Trauma Treatment: What We Did Then, What is Now

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Learning Objectives:

✓ What is trauma?
  ✓ History of trauma and initial developments in the treatment of trauma;
  ✓ History of treatment methods and classification of traumatic stress as Post Traumatic Stress Disorder.

✓ What changed and when?
  ✓ Diagnostic and Statistical Manual;
  ✓ PTSD Diagnosis.
  ✓ Cautionary Tale: Misdiagnosis.

✓ Adverse Childhood Experiences Study (ACES).

✓ 20th Century PTSD treatments.

✓ New brain science in the understanding of trauma.

✓ Intersection of brain science and the implementation of new trauma treatments and techniques;
  ✓ EMDR;
  ✓ Accelerated Resolution Therapy;
  ✓ Sensorimotor Psychotherapy;
  ✓ Mindfulness/Meditation;
  ✓ Trauma-informed Yoga.
  ✓ On the horizon.

✓ Resources for further information.
“Awareness is the greatest agent for change.”

Eckhart Tolle

So, what is Trauma?
What is trauma?

- First recorded in 1685-95, from the Greek word traûma meaning ‘wound.’
- The experience of and response to a disturbing or distressing event (like physical abuse, rape, war, or natural disaster).
- Often experienced as an emotional response that may have immediate or longer-term reactions like unpredictable emotions, frozen body states, hypervigilance, and somatic symptoms (sweating palms, headaches).
- Originally conceived as a response to events outside the range of human experience (based on the definition in the DSM-III in 1980) but later conceived as a psychological and neurological response to distressing events felt by self or observed as they happen to others.
Trauma: Part of the Human Condition

- Humans are adaptive throughout history, even in face of horrible events.
  - Fight, flight, freeze.
  - Fight or flight = survival.
  - Freeze = death by predator.

- Resilience/adaptivity has resulted in human survival.
  - Trauma still impacts some psychologically, as they go on to lead traumatized lives.

- Three eras of trauma:
  - Hysteria;
  - Shell shock; and
  - Sexual and domestic violence.
For twenty-five centuries, hysteria had been considered a strange disease with incoherent and incomprehensible symptoms. Most physicians believed it to be a disease proper to women and originating in the uterus.


Hysteria.

- 1650-60. Latin for hystericus; Greek for hysterikós.
- Suffering in the womb. Reflecting the Greeks’ belief that hysteria was peculiar to women and caused by disturbances in the uterus.
Hysteria

- Previously known and accepted, but studied and focused on in the late 19th Century.
- Hysteria became a commonly accepted condition, specific to women.
- Some generalized hysteria to be anything mysterious in women.
- Hysteria ~ Hysterectomy.
- Note: hysteria and hysterical are used interchangeably to reflect the psychoanalytic term.

Hysteria

- French neurologist Jean-Martin Charcot began studying hysteria at Salpêtrière hospital.
  - Treated beggars, prostitutes, the insane, and others.
  - The hospital (an asylum) offered greater safety and even respect for women who came to Salpêtrière escaping rape, violence, and exploitation.
  - Sigmund Freud and William James studied under him there for a period of time.
- Charcot offered Tuesday lectures to the public (physicians and actors, authors and the public at large) featuring the hysterical women.
- His studies focused attention on women who had previously been considered malingerers and were only treated by hypnotists or with popular healers and their ointments.

Hysteria

- Charcot’s work brought legitimacy to the study of hysteria.
- A select group of the women studied were featured performers and became something akin to stars.
- Charcot called hysteria “The Great Neurosis.”
- He observed, described, and classified symptoms.
- Focused on symptoms but not on the inner lives of the women.
- Study of women was objective (their speech was described as “vocalization” for example).

Charcot: Let us press again on the hysterogenic point (a male intern touches the patient in the ovarian region.) Here we go again. Occasionally subjects even bite their tongues, but this would be rare. Look at the arched back, which is so well described in textbooks.

Patient: Mother, I am frightened.

Charcot: Note the emotional outburst. If we let things go unabated we will soon return to the epileptoid behavior...(the patient cries again: “Oh! Mother.”)

Charcot: Again, note these screams. You could say it is a lot of noise over nothing.
Rivalry ensued between two of Charcot’s followers: Janet and Freud.

Both decided to delve deeper into the psyche of women by interviewing women about their lives (no longer observational).

The men talked with the women daily about their lives and learned that their condition was caused by psychological trauma.

- Unbearable trauma created an altered state of consciousness which caused hysterical symptoms.

- Janet called this “dissociation” and Freud called it “double consciousness.”
Hysteria

- By mid-1890s, discovery that hysterical symptoms could be alleviated when the traumatic memories and associated feelings could be put into words – “the talking cure.”
  - The talking cure was coined by a patient of Breuer, Freud’s collaborator, called Anna O.
- Doctors soon went on a quest to find the solution to hysteria hidden in the patient’s past.

