Equine Assisted Therapy for PTSD: Clinical and Brain-Based Evidence

Horses and Humans Research Foundation
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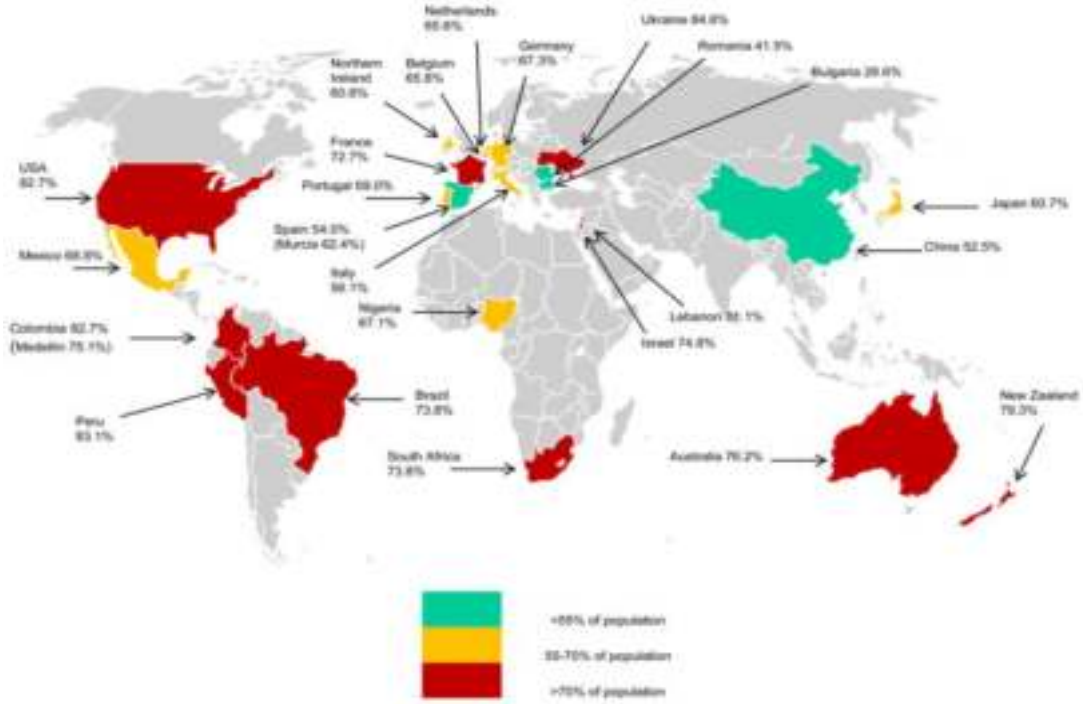
Trauma is Everywhere



- World Health Organization (Benjet et al., 2016)

Posttraumatic Stress Disorder (PTSD)

PTSD is a fear-based disorder

1. Experiencing or witnessing a traumatic event (i.e., EXPOSURE to actual/threatened death, serious injury, sexual violence)

2. Symptoms in four areas (after exposure):
   - Re-experiencing symptoms
   - Avoidance
   - Negative alterations in cognitions and mood
   - Hyperarousal

3. Significant impairment in major spheres of life

Psychiatric Wounds of War

- Soldiers' Heart – Civil War
- Shell Shock – World War I
- Battle Fatigue – World War II
- Combat Neurosis – Korean War
- Post Traumatic Stress Disorder (PTSD) – Vietnam

Veterans with PTSD

- Significant suicide rate (~20 per day; 18% of all suicides)
- ~50% do not seek or receive treatment
- Veterans avoid treatment due to mistrust, stigma, concerns about the treatment experience, low emotional readiness, and logistical barriers
- Treatment response in veterans is lower than in civilians (<50%)
- Years of non-specific or ineffective treatments have demoralized veterans
- Innovative treatments are highly needed

Treatments for PTSD

- The best-researched treatment for PTSD is prolonged exposure (PE) therapy
- Exposure therapy is a form of treatment that is used to treat anxiety which involves “exposing” people to a fear stimuli in two ways:
  - Imaginal exposure: repeated retelling and processing of the traumatic story
  - *In vivo* exposure: repeated immersion in avoided circumstances, such as crowds, busy streets, noisy environs, etc.

