The Clinical Neuropsychologist’s Approach to Post-traumatic Stress Disorder

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Summary of Talk

- Case Example: Intro
- What PTSD?
- Epidemiology
- PTSD and the Brain
- Special Issues: Moral Injury and Suicidality
- PTSD Assessment/Treatments
- Case Example: Conclusion
Case Example: Erika

- 26-year-old veteran, served two tours in Afghanistan
- Mortuary Affairs: Daily work with body parts and personal effects
- Heart pounding and short of breath when near scent of a dead animal. Smelled a dead squirrel outside: now avoids walks outdoors
- Extreme guilt b/c did not serve directly in combat
- Blames herself for “not taking the risks”
- Not sleeping well, drinking beer to go to sleep
- Tries to avoid thinking of experiences
Case Example: Erika

- Younger brother was killed by IED in Iraq.
- Was a straight-A student, now can’t pay attention in class.
- Wants to move forward and “forget about it all” but can’t.
- Apprehensive about mental health treatment, but comes in, saying, “I’m at the end of my rope.”
- Clearly meets criteria for PTSD, with additional depression.
A Brief History of PTSD

- Literary references to the effects of war trauma date back to Homer’s *Iliad*.
- US Civil War: “soldier’s heart,” chest pain and palpitation w/o cardiac cause (De Costa’s Syndrome)
- WWI: “shell shock” or “war neurosis”
- WWII: “battle fatigue” or “combat exhaustion”
- DSM-I (1952): “Gross Stress Reaction”
- Vietnam: “Post-Vietnam syndrome”
- DSM-III and onward: PTSD
PTSD Diagnosis: DSM-5 Overview

A. Trauma
B. Intrusive Symptoms/Re-experiencing
C. Avoidance
D. Negative changes in cognition and mood
E. Alterations in arousal and reactivity
F. Greater than one month
G. Functional impairment
H. Not due to substance use or medical condition
PTSD Diagnosis: Trauma

Exposure to actual or threatened death, serious injury, or sexual violence:

- Directly experiencing
- Witnessing in-person
- Learning that an event occurred to a loved one (e.g., violent or accidental death)
- Repeated or extreme exposure to aversive details of traumatic events (e.g., 1st responders who handle human remains, police officers repeatedly exposed to details of child abuse)
Perspectives on Trauma

- Trauma does not always lead to PTSD
- Trauma is related to specific exposure
- Negative experiences may affect someone greatly but may not represent “trauma”
- Examples of trauma:
  - Military combat
  - Natural disasters
  - Sexual trauma
  - Violent crime
  - Chronic physical abuse
  - Captivity
  - Severe accidents
  - Repeatedly handling bodies
PTSD Dx: Intrusive Sxs (1 or more)

- Recurrent, involuntary, and intrusive **distressing memories** of the event
- Recurrent, **distressing dreams** in which the content or affect is related to the trauma
- **Dissociative reactions** in which the person feels or acts as if the event is recurring (e.g., flashbacks)
- Intense or prolonged **emotional distress** in response to **trauma cues** that symbolize or resemble an aspect of event
- Marked **physiological reactions** to cues
PTSD Dx: Avoidance (1 or more)

- Avoidance of distressing memories, thoughts, or feelings related to the event (i.e., mental avoidance)
- Avoiding external reminders of the event (i.e., behavioral avoidance)
  - Crowds
  - Fireworks
  - People wearing turbans
  - Swerving to avoid a garbage bag at the side of the road (reminders of improvised explosive devices)
PTSD Dx: Cognition or Mood (2 or more)

- **Inability to recall** important aspects of the event
- **Persistent/exaggerated negative beliefs** or expectations about oneself, others, or the world (e.g., “I am bad,” “The world is dangerous”)
- **Persistent, distorted thoughts about the cause or consequences** → blame him/herself or others
- **Markedly diminished interest** or participation in important activities
- **Feelings of detachment or estrangement** from others
- **Persistent inability to experience positive emotions**
PTSD Dx: Arousal/Reactivity (2 or more)