Hysteria

- Freud took this into the sexual lives of women (sexual assault, incest, abuse).
- Wrote *The Aetiology of Hysteria*, made the claim that:
  - At the bottom of every case of hysteria is childhood sexual abuse, and
  - It is treatable with psychoanalysis.
- Problem was that hysteria was widespread, so this claim needed childhood sexual abuse to be widespread – that was not socially or academically acceptable.
- After unsuccessful work with a patient, Dora, who refused to work with Freud on her “feelings of erotic excitement” (rather than abuse) towards the men her father pawned her off to for sex, Freud stopped work on hysterical patients.
  - Freud’s psychoanalysis approach to all therapy followed his work with hystericics, and focused on sexuality, desire, and fantasies but not on the social context of the patient’s experience.

Hysteria

- Freud declared that hysterical patients’ accounts of childhood sexual abuse were untrue.
- For more than a century after Dora broke off her treatment, Freud’s followers held a grudge against Dora; hysteria patients overall were scorned and returned to silent suffering without intervention.
- Men had never intended to investigate the sexual trauma of women, and by the turn of the century, public backlash against hysteria ensued.

Hysteria

- Meanwhile, Anna O. (real name Bertha Pappenheim) recovered after her two-year treatment with Breuer that was suddenly broken off (left her hospitalized and him with cold chills).

- She became a prominent feminist social worker, directed an orphanage for girls, founded a feminist organization for Jewish women, and travelled across Europe and the Middle East to campaign against the sexual violence and exploitation of women and children.

- The “hysteric” had been cured through the talking cure and passionate activism.

Focus shifted from women to physical symptoms in men.

English surgeon John Eric Erichsen worked with persons with whiplash injuries and “railroad spines,” argued against attributing these to hysteria (believed hysteria was a woman’s issue).

His fellow surgeon, Page, believed these physical symptoms had psychological origins.

German neurologist Henry Oppenheimer attributed trauma symptoms to molecular changes in the central nervous system, coining “traumatic neurosis.”

Early studies of post-war combat soldiers found cardiovascular symptoms and led to long tradition of associating trauma with cardiac neuroses, also called “soldiers’ heart.”

Shell Shock

- Attention began to focus on World War I combat soldiers.
- Over 8 million men died in four years, and millions of observers to this destruction.
- Many men began to act like hysterical women.
- They screamed, wept, became mute, unresponsive, could not move, lost memory and feeling.
- One estimate reported 40% of British battle soldiers had a mental breakdown.
- Hospital space had to be requisitioned to get these soldiers out of the public eye (strong belief that soldiers were performing a manly honor).
- Military authorities attempted to suppress reports of these soldiers’ experiences because of the optics in the public.

Shell Shock

- Study of these soldiers began in England and the United States.
- Symptoms were originally assigned a physical cause.
  - Concussive effects of mortar fire = “shell shock.”
- The name stuck even when soldiers who had not been exposed to mortar fire had these symptoms.
- Focus on moral character of the patient began.
  - Normal soldier could glory in war, no emotional turmoil.
- Constitutionally inferior soldier developed traumatic neurosis.
- Some military officials believed these traumatized soldiers should be court-martialed or dishonorably discharged, not given medical treatment.

Shell Shock

- British psychiatrist Lewis Yealland, in *Hysterical Disorders of Warfare*, recommended these ‘inferior’ soldiers receive treatment involving shame, threats, or punishment.
  - Most prominent traditionalist view on treatment.
- Patients were called lazy and cowards.
- Mutism, sensory loss, motor paralysis = treated with electric shocks.
  - One patient was strapped into a chair and received electric shocks to his throat for his mutism.
  - For hours, unabated, his throat was shocked with Yealland saying, “you must behave as the hero I expect you to be.”
  - The man finally spoke.

Another, more progressive, approach argued that combat trauma was a real psychiatric condition that could occur in any/all soldiers (regardless of character).

Treatment should use psychoanalytic principles, be humane, dignified, and respectful.

Goal was to treat and return soldier to war (true for traditionalist and progressive treatment approaches alike).

Progressive approach used a form of talking cure along with encouragement of soldiers to write and talk freely about the horrors of war.

Many soldiers returned to war; many could not and were reeducated.

These next two videos show actual patients from the Seale Hayne Military Hospital in Devon, UK following WW I.

Diagnosed with shell shock, treated unconventionally for the time.

Treatments included:
- Repetitive muscle movements,
- Hypnosis,
- Re-education.