Limitations of exposure therapy

- Exposure therapy is effective for most people in civilian samples (about 85%)
- However, among military veterans, exposure therapy is less effective (about 60%)
- In addition, exposure therapy is challenging and upsetting for many, and many (about 36%) refuse or drop out of treatment
- Yet, there is a lack of evidence-based alternative treatments for PTSD through the VA or any other sources

Equine Assisted Treatment for PTSD

Hypotheses:

- Horse-human interaction experiences during therapy can foster insight and behavioral changes in patients
- Horse-human interactions offer a platform for eliciting thoughts, feelings, and behaviors related to patients' lives outside treatment

Why Horses?

- Horses are sensitive to verbal and nonverbal cues, providing patients immediate feedback during the horse-human interactions
- Horses are hypervigilant just like people with PTSD
- Horse-Human interactions afford patients and therapists opportunities to foster emotional awareness, reflection, and attunement to thoughts, behaviors, and forms of communication

Why Horses (Cont.)?

Horses evoke feelings of:

- Self-efficacy
- Receptiveness
- Connectivity
- Communication
- Patience
- Emotional Comfort
- Trust & Closeness

Horses and PTSD: a perfect combination

- Horses are prey animals, easily frightened, insecure and hypervigilant
- Patients with PTSD are hypervigilant, and frequently unsure about safety
- Horses are large and intimidating, provide an opportunity to engage fear network in humans
- Horses and people are social, looking for attachment figures and eager to feel safe and secure

State of Research on EAT for PTSD

- Most EAT-PTSD research is scarce and generally poorly designed
- Small sample size, inconsistent assessments, unstandardized treatment procedures, and frequent conflict of interest
- Lack of well-specified treatment manuals of EAT
- No adequate safety, feasibility, and efficacy research of EAT

Man O' War: Video and Rationale

Funded in 2015

Addressing:

- Mental health needs of service members
- Second career of race horses
- Mental health treatment stigma
- Innovation in psychiatric research
- Capitalizing on shared experiences of patients with PTSD and horses: often feel fearful, hypervigilant, and on alert

Addressing the gaps

We developed and manualized a group EAT for PTSD (EAT-PTSD) comprising of eight 90-minute weekly group sessions

1. Pilot testing: small sample (N=8 patients from two EAT groups)
2. Large open trial (16 groups; N=63)
3. Brain imaging study (N=19; multimodal)

MILITARY MEDICINE, 00, 0/0:1, 2019

Equine-Assisted Therapy for Veterans with PTSD: Manual Development and Preliminary Findings

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ABSTRACT Introduction: Equine-assisted therapy (EAT) for post-traumatic stress disorder (PTSD) has attracted great interest despite lacking empirical support, a manual, and a standardized protocol. Our team of experts in EAT and PTSD developed an eight-session group EAT treatment protocol for PTSD (EAT-PTSD) and administered it to two pilot groups of military veterans to assess initial effects. Materials and Methods: We describe the development of the treatment manual, which was used with two pilot groups of veterans. Protocol safety, feasibility, and acceptability were assessed by reported adverse events, treatment completion rates, and self-rated patient satisfaction. Preliminary data on PTSD, depressive, and anxiety symptoms and quality of life were collected pretreatment, midpoint, post-treatment, and at 3-month follow up. Results: No adverse events were recorded. All patients completed treatment, reporting high satisfaction. Preliminary data showed decreases in clinician-assessed PTSD and depressive symptoms from pre to post-treatment and follow-up (medium to large effect sizes, $d = .54–1.8$), with similar trends across self-report measures ($d = 0.72–1.6$). In our pilot sample, treatment response and remission varied; all patients showed some benefit post-treatment, but gains did not persist at follow-up. Conclusions: This article presents the first standardized EAT protocol. Highly preliminary results suggest our new manualized group EAT-PTSD appears safe, well-regarded, and well-attended, yielding short-term benefits in symptomatology and quality of life if unclear length of effect. Future research should test this alternative treatment for PTSD more rigorously.