- Irritable behavior and/or angry outbursts
- Reckless or self-destructive behavior
- Hypervigilance (i.e., always “on guard”)
- Exaggerated startle response
- Problems with concentration
- Sleep disturbance
Epidemiology

- Community U.S. adults: 6.8% lifetime prevalence \(^1\)
- Adolescents: 3.7% boys, 6.3% girls (6-month prev.) \(^2\)
- Vietnam vets in 1980s: 15% men, 8% women \(^3\)
- Gulf War vets: 10.1% estimated prevalence \(^4\)
- Vets from Iraq and Afghanistan: 14% \(^5\)

Risk Factors

- **Pretraumatic**: prior depression, PTSD, OCD, early emotional pxs, low SES/educ/intelligence, prior trauma, childhood adversity, minority status, female

- **Peritraumatic**: trauma severity, perceived threat/injury, “interpersonal” violence

- **Posttraumatic**: negative appraisals, poor coping, development of Acute Stress Disorder, exposure to reminders, financial/other losses, poor social support

~ DSM-5
PTSD and the Human Brain

Multiple structural brain imaging studies report reduced hippocampal volume

Important in learning and memory

Abnormalities may “mediate PTSD-related deficits in appreciation of safe contexts and contextual memory”

~ Admon, Milad, & Hendler (2013) *Trends in Cog Sci*
PTSD and the Human Brain

In functional imaging studies, most consistent finding is hyperactive amygdala response to emotional stimuli.

Hyperactive amygdala has been associated with heightened fear and increased physiological arousal in PTSD.

~ Admon, Milad, & Hendler (2013) *Trends in Cog Sci*
PTSD and the Human Brain

PFC displays abnormal function and structure, especially in its medial sections.

Associated with deficits in emotional regulation

Insula: less studied in PTSD, but research suggests that it often is hyperactive in response to negative stimuli. May be connected to altered interoception of somatic state.

PTSD and the Human Brain

• Connectivity studies show deficient connection between the amygdala/hippocampus and frontal lobes
  • May relate to problems with recruiting cognitive control to help regulate emotions

• In sum, extant research suggests the following regions are important in emotion regulation and expression in PTSD: the hippocampus, amygdala, PFC, & insula

Disentangling Predisposing Factors from Acquired Neural Changes

~ Admon, Milad, & Hendler (2013) *Trends in Cog Sci*
PTSD and TBI

PTSD
- Flashbacks
- Nightmares
- Isolates Self
- Easily Startled

TBI
- Headache
- Nausea & Vomiting
- Hearing Loss
- Ringing in Ears
- Dizziness
- Attention Problems
- Irritability
- Sleep Problems
- Depression
- Poor Anger Control
- Anxiety

PTSD and TBI overlap in symptoms such as:
- Dizziness
- Attention Problems
- Irritability
- Sleep Problems
- Depression
- Poor Anger Control
- Anxiety

PTSD and TBI can co-occur, with PTSD symptoms often overlapping with TBI symptoms.
Moral Anguish of War

Guilt
- Accident guilt
- Survivor guilt / Luck guilt
- Collateral damage guilt

Shame
- “War takes place in a different time and space... I know I am the same person who was doing those things. And that’s what tears at your soul.”

Moral Injury
- “What does God think of me?”

~ Maguen, S. & Litz, B. (2012)
What Experiences Can Result in Moral Injury?

“Perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations.”

~ Litz, Stein, Dulaney, et al. (2009)
Relationship of Guilt & Shame to Suicide in the Military

- Guilt and shame were independently associated with severity of current suicidal ideation
- Guilt had a particularly strong relationship with frequency of suicidal thoughts
- Effects were noted above and beyond the effects of depression and PTSD

~ Bryan, Morrow, Etienne, & Ray-Sannerud (2013)
Generally, research indicates that PTSD increases risk of suicidal thoughts, plans, and completion.