**Trigger Warning:** Some of these brief films may be difficult for some to watch as they show men experiencing the somatic and psychological effects of trauma. Please choose to watch based on your own level of comfort.
Seale Hayne Military Hospital Patients

Video source from YouTube at War Archives, retrieved from https://www.youtube.com/watch?v=IWHbf5jGJY0
Seale Hayne Military Hospital Patients

Video source from YouTube at War Archives, retrieved from https://www.youtube.com/watch?v=S7JIl9_EiyA
Shell Shock

- Attention to combat neuroses slowed a few years after the end of WW I.
  - The public sought to forget these traumatized soldiers, thought of them as an embarrassment.
- Resurgence of medical interest in combat trauma with advent of WW II.
- Goal was to find rapid, effective treatment, so stigma had to be removed.
- For first time, belief that any man could break down from combat exposure and severity of symptoms was proportional to degree/severity of exposure.
- Finding that the strongest protection against trauma was **interrelatedness of soldiers, morale, and leadership of fighting unit**.
- Brief interventions occurred close to battle lines, keeping soldiers close to their comrades.
  - One study estimates that 80% of American soldiers with combat stress from WW II were returned to some form of duty, often within a week (30% went back to combat units).

Shell Shock

- Unlocking traumatic memories (e.g. through the talking cure) was found not to be a sufficiently lasting cure.
- Likewise, unlocking traumatic memories through hypnosis or sodium amytal (sedative hypnotic/truth serum) did not prove lasting.
- Retrieved memories had to be integrated into consciousness, though these findings were generally ignored in favor of rapid return of soldiers to war.
- No surprise that after WW II, the public and medical interest in combat trauma was again ignored.
  - Soldiers returned home and internalized their experiences without treatment.
  - The Silent Generation.

Vietnam Veterans Against the War started meeting about their experiences in the war.
- Their anti-war testimonies reshaped the idea of “the good soldier” and the “manly honor” of war.
- Their testimony fueled, gave legitimacy to public anti-war sentiment.

By the late 1970s, political pressure from veterans’ organizations resulted in legal mandate for psychological treatment program (Operation Outreach).

Veteran-staffed self-help groups resulted, psychiatric study of veterans followed.

A five-volume study commissioned by the Veterans Administration outlined the wartime experiences of veterans and their lives upon returning from war.
- This and other research helped establish psychiatric diagnosis in 1980.

Sexual and Domestic Violence

- Most modern (20th C.) trauma studies focused on combat veterans.
- Not until women's liberation movement of the 1970s did women's issues in trauma gain consideration again.
- Nearly a century after hysteria, women began to speak out (and publicly) about sexual and domestic violence through consciousness raising.
  - Women's experiences of trauma were coined the "problem without a name."

Consciousness raising led to political shifts and clinical studies.
- 1971: Public speak-out on rape organized by the NY Radical Feminists.
- 1976: First International Tribunal on Crimes Against Women held in Brussels.
- Mid-1970s: Rape reform legislation began in the U.S. with work by National Organization for Women, spread to all 50 states in next 10 years.

Research on sexual assault and childhood sexual abuse began.
- One study (n=900) by Diana Russell in the 1980s found 1 in 4 women had been raped; 1 in 3 had been sexually abused in childhood.

Sexual and Domestic Violence

- Social response to victims developed.
  - 1971: First rape crisis center opens its doors.
  - Offered legal, practical, and emotional support by volunteers to rape victims.
  - Victim advocates began work within the legal system.

- Further studies categorized symptoms in women that were specific to the kind of trauma experienced:
  - Rape trauma syndrome;
  - Battered women's syndrome.

- No longer were these traumatic responses isolated to combat veterans, but now included survivors of rape, domestic violence, and incest.
  - All survivors were experiencing post-traumatic stress disorder.

“Don’t be so loyal to your mind; the mind is not loyal to you.

Bert McCoy

Next: Diagnostic and Statistical Manual
DSM

  - Typical persons effected by traumatic events like combat or disaster.
  - Symptomatology for up to six months, then resolves.
  - After six months, new (different) diagnosis.

  - Similar category diagnosis, Adjustment Reaction to Adult Life.
  - Reaction due to:
    - Unwanted pregnancy with suicidal thoughts;
    - Fear linked to military combat;
    - Ganser syndrome (dissociative-type disorder) in prisoners facing a death sentence.

1980: The DSM-III

- Work began in 1974 to produce an updated DSM, coordinated with the development of the next ICD (version 9).
- Built on findings and research on:
  - Returning Vietnam War Veterans;
  - Sexual trauma victims;
  - Holocaust survivors;
  - Victims of catastrophes, interpersonal violence, and industrial accidents.
- Research findings expanded idea of post-Vietnam War syndrome; multiple stressors caused traumatic experience.

1980: The DSM-III

- Common symptoms shared, but not one path to symptomatology.
- Severe physical and/or psychological stressors with acute or delayed onset, symptoms in three categories:
  - Autonomic responses;
  - Avoidance; and
  - Reexperiencing.
- Post-traumatic Stress Disorder coined (categorized under Anxiety Disorders).

Diagnosis characterized by stressor outside the range of usual human experience distressing to nearly anyone.

Diagnosis accepted, widely adopted in clinical settings.