INTRODUCTION

Post-traumatic stress disorder (PTSD), a pervasive and debilitating disorder, occurs following traumatic events involving exposure to, or threat of, physical harm, death, or sexual violence to oneself or another. Symptoms include re-experiencing (e.g., nightmares, flashbacks), avoidance behaviors, negative cognitions and mood, and altered arousal and hyper-reactivity.[1] PTSD can persist for years and is associated with significant functional impairment, psychiatric comorbidity, suicidality, substance use, chronic pain, poor physical health, and delayed treatment seeking.[2–5] Equine-assisted therapy (EAT) is an increasingly popular but widely variable, unstandardized, and understudied intervention for trauma-exposed patients. Its utility in treating PTSD is unclear.

Military service members face high trauma risk through combat, injury, captivity, and sexual assault.[6–9] In one study, up to 95% of post-9/11 service members surveyed endorsed experiencing attacks, ambushes, or seeing human remains.[7] U.S. adults overall have lifetime PTSD prevalence below 10%,[10] whereas prevalence among post-9/11 veterans reaches 23%.[11]

Veterans often avoid seeking mental health treatment: one study found that only 23–40% of post-9/11 veterans screening positive for a probable mental health disorder had sought care.[7] Barriers to care include inadequate education about PTSD, logistical impediments, stigma, concerns about treatment experience, and low-emotional readiness.[12–14] Patients who do present for treatment rarely enroll in evidence-based exposure interventions (e.g., prolonged exposure, and cognitive processing therapy),[15–17] and dropout is high.[18–21] One-third to one-half of patients receiving exposure-based treatments for military service-related PTSD demonstrate no clinically significant improvement, and two-thirds retain their PTSD diagnosis post-treatment.[22] Medications (most commonly, serotonin reuptake inhibitors) may benefit patients,[23] yet some veterans report side effects, do not improve, or

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EAT-PTSD Treatment Manual

- Takes place in “round pen” - privacy
- Groups of 4 (3 -6) -- mixed gender, mixed traumas
- 90-minute 8 weekly sessions
- Assessment of PTSD and depression at baseline, midpoint (after week 4), post treatment (after week 8) and at 3-month follow up

EAT-PTSD Treatment Manual (Cont.)

