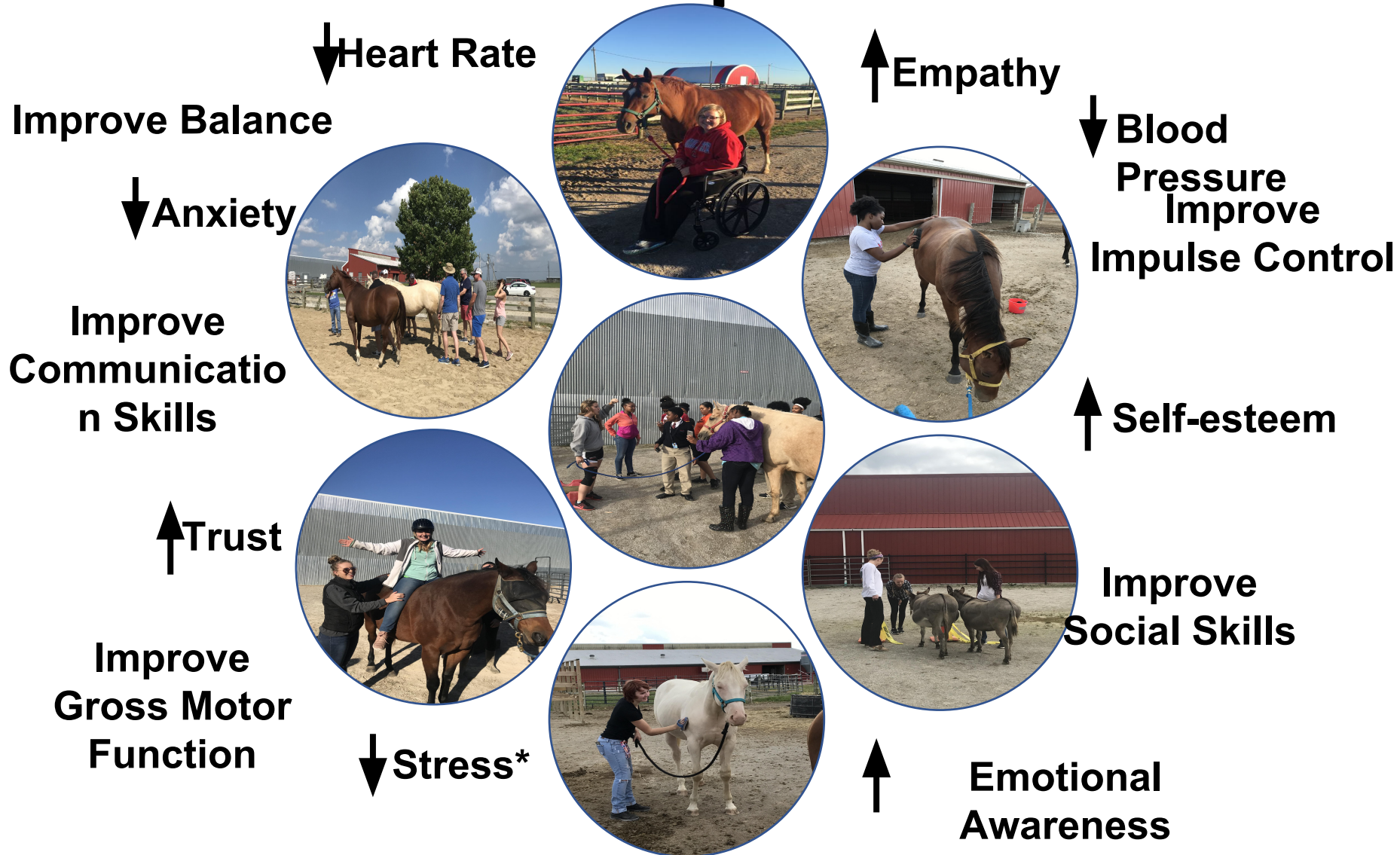
Learning

- ❖ *Equine-Assisted Learning in Education*
- ❖ *Equine-Assisted Learning in Organizations*
- ❖ *Equine-Assisted Learning in Personal Development*

Horsemanship

- ❖ *Adaptive Equestrian Sports*
- ❖ *Adaptive or Therapeutic Riding*
- ❖ *Driving*
- ❖ *Interactive Vaulting*