Clinicians expanded on severity of stressors to include others (abuse in childhood, traffic accidents) more ‘usual,’ in spite of prohibitions in DSM-III.

Delayed onset PTSD (at least six months after event) used to qualify/justify diagnosis from childhood abuse.

- Modified during peace time, greater emphasis on broad range of stressors (particularly psychological experiencing of stressors), eventually includes perceived threats to self or others.

- Research supports that PTSD is fairly common.
  - Present in about 8 million Americans in any given year.
  - ~7 or 8 out of every 100 people (or 7-8% of the population) will have PTSD at some point in their lives.
  - ~10 of every 100 women (or 10%) develop PTSD sometime in their lives compared with ~4 of every 100 men (or 4%).

Research continued, increased understanding of brain biology contributed to changes implemented in DSM-5.

PTSD is moved out of the Anxiety Disorders section and is now in new category of Trauma- and Stressor-Related Disorders.

Criteria applies to children older than 6yoa, adolescents and adults.

Actual or threatened stressor (either direct, witnessed), learning of close family who experienced directly, or through repeated exposure (e.g. first responders).

DSM

- Categorized into four types of symptoms:
  - Reexperiencing (recurrent, intrusive distressing memories);
  - Avoidance of stimuli related to traumatic event;
  - Negative changes in beliefs/feelings (“I am bad,” anhedonia, detachment);
  - Hyperarousal (angry outbursts to sleeplessness to startle response).
- Symptoms must last more than 1 month.
- Dissociative symptoms and With delayed expression are both specifiers.

Observations: How Trauma Presents

- Depression
- Irritability
- Loss of interest
- Numbing
- Decreased concentration
- Insomnia
- Emotional overwhelm
- Loss of a sense of the future/hopelessness
- Substance abuse
- Shame and worthlessness, guilt

- Little or no memories (loss of time)
- Nightmare and flashbacks
- Hyper-vigilance and/or mistrust
- Generalized anxiety and panic attacks
- Chronic pain and headaches
- Self-destructive behavior
- Loss of sense of “who I am”
- Feeling unreal or out of body
- Avoidance
- Eating disorders

Online Presentation by Camille Drachman, Sierra Tucson, “Trauma and Recovery: The Biology of Trauma and Nervous System Injury,” presented September 15, 2016.
A Cautionary Tale: Misdiagnosis

- Because there has been such long-term development of the PTSD diagnosis, there has been an increased risk for misdiagnosis.
- Instead of PTSD, women (in particular) have been diagnosed with Borderline Personality Disorder;
- Men and women have been diagnosed with:
  - Primary substance use disorder;
  - Depression;
  - Anxiety;
  - Bipolar disorder.
The past will let go of you if you let go of the past.

Timber Hawkeye

Next: Adverse Childhood Experiences
The CDC-Kaiser Permanente Adverse Childhood Experiences (ACE) Study.
One of the largest studies on childhood abuse, neglect, and health.
Originally studied more than 17,000 Southern Californians with Kaiser Permanente insurance (over two waves of data collection).
Asked questions about their lives prior to the age of 18.
Questions inquired about abuse, neglect, maltreatment, and different factors of household dysfunction in their home life.
The more factors identified, the greater health risks were associated.
Everyone has an ACE score between 0 and 10.

From the CDC website: http://www.cdc.gov/violenceprevention/acestudy/about.html
ACEs

Prevalence of Each ACE Among WV Adults – 2014 BRFSS Data

Many states (including West Virginia) now collect ACEs information through Behavioral Risk Factor Surveillance System screening, which is state-based and randomized. The survey is by telephone (random-digit dial) and asks questions about health conditions and risk factors. West Virginia last asked ACEs questions during the BRFSS survey in 2014, with the data reported in 2015. (Remember: these are WV adult respondents recalling events prior to the age of 18 years).

Slide data from Daniel Christy, MPA, Director of WV DHHR Health Statistics Center, WV BRFSS ACE data 2014
ACE research supports that three or more ACE scores put an individual at high risk for health conditions and chronic disease in adulthood. For example, an ACE score of 6 in a male creates a 4,600% increase in likelihood of becoming an IV drug user later in life.

ACEs

- Prevalence for high risk ACE is higher among females than males.
  - Females are higher risk (3+ ACE score than males).
  - Those in the 25-34 year old age group are higher risk than those over age 55.
  - No consistent pattern of prevalence correlated with educational attainment.

Slide data from Daniel Christy, MPA, Director of WV DHHR Health Statistics Center, WV BRFSS ACE data 2014
Trauma Sxs in Children, Misdiagnosis

Video source from YouTube at NICABM, Ruth Buczynski, retrieved from https://www.youtube.com/watch?v=rbqerGQXonUA
“Between stimulus and response there’s a space, in that space lies our power to choose our response, in our response lies our growth and our freedom.”