- **Session 1**: orientation (rationale, description, possible benefits). It provides psychoeducation (e.g., common reactions to trauma, development and maintenance of PTSD), a barn tour, and ends with meeting the horses in a private "round pen."
- **Early phase** (sessions 2-3): acquainting patients with the horses, on grooming exercises, and on learning "leading" – directing the horses with a rope or a wand
- **Middle phase** (sessions 4-7): advanced exercises to facilitate patient mastery and comfort with the horses. For example, patients learn to use a wand to distance the horse, creating personal space, or to collaboratively maneuver a horse onto a tarpaulin, fostering teamwork and cooperation.
- **Final session**: graduation ceremony celebrating patients' treatment progress and accomplishments
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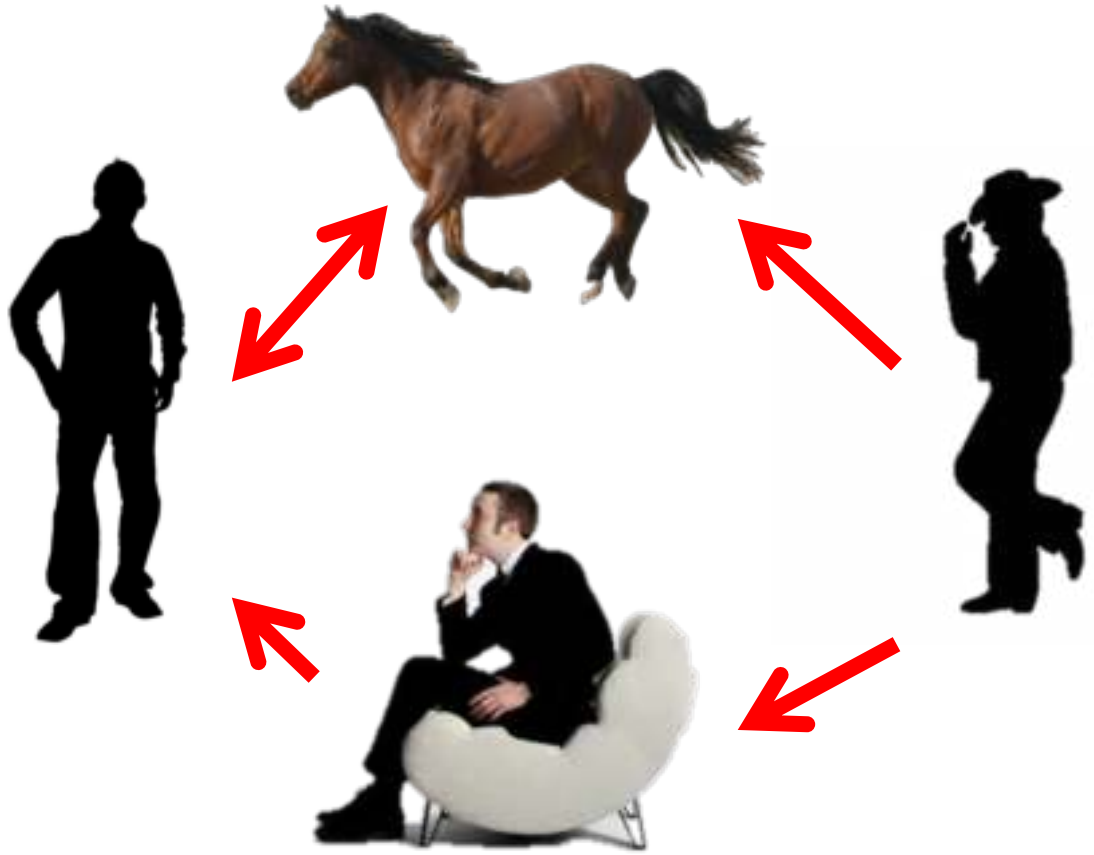

Therapist gets to observe interactions between client and horse; horse professional observes effects on horse and client

Large Open Clinical Trial (N=63)

Original Research

Equine-Assisted Therapy for Posttraumatic Stress Disorder Among Military Veterans: An Open Trial