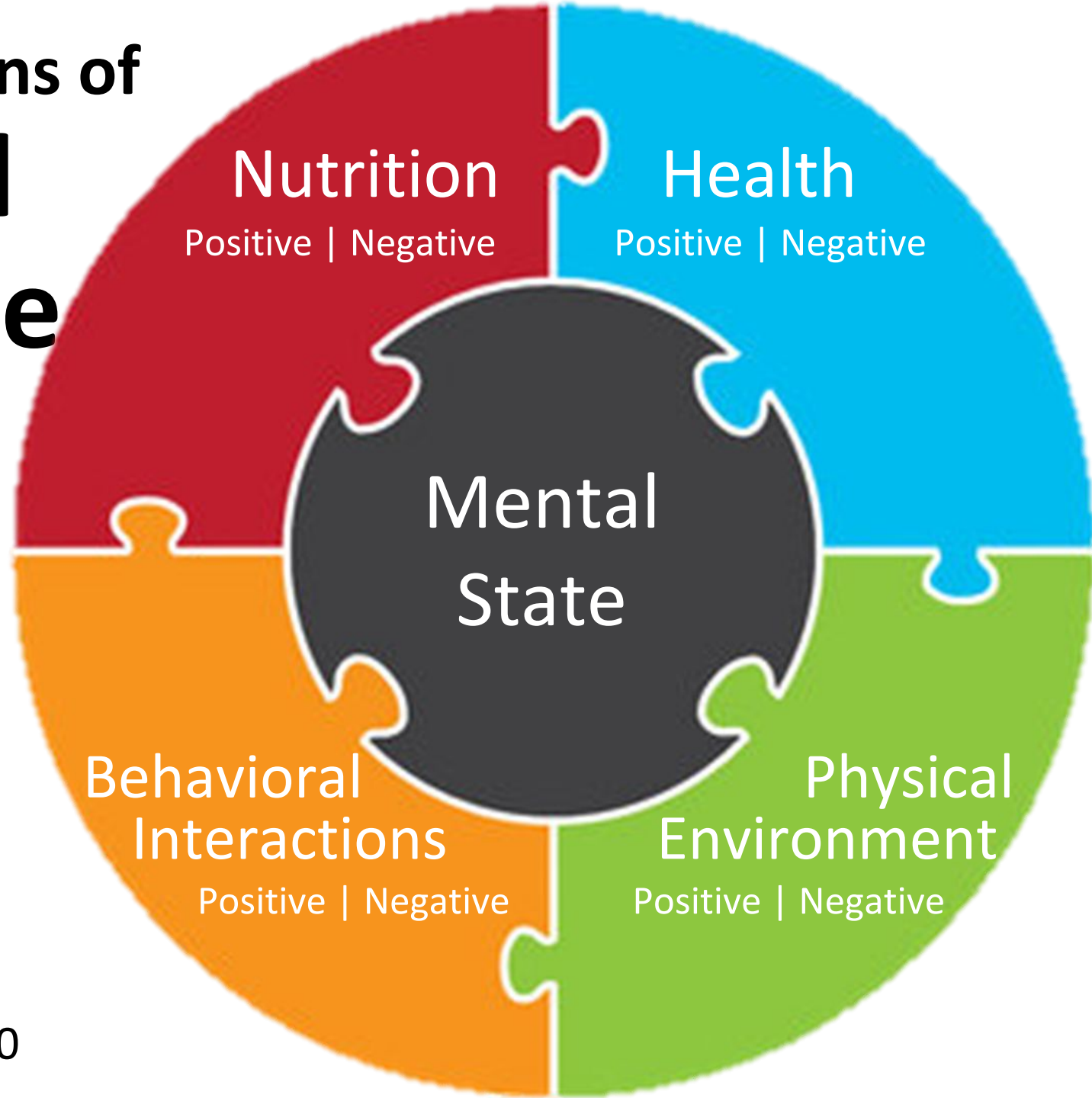
Benefits of EAS on Human Participants



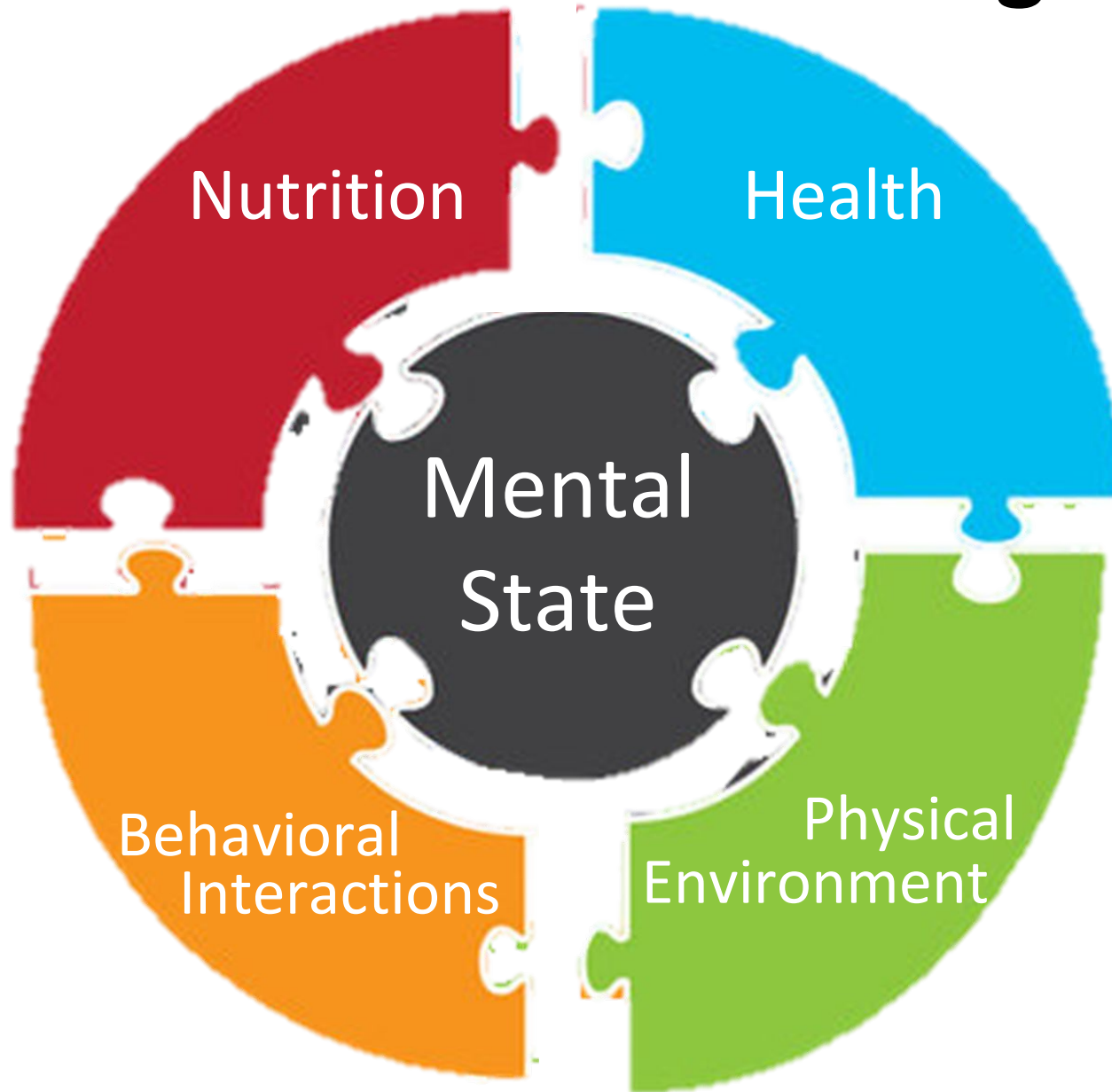