Viktor Frankl

Next: 20th Century PTSD Treatments
20th Century PTSD Treatments

- Early 20th Century focused on asylums, hypnosis, psychoanalysis, and talk therapy.
- Late-1970s focused on survivor-led support groups similar to self-help or peer recovery groups.
- Talk therapy and Gestalt therapy bridge the 1970s and 1980s.
- Psychodynamic therapy and group psychotherapy emerged as well.
- By the 1980s, understanding of PTSD treatment as a biopsychosocial issue; combined medications with treatment and support groups.
- Unfortunately not all medications taken are prescribed; high incidence of alcohol and other substance use disorders co-occurring with PTSD.

20th Century PTSD Treatments

- Purposes of medications for treatment of PTSD:
  - Reduction in frequency/severity of intrusive symptoms;
  - Reduction in hyperarousal;
  - Reduction in avoidance behavior;
  - Reduction in tendency to interpret incoming stimuli as recurrences of the trauma;
  - Improvement in mood (reduction in depression, numbing);
  - Reduction in psychotic and dissociative symptoms; and
  - Reduction of impulsive aggression against self and others.

- MAOIs, SSRIs, Tricyclic antidepressants, anticonvulsants, beta-adrenergic blockers, and Benzodiazepines were all tried in the 20th Century.

20th Century PTSD Treatments

- By 1990s, PTSD believed to effect 9% of U.S. population.
- Cognitive behavioral therapy (CBT) gained traction with widespread practice and research.
  - Exposure therapy (goal=habituation of the fear by repeated exposure to the memory of the trauma) develops.
  - Grows into Prolonged Exposure (PE) therapy (particularly based on work with rape victims).
    - Repeated reliving of the trauma through narration/listening to narrative better decreases meaning of trauma memory – an event, not the meaning of the whole world.
    - Helped to better discriminate between danger and safety.

20th Century PTSD Treatments

- Anxiety Management Training, particularly Stress Inoculation Training (SIT), teaches techniques to cope with stress and anxiety (e.g. relaxation, cognitive restructuring) to develop coping.
  - Helps survivor feel more in control, helps build confidence to avert potential future danger.

Trauma is in the nervous system, not in the event.

Peter Levine

Next: The Brain Science
Brain Science

- Brain imaging in the early 1990s helped develop understanding of parts of the brain and its functions.
  - Learned that trauma is changing the function and operations of the brain.
  - To be traumatized is to organize your life as if the trauma is still ongoing.
- In scans, images highlighted the limbic system in the brain – already known as the emotional area of the brain – and particularly the amygdala.
- Arousal during fear was now shown as a physiological state in the body.

Brain Science

- In trauma, the “old brain” (fight-flight-freeze) takes over and partially shuts down the newer brain (cognition-reasoning).
  - If the old brain response is successful and we escape danger, we recover our equilibrium.
  - If not, the brain continues to signal to the body to escape (in vain) and stress hormones are released without being utilized.

The brain is in charge of our survival.

When trauma interrupts our internal signals of survival, the effects are felt (and seen) in the brain and body.

Trauma recalibrates the brain’s alarm system, increases release of stress hormones, and alters system that filters relevant information from irrelevant (danger vs. safety).

Important areas for understanding this include the:

- Neocortex - the thinking, newest part of the brain;
- Reptilian brain – the oldest part and first to develop in the womb because it controls breathing, heart rate, other ANS functions*; and
- Limbic system – the emotional part of the brain that develops in response to the environment.

Brain Science

*The ANS regulates three physiological states:

1. First level is social engagement (when we feel threatened, we call out for help, support, and comfort from those around us).
2. If no one comes or danger is more imminent, we revert to fight or flight.
3. If we cannot fight back or run away, we turn to freeze or immobilization.

Brain Science

- The vagus nerve operates based on each stage of physiological threat.
  - The vagus nerve is the longest nerve of the autonomic nervous system.
  - Generally, the vagus nerve directs you to smile back at someone smiling at you, or to nod in agreement with someone talking.
- In the first level threat, the vagus nerve tells the body to show distress in facial expressions or to have a quavering voice when calling for help.
- In the second level, the vagus nerve alerts the limbic system to organize muscles, lungs, and heart for fight or flight activity (e.g. adrenaline rush, sweating, HR increase, etc.).
- In the third level, the activation of the vagus nerve taps into the dorsal vagus nerve which vastly reduces metabolism: HR drops, can’t breathe, bowels empty or stop working: freeze.
- Additionally the Broca’s region of the brain shuts down and language is limited while the primitive brain takes over.

Scientific findings shed proof that people’s behavior after trauma is not willful but physiological and treatment directions shifted to help survivors ameliorate symptoms.

Several parts of the brain have been studied using neuroimaging in trauma studies.

Key areas related to activation, volume, and perception (esp. inability to perceive danger from non-danger) include:
- Amygdala;
- Ventromedial Prefrontal Cortex;
- Anterior Cingulate Cortex;
- Insula;
- Hippocampus; and
- Gray Matter.