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ABSTRACT

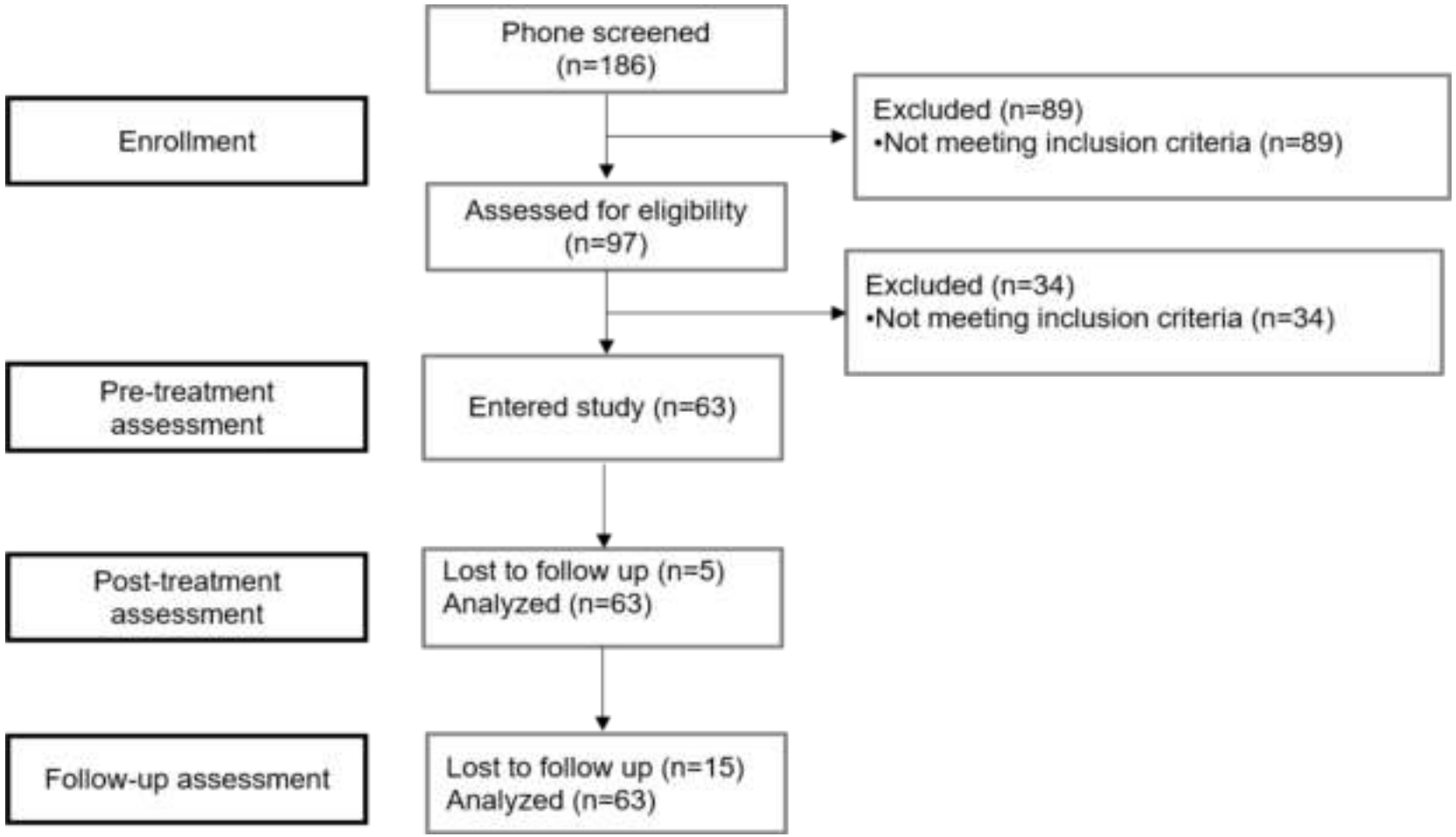
Objective: As veterans have high rates of posttraumatic stress disorder (PTSD) and historically poor treatment outcomes and high attrition, alternative treatments have gained much popularity despite lack of rigorous research. In this study, a recently developed and manualized 8-session group Equine-Assisted Therapy for PTSD (EAT-PTSD) was tested in an open trial to assess its preliminary feasibility, acceptability, and outcomes for military veterans.

Methods: The study was conducted from July 2016 to July 2019.