What about the Equine Participants?



Five Domains of Animal Welfare




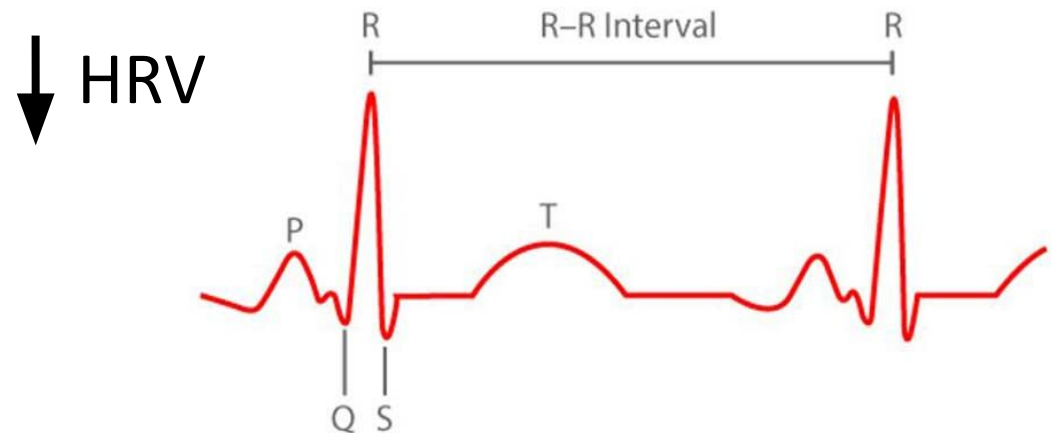
Welfare vs Well-Being?