Brain Science

- Amygdala - part of the limbic system. Performs a primary role in the processing of memory, decision-making, and emotional reactions.

- Hippocampus - part of the limbic system. Involved in the consolidation of information in memory.

- Ventromedial Prefrontal Cortex (mPFC) - part of the prefrontal cortex. Plays a role in inhibition of emotional responses and in the process of decision making.
Brain Science

- **Anterior Cingulate Cortex (ACC)** - shaped like a collar around the front corpus callosum. Responsible for impulse control, reward, decision making, and emotion.
- **Dorsal** part of the ACC is connected with the prefrontal cortex and parietal cortex, as well as the motor system and the frontal eye fields, making it a central station for processing top-down and bottom-up stimuli.
- **Ventral** part of the ACC is connected with the amygdala, nucleus accumbens (reward system), hypothalamus (metabolic processes), and anterior insula. Involved in assessing the salience of emotion and motivational information (sticking with a task).
- Insula - folded deep into the cerebral cortex. Involved in consciousness, perception, and linked to emotion.
- Gray matter - distributed at the surface of the cerebral cortex, cerebellum, and cerebrum. A major part of the CNS, responsible for muscle control and sensory perception.
Brain Science

Research Findings:

- Increased activation in the insula. Some studies show correlation between the insula and symptom severity.
- Increased amygdala blood flow in combat veterans with PTSD and co-morbid substance use disorder.
- Result is hyper-responsivity, exaggerated fear response during trauma.
- Alternatively, decreased amygdala activation associated with resilience to PTSD.

Deactivation (or less activation) and decreased blood flow in the ventral mPFC during trauma exposure.

Alternatively, activation in the ventral mPFC found to inversely correlate with PTSD symptom severity;

One study showed patients with PTSD who did not respond well to CBT had significantly greater pretreatment activation in the anterior cingulate cortex.

Studies have shown both increased and decreased hippocampal activation in PTSD (findings: the hippocampus functions abnormally in PTSD).
Brain Science

Research Findings:

- Small study of 12 persons with PTSD, 10 without, found decreased hippocampal volumes and white matter atrophy in PTSD subjects.
- Controlled for lifetime alcohol intoxication (so alcohol use was not changing hippocampal volume).
- No relationship found between white matter atrophy and hippocampal volume; both occurred but not related or causal.

Brain Science

Research Findings:

- Many studies find smaller hippocampal volume in PTSD patients who have lived with the trauma for a number of years.
- In studies focused on recent patients with new trauma, findings show that smaller hippocampal volume exists and is a predisposing factor in developing PTSD.
- Recommendation of this study is to screen hippocampal volume soon after trauma event to see who will likely develop PTSD so treatment can begin earlier.

Research Findings:

- PTSD patients tend to generalize their fear in response to cues that resemble the feared object, but still are distinct from the [actual] feared object.
- Generalization process leads to a proliferation of symptoms incorporated as new triggers by patients.
- Amygdala is more activated during threat and no difference when threat is from perceived or actual trigger.
- Summary is that changes in brain function due to PTSD makes people more vulnerable to generalized anxiety – no distinguishing between most fearful or least fearful, real or actual threat.
Autonomic Nervous System

- Unconscious control system that regulates bodily functions such as the heart rate, digestion, breathing, pupillary response, swallowing, urination, etc.
- In control of fight-or-flight.
- Controlled by the hypothalamus and receives input from the limbic system.
- Divided into two branches or pathways (sympathetic and parasympathetic nervous systems).
Autonomic Nervous System

- Heart rate, blood pressure, sweating, digestion, respiration rate.
- Connects brain to organs: first to start working in utero.
- Animals in the wild must release trauma or they risk dying.
  - Zebra runs from predator and keeps running.
- Humans may shake after a scary event and that is a healthy release from trauma.
  - Being active and moving is part of natural system/response.
- Yet there is also a frozen state in response to trauma (think of “playing possum” or fainting goats).
- Ideally, trauma responses are exercised through action; not always.
Autonomic Nervous System

- After trauma, people either move (fight/flight) or freeze.
- Hurricane Katrina: people were forced to freeze.
- Resolution of trauma (processing of traumatic events) is helped or hindered based on ability to move.

Autonomic Nervous System

Fight-Flight (sympathetic nervous system) – mobilizing system
Freeze (parasympathetic nervous system) – dampening system
Autonomic Nervous System

**Fight/Flight**
- Low level = concern, worry
- High level = fight, run

**Freeze**
- Low level = entranced focus, lock eyes on object
- High level = dissociation
Trauma Treatment Approach

- **Top-down:**
  - Talk therapy. Starts with the Prefrontal Cortex (responsible for intellect, complex learning, reasoning, recall) and uses cognition to learn about the self while processing memories.