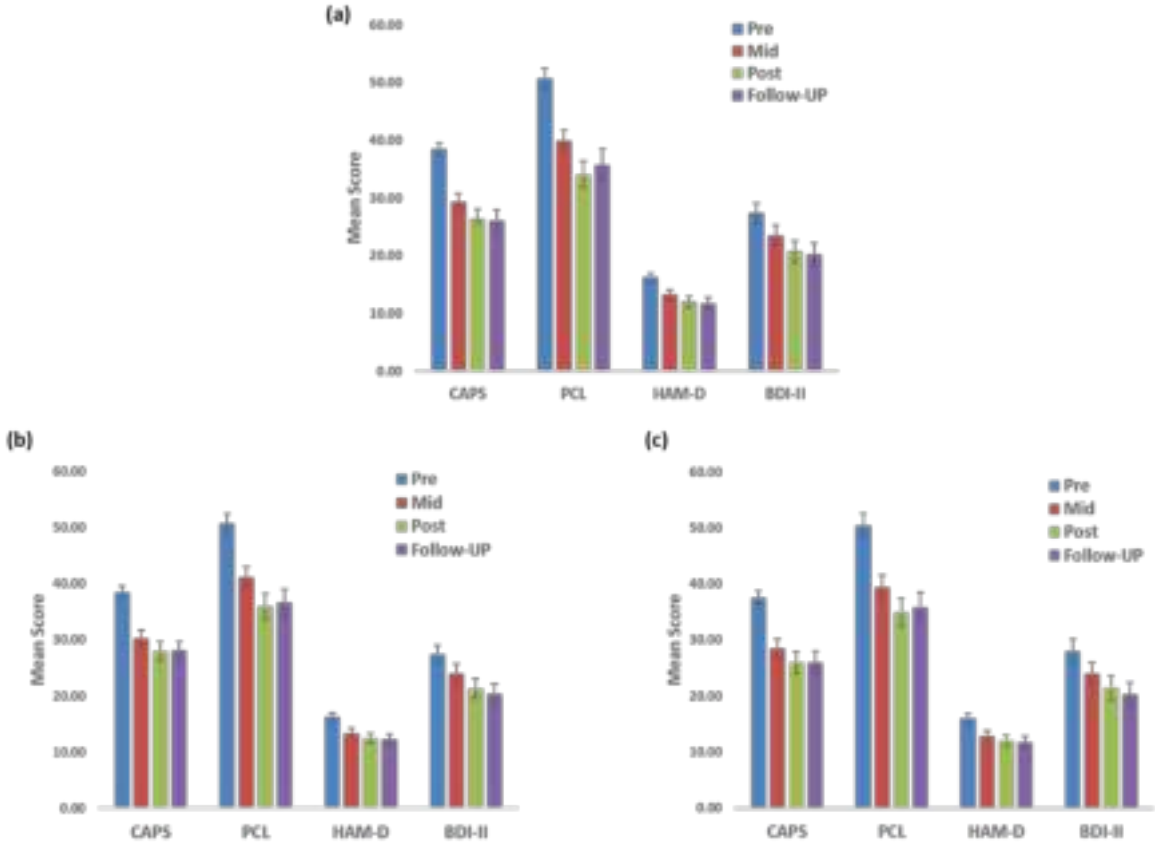
Posttraumatic stress disorder (PTSD) is a prevalent and highly debilitating disorder, impairing social, occupational, and other important areas of functioning.[1] In the United States, PTSD has a lifetime prevalence of nearly 9% and a 12-month prevalence rate of about 3.5%.[1] As military personnel face increased risk for trauma exposure through combat, injury, captivity, and sexual assault,[2–4] PTSD rates are even higher for this population (10%–30%).

Despite the development of several psychotherapies and

Participants' Progress through Study Stages



Changes in PTSD (CAPS, PCL) and Depression (HAM-D and BDI-II) Scores



Brain Imaging Study

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RESEARCH ARTICLE

WILEY

Neural changes following equine-assisted therapy for posttraumatic stress disorder: A longitudinal multimodal imaging study

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Abstract

Background: While effective treatments for posttraumatic stress disorder (PTSD)

Brain Imaging Study (Cont.)