Biological Measurement of Well-Being: Heart Rate/Heart Rate Variability

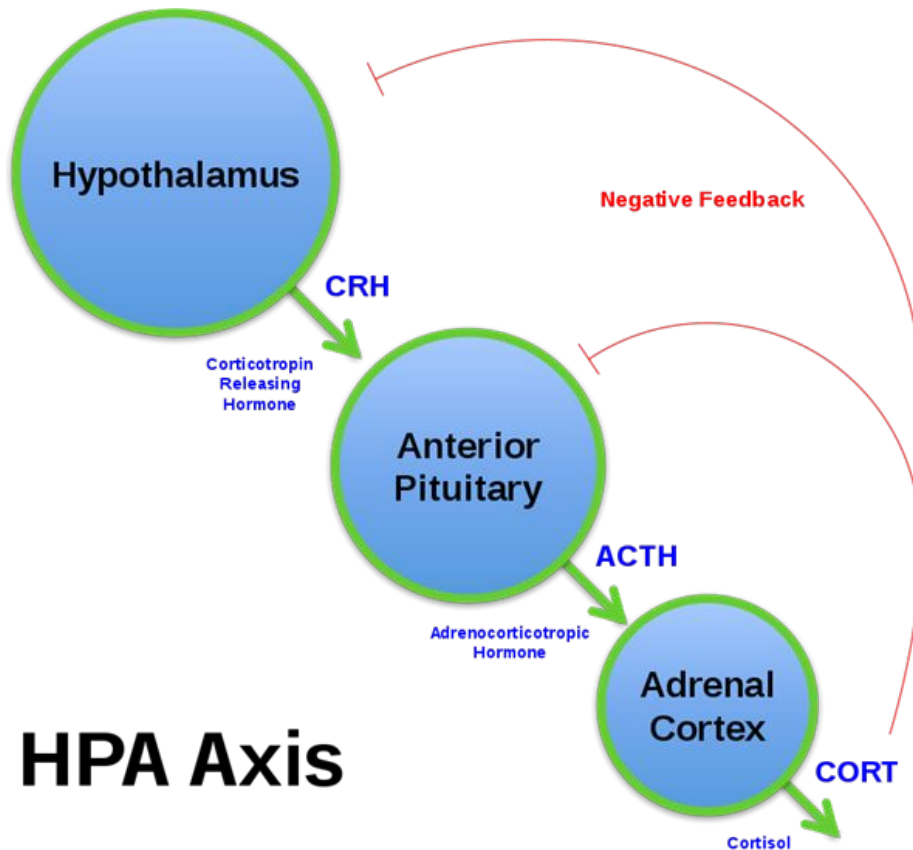
Influenced by Age, Exercise, Excitement/Stress*
Mixed Results

↑ 'Stress' ... ↑ Mean HR 

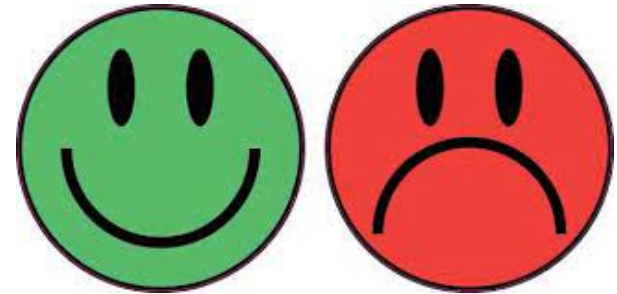


Biological Measurement of Well-Being: Cortisol

Acute vs Chronic Stress



Eustress vs. Distress



| Eustress | Distress |
|---|---|
| <i>a form of stress having a beneficial effect on health, motivation, performance, and well-being</i> | <i>the type of stress we are referring to when we say stress. It is the form of stress with negative implications</i> |
| + | - |

Biological Measurement of Well-Being: Cortisol

Circadian Rhythms

Sample Sources:

Plasma

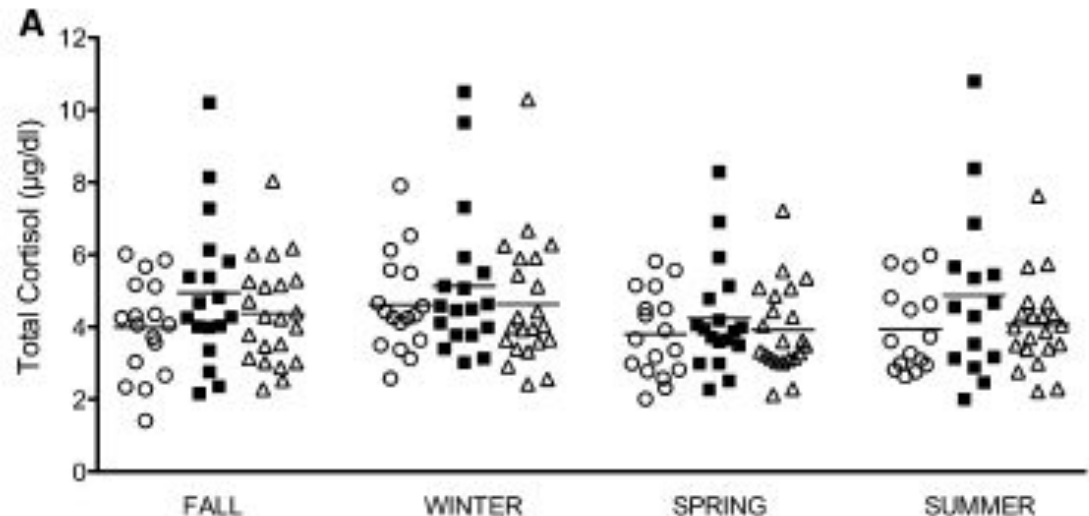
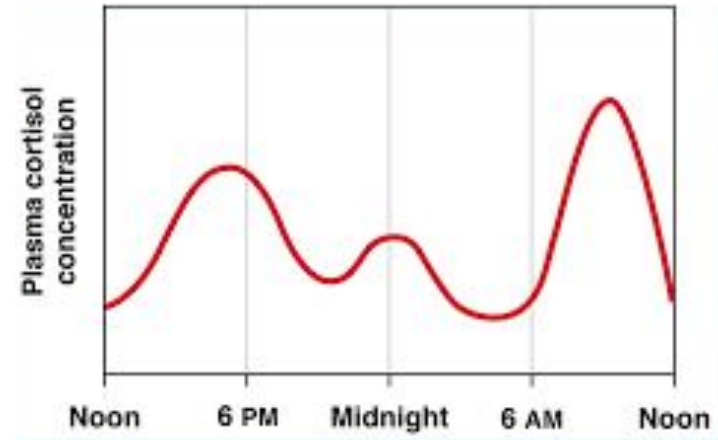
Saliva

Urine

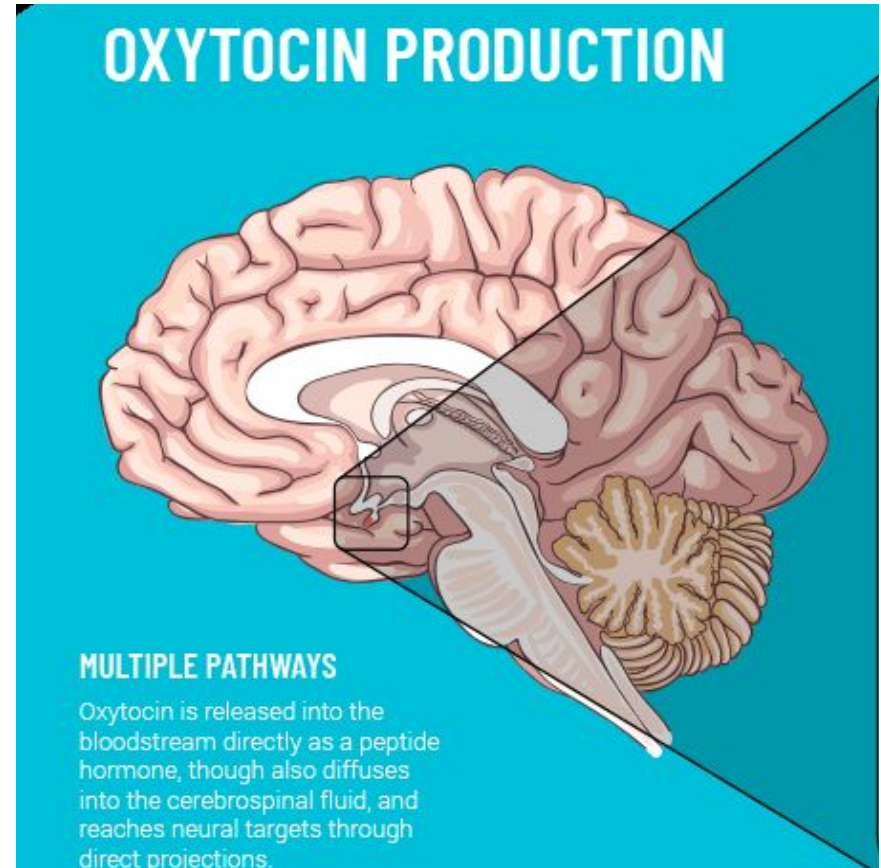
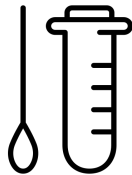
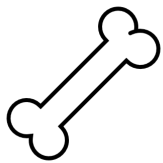
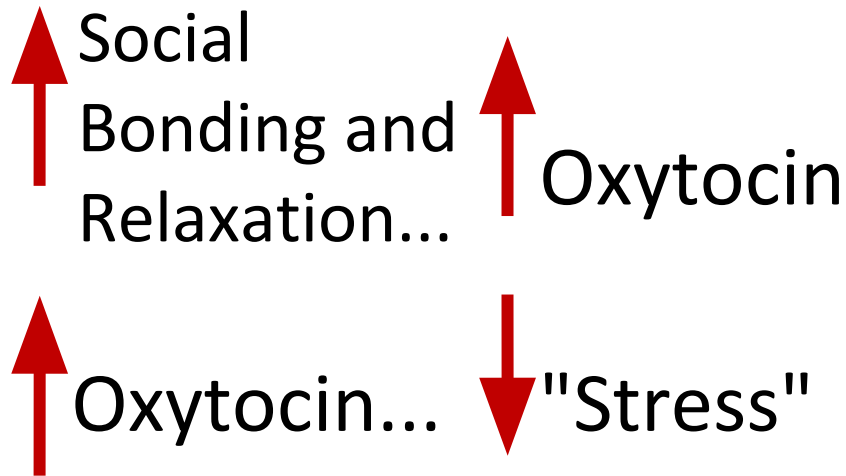
Feces