- **Bottom-up:**
  - Allow the body to have experiences that counteract the helplessness or rage or collapse that result from trauma. Therapies of movement. Start with the Limbic System (the emotional, feeling brain that stores trauma experience) and involve activity, behavior change/avoidance, cognition override.

- **Medications:**
  - Take medicines to shut down responses in order to change the way the brain organizes information and/or reacts to information.

- **Combination of all three:**
  - Sensorimotor psychotherapy, EMDR, CBT, others. Combine talk therapy with movement – taps into the limbic system to resolve trauma. Medications may help access points in the traumatized person to enhance the work of therapy.
One can choose to go back towards safety or forward towards growth. Growth must be chosen again and again; fear must be overcome again and again.

Abraham Maslow

Next: Polyvagal Theory
Polyvagal Theory

- Developed by Dr. Stephen Porges, Director of the Brain-Body Center at the University of Illinois at Chicago, during his study of vagus nerve.
- Theory specifies two functionally distinct branches of the vagus nerve:
  - One responsible for immobilization,
  - One for social communication/self-soothing.
- Physiological state dictates the range of behavior and psychological experience.
- Emphasizes that our nervous system has more than one defense strategy.
- Whether nervous system dictates fight/flight or immobilization is not voluntary or conscious.
  - Nervous system evaluates risks of the environment then responds.
- Immobilization response is true for some but not all – that is why not everyone in the face of trauma develops PTSD.

Polyvagal Theory

- Vagus nerve is a cranial nerve that exits the brain stem and travels through much of our body.
- Primary sensory nerve, with 80% of its fibers sending information to the brain.
  - 20% of its fibers can change our physiology: make our hearts go faster or slower.
  - Part of the Autonomic Nervous System.
- Vagus nerve is influential as an accelerator or an inhibitor (and can actually stop the heart in dire situations).
- Effects the sympathetic nervous system (gas pedal: fight-or-flight) and the parasympathetic nervous system (brake pedal: immobilization/freeze).
Polyvagal Theory

- Immobilization is a component part of a very old reptilian type of defense system that humans have kept in spite of evolution.
- Reptiles have one vagal pathway; mammals have two (includes the distinctly mammalian myelinated vagus nerve).
- For reptiles, this immobilization feature is useful (they are slow, don’t need a lot of oxygen or support a big brain); for humans, there is difficulty rebounding to “normal” again after having been in this state because we need oxygen and brain activity.
- Polyvagal theory posits that the Autonomic Nervous System decides which situation is safe and which is unsafe, unconsciously triggering the appropriate system and vagus nerve pathway.
Polyvagal Theory

- Porges posits that lack of support and resilience in childhood causes our body to lose regulation of the mammalian pathway of the vagus nerve, and rely on the reptilian pathway instead.
  - In the face of stress and fear, one might have fatigued muscles, feel ‘fuzzy’ or like a case of the flu, pass out, or dissociate.
- Goal of polyvagal theory is to get the individual back out of reliance on the reptilian vagal nerve pathway.
Polyvagal Theory

How to do this:

- Talk therapy using the framework of understanding polyvagal theory.
- Teach people to move from reptilian pathway to safety, then to social engagement state – shift into social engagement (this is a coping process).
  - Social engagement is uniquely inherent to mammalian behavior (coping goal – remember the soldiers?).
  - Dissociative state, to fight/flight, to safety, to social engagement.
- Encourage trauma victims to celebrate the resourcefulness of their bodies (e.g. not fighting during rape probably kept them alive in that instance) rather than feeling guilt or worthlessness over their body response.
  - There is no such thing as a bad response, only adaptive responses.
Polyvagal Theory

- Breath work, particularly extending exhales longer than inhales for a period of time, activates the parasympathetic nervous system.
- Moves person into fight/flight, and with that the person needs to move from breath work to movement to expend energy and move into safety.
  - Movement;
  - Drawing;
  - Play.
- Low-frequency sounds throw individual into fearful, cautionary state so get rid of those sounds (Peter and the Wolf, MRI machine, hospitals, etc.).
- Mindfulness infers a safe zone: if we are practicing mindfulness we are not judging, vs. evaluating the environment for safety (which is judging).
- Therapists look for the defense mechanism hierarchy in the client.
- Recognize shifts from fight-or-flight to shutdown when clients feel trapped.
- Recognize the movement from shutdown into fight-or-flight that offers a possible shift into social engagement.
- Know (encourage) if and when the client can gain a sense of safety.
- Help client honor body’s good work.
Brain Changes from Trauma

Video source from YouTube at NICABM, Ruth Buczynski, retrieved from https://www.youtube.com/watch?v=LKWUmxwX1ZI
Newer Trauma Treatments
Selected trauma treatments that integrate top-down and bottom-up processing.
True healing is not the fixing of the broken, but the rediscovery of the Unbroken.