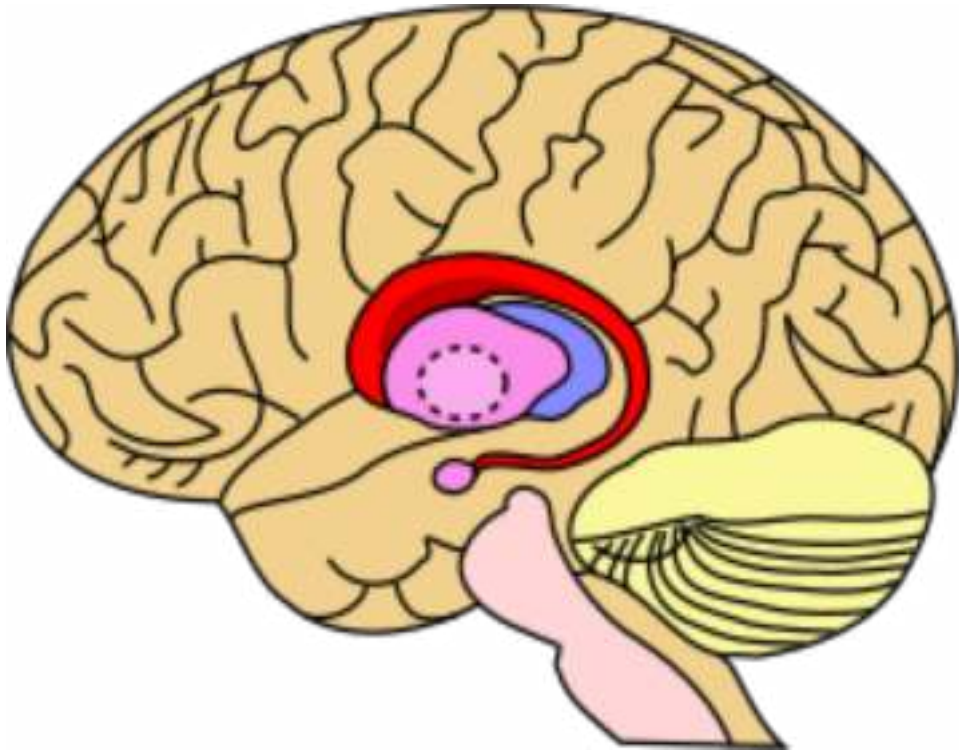
Goal: to employ longitudinal neuro-imaging, including structural magnetic resonance imaging (sMRI), resting state-fMRI (rs-fMRI), and diffusion tensor imaging (DTI), to determine mechanisms and predictors of EAT outcomes for PTSD

Brain Imaging Study: Method

- 19 veterans with PTSD completed eight weekly group sessions of EAT, undergoing multimodal MRI assessments before and after treatment
- Clinical assessments were conducted at baseline, post-treatment and at 3-month follow-up.

Caudate Nucleus

- Part of the Corpus Striatum
- A component of the Basal Ganglia Network (BGN)
- A region that is part of the reward system: underlying pleasure seeking and experience



Thalamus

Functions: large hub relaying sensory signals including motor signals to the cerebral cortex and involved in regulation of consciousness, sleep, and alertness

Results

- At post-treatment patients showed a significant increase in functional connectivity (FC) and reduction in the gray matter density of the thalamus and the caudate.
- The increase of caudate FC was positively associated with clinical improvement seen immediately at post-treatment and at 3-month follow-up.
- Higher baseline caudate FC was associated with greater PTSD symptom reduction post-treatment.

Conclusions

- EAT-PTSD is potentially safe, well-tolerated, with large effect size improvement on standard ratings
- Treatment benefits across all outcome measures largely persisted three months following treatment
- Abnormal functioning within the caudate has been documented in depression substance abuse, and PTSD
- The limbic-basal ganglionic reward system may be modified by the eight-week-long EAT employed for the treatment of PTSD
- The caudate nucleus is involved in reward anticipation and response
- Increase in functional connectivity together with pruning effect in the caudate from pre- to post-treatment
- PTSD have a disrupted, dysfunctional reward circuitry, that might be alleviated through EAT
- Overall: increase capacity to seek and experience pleasure
- NEXT STEP: Randomized controlled trials are needed now

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- Reminder: Jody Jacob-McVey and Debra Farber will provide a Man O' War Workshop later today!
- Thank you!
- Questions?