In a longitudinal study following a clinically depressed civilian sample, presence of PTSD was linked to almost a 3-fold increase in suicide attempts.

~ *Am. J. Epidemiol.* (2010) 171(6), 721-72
The Interpersonal Theory of Suicide

Perceived Burdensomeness

Thwarted Belongingness

High Risk for Suicide

Reduced Fear of Death

~ Van Orden, Witte, Cukrowicz, Braithwaite, Selby, & Joiner (2010)
Assessment Process

- Initial assessment: Stress related Sxs and dangerousness to self or others
- Medical and Functional status, Risk and protective factors
- Establish diagnosis and follow-up, refer for specialty care as needed
- Assess for co-occurring conditions and PTSD severity
- Educate patient and family
- Determine optimal setting for management
Psychotherapy Overview

• Cognitive behavioral therapies most effective

• Typical components:
  • Psychoeducation
  • Anxiety management
  • Exposure: Cognitive Processing Therapy (CPT) or Prolonged Exposure (PE)
  • Cognitive restructuring
  • Eye Movement Desensitization and Reprocessing has also been recommended
Cognitive Processing Therapy (CPT)

- **Why it works:** Trauma often causes people to struggle with memories and thoughts of the event. They may get “stuck” on these thoughts and feel unable to make sense of the trauma.
- Teaches skills to handle distressing thoughts.
- Helps people understand what they went through and how the trauma changed their view of the world, themselves, and others.
- Focuses on examining and challenging thoughts about the trauma.
Prolonged Exposure Therapy (PE)

- **Why it works:** Repeated exposure to thoughts, feelings, and situations that have been avoided helps people learn that trauma reminders do not have to be avoided.
- Pt. learns to identify situations they have been avoiding. By repeatedly confronting those situations, their distress decreases over time.
- Four parts: 1) education, 2) breathing retraining, 3) real world practice (*in vivo* exposure), and 4) talking through the trauma (*imaginal* exposure)
Eye Movement Desensitization & Reprocessing (EMDR)

• **Why it works:** Patients focus on hand movements or tapping while talking about traumatic events. Focusing on hand movements or sounds while talking through the event may help change how people react to memories of trauma over time.

• **EMDR has four main parts:** 1) identification of a target trauma, 2) desensitization and reprocessing, 3) developing positive thoughts and images, and 4) body scan to locate tension or other physical sensations.
Pharmacotherapy

• Strong evidence: SSRIs: paroxetine, sertraline, fluoxetine. SNRI: venlafaxine
• Fair evidence: mirtazapine, prazosin (sleep/nightmares), TCA’s, nefazodone, MAOI’s.
• Harmful: benzodiazepines
  • Short-term use arguably helpful to improve sleep and reduce anxiety → but pts want to keep taking
  • Study suggests long-term use (1-6 months) associated with increase rate of subsequent PTSD\(^1\)
  • May interfere with extinction of fear conditioning

\(^1\)Gelpin et al., 1996, J Clin Psychiatry
Erika: Treatment and Outcome

- **First:** Assess Suicide Risk
- **Psychiatry:** prazosin, SSRI
- **Build coping skills:**
  - Improving sleep
  - Regulating emotions
- **Trauma work** – CPT or PE
- **Neuropsychology Evaluation:** assess PTSD impact on education, support for school accommodations
- **CogSMART Group:** build compensatory strategies for attention, memory, problem-solving, etc.
PTSD Resources

VA Resources for PTSD:
- http://www.ptsd.va.gov/apps/AboutFace/
- http://maketheconnection.net/conditions/ptsd?gclid=CJmQ_-iD-b0CFaVxOgod9ywAjg

Other Resources for PTSD:
- http://www.apa.org/topics/ptsd/

Mild Traumatic Brain Injury Resources (with or w/o PTSD):
- http://www.cogsmart.com