Hair

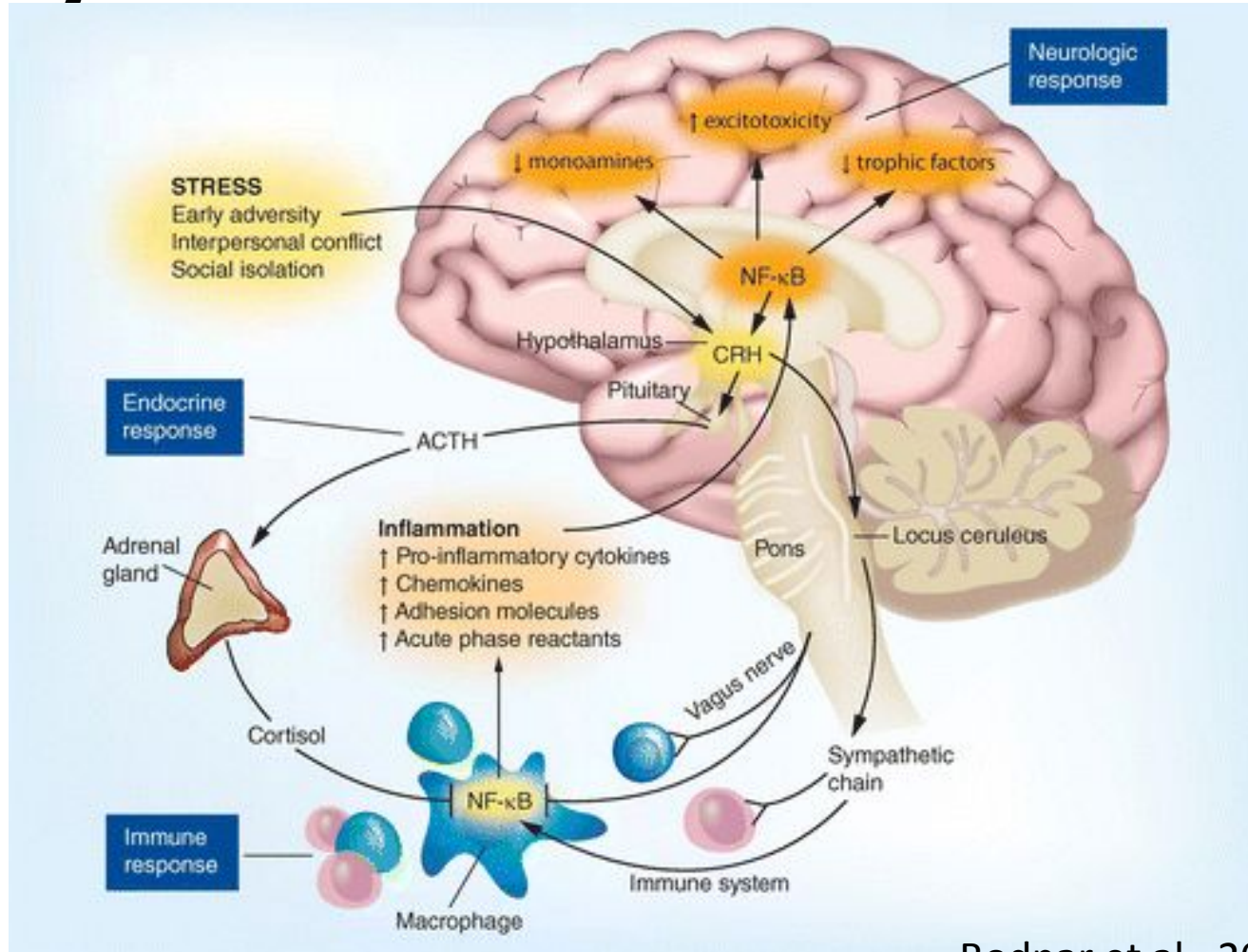
Seasonal Rhythms



Biological Measurement of Well-Being: Oxytocin



Biological Measurement of Well-Being: Pro-Inflammatory Cytokines

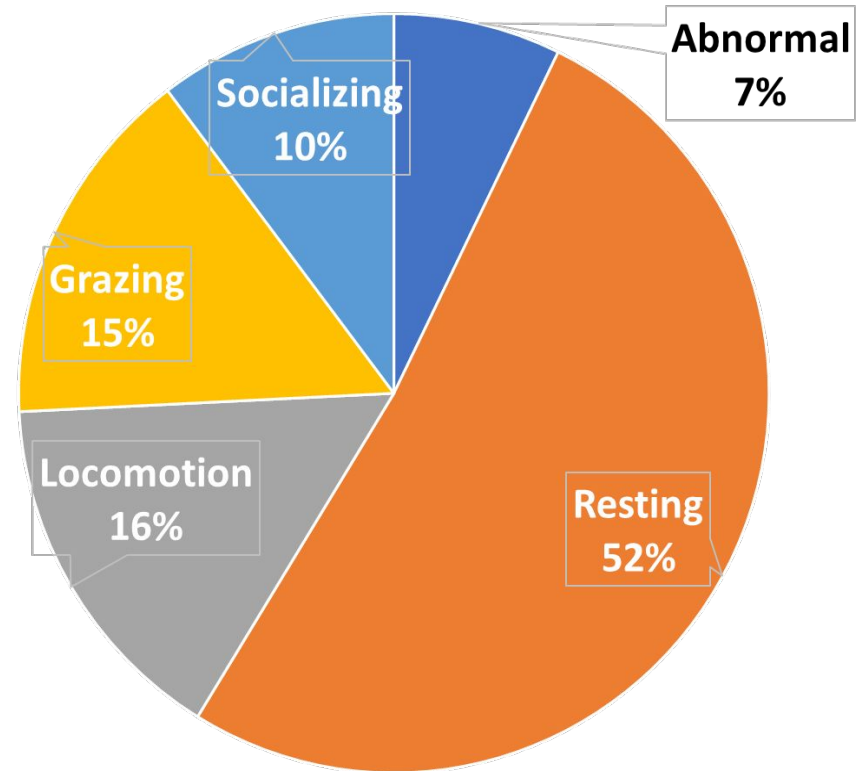
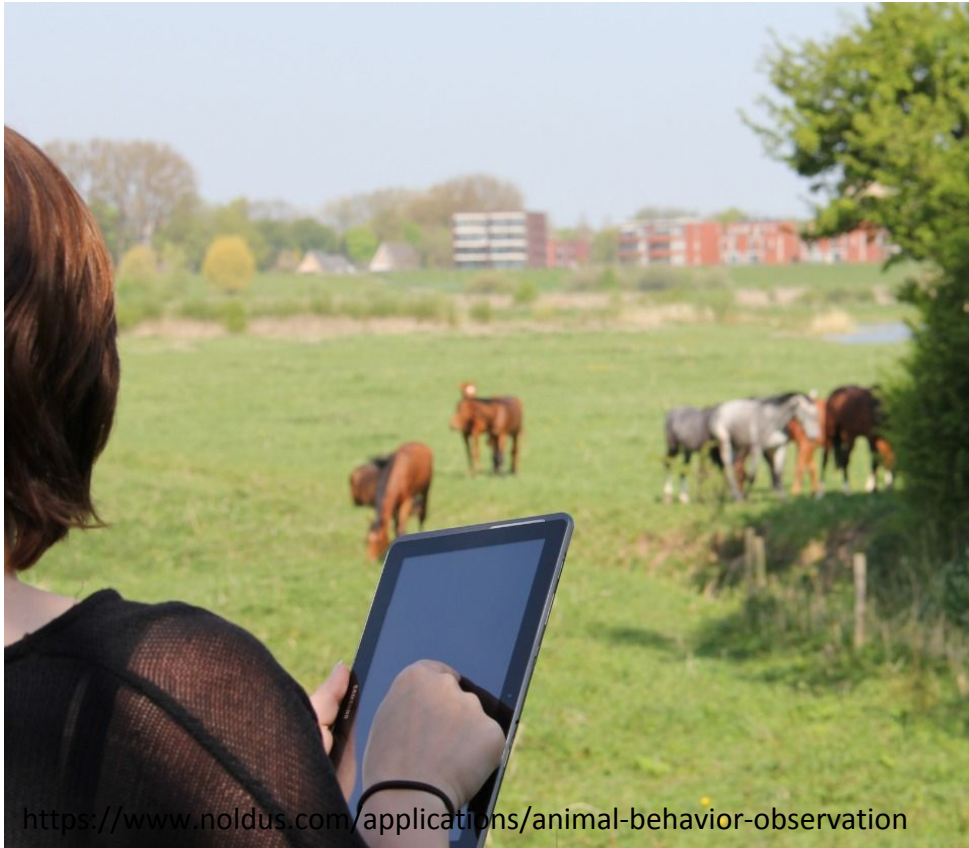


IL-1 β
IL-6
IL-8
TNF- α

Behavioral Measurement of Well-Being: Novel Object/Reactivity/Sensitivity Tests



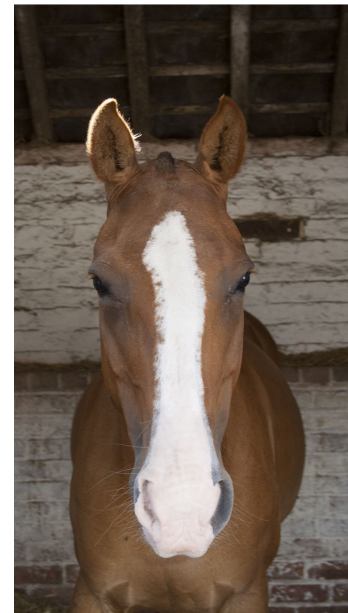
Behavioral Measurement of Well-Being: Ethograms



Behavioral Measurement of Well-Being: Facial Expression

Facial Actions

- Eye white increase
- Nostril dilator
- Upper eyelid raiser
- Inner brow raiser
- Tongue show



Approaches to Measuring Animal Well-Being

BIOLOGICAL

- Heart Rate (HR)/HRV
- Cortisol
- Oxytocin
- Pro-inflammatory Cytokines

BEHAVIORAL

- Novel Object Tests
- Ethograms
- Facial Expressions

Is one approach better than the other?



A Comprehensive Approach is Needed

Evaluating **biological AND behavioral measures** may provide a more comprehensive assessment than either approach alone.

| Variables | HR Baseline | HR Umbrella | Behavior Umbrella | HR Pool Float | Behavior Pool Float | Average Cortisol |
|---------------------|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|----------------------------------|------------------|
| HR Baseline | --- | | | | | |
| HR Umbrella | 0.27411 0.1007 | --- | | | | |
| Behavior Umbrella | -0.05087 0.737 | -0.41744 < 0.0001 | --- | | | |
| HR Pool Float | 0.36107 0.0137 | 0.66815 < 0.0001 | -0.40497 < 0.0001 | --- | | |
| Behavior Pool Float | -0.29459 0.0495 | 0.16693 0.1245 | -0.02777 0.7796 | 0.08255 0.4048 | --- | |
| Average Cortisol | -0.26903 0.0706 | -0.21860 0.0419 | 0.02478 0.8019 | -0.44413 < 0.0001 | -0.22254 0.0232 | --- |

Evaluating **biological AND behavioral measures in BOTH humans and horses** may allow us to understand the mechanisms responsible for the many benefits that are often observed with EAS.

Assessing the Influence of Equine Assisted Services on the Health and Well-Being of Individuals who Have Experienced Trauma and their Equine Partners

Participants



Men & Women (18-55 yrs)



Horses at The Ohio State University Equine Facility

Assessments

Physiological (Bio)



Saliva: Oxytocin

Pro-inflammatory Cytokines

Heart Rate: Heart Rate Variability (HRV)



Psychological/Behavioral (Psychosocial)

Demographic survey: statistical characteristics (38Q)

PCL 5: PTSD symptoms (20Q)

TBI-ID: TBI history



SRS: Self-Reported Scales

QL: Quality of life survey (11Q)

ASQ: Anxiety screening questionnaire (15Q)

STOP-D: Psychological distress survey (5Q)

STAI: State trait anxiety inventory (6Q)



Touch: frequency & duration (video recording)

FEC: Equine facial expression coding (video recording)

Hypotheses

↑ Oxytocin
Quality of life
Perceived social support

↓ IL-6
HRV
Depression

Trauma Symptoms
Anxiety
Psychological Distress

Study Design



4 weekly, 1-hour sessions

Session 1: Grooming

Session 2: Liberty Work

Session 3: Leading

Session 4: Obstacle Course

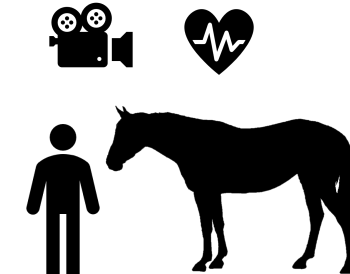
Pre-Study Assessment



Pre-Session Assessment



During-Session Assessment



Post-Session Assessment



Post-Study Assessment



**Thank
You!**



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