Jeff Foster

Next: EMDR
EMDR

- Eye Movement Desensitization and Reprocessing.
- Created by Francine Shapiro in 1987 after experiencing her own distress.
- While walking one day, she noticed the disturbing thoughts she was having disappeared, noting that her eyes spontaneously moved back/forth in an upward diagonal while thinking of the thoughts.
- When she brought the thoughts back to mind, they were diminished and not as valid as before.
- She soon tested this pattern on 70 people over a 6 month period.
- To help them spontaneously move their eyes, she asked them to follow her fingers.
- Became formalized treatment to conjure an image of the traumatic experience while evoking feelings associated with the event and following eye movements (or holding vibrating paddles) that stimulate bilaterally.

EMDR

- Became formalized treatment to conjure an image of the traumatic experience while evoking feelings associated with the event and following eye movements (or holding vibrating paddles) that stimulate bilaterally.
- Used as an approved treatment for PTSD by the Veterans Administration (along with PE).
- NIH study found 7 of 10 studies reported EMDR therapy to be more rapid and/or more effective than trauma-focused cognitive behavioral therapy.
- A Legacy Program in SAMHSA NREPP, so will be re-reviewed for evidence-based outcomes by 2018.
- Cost is approximately $1,500 for Part I and II of the training weekends.
- [www.emdr.com](http://www.emdr.com)
- (30 years old but included in newer treatments because many do not know about it and not well funded historically to determine why it really works.)


EMDR

Eight Phase Protocol.

- **Phase 1: Client History and Treatment Planning;**
  - Medical or psychological conditions identified, targets identified.

- **Phase 2: Preparation;**
  - Therapeutic alliance, client relaxation and safety procedures.

- **Phase 3: Assessment;**
  - Image of the memory is established, along with an associated negative cognition (e.g. “I am worthless”) and a desired positive cognition that will be installed later (e.g. “I am worthwhile”).
  - Client identifies the level of disturbance on a 10-pt. Subjective Unit of Disturbance (SUD) scale.
  - Client identifies the location of the physical sensations associated with the memory.

EMDR

- Phase 4: Desensitization;
  - Bilateral stimulation performed and SUD level is checked on (or focus of memory changes) until SUD level is reduced to 0 or 1.

- Phase 5: Installation;
  - Focus is on strengthening/increasing the positive cognition to replace the negative cognition until it is installed at a 7 on Validity of Cognition (VOC) scale.

- Phase 6: Body Scan;
  - Scan of the body for physical sensations while the memory and positive cognition are held in the mind simultaneously.
  - Existing physical sensations are targeted for successive bilateral stimulation sets until diminished or new targets arise.

EMDR

Phase 7: Closure;
- Whether or not the reprocessing is complete, the client is returned to a state of equilibrium with reminders to return to calm/safe place, use relaxation techniques, keep a journal of new disturbances.

Phase 8: Reevaluation;
- Implemented at the beginning of each new session to determine if the (previous) installation has been maintained, and then re-work old target material or move on to new target material accordingly.

EMDR  (Video Caution: Hairstyles, eyeglasses, and computers are dated. And I think Hugh Downs is dead).

Video source from YouTube at CalSouthern Psychology, retrieved from https://www.youtube.com/watch?v=GLUldcJE0Q
“Our journey is about being more deeply involved in life and yet less attached to it.”

Ram Dass

Next: Accelerated Resolution Therapy
Accelerated Resolution Therapy

- Developed in 2008, Accelerated Resolution Therapy (ART) is a:
- Brief, exposure-based psychotherapy for psychological trauma, depression, anxiety, phobias, OCD, and substance use.
- Structured program delivered in one to five, 60–75 minute sessions over 2 weeks.
- Incorporates specific visualization techniques enhanced through the use of rapid eye movements (similar to eye movements during REM sleep) combined with talk therapy.
- Uses a directive approach that reduces physical and emotional reactions to distressing memories/images stored in the brain.

Accelerated Resolution Therapy

- Session begins with client visualizing a prior traumatic experience that causes anxious side effects (sweating, rapid heart rate, etc.).
- The client’s eyes follow the therapist’s hand as it moves rapidly from left to right.
- While the therapist is doing this, she also leads the client through talk therapy.
- The therapist then helps the client create and lay-over new memories on top of the old (distressing) memories.
Accelerated Resolution Therapy

Video source uploaded by www.acceleratedresolutiontherapy.com on YouTube at https://www.youtube.com/watch?v=DfsQ_sZ9ml
Accelerated Resolution Therapy

- Differs from EMDR in that it allows replacing of positive image/memory by therapist over top of negative memory.
- EMDR allows more free-association by the person in therapy (very structured in ART).
- SAMHSA NREPP finds ART effective for reducing trauma and stressor-related disorders.
- Implemented with adults in three military settings and community-based & private-practice settings in U.S. since 2011.
- Cost to train is $1,500.
- [www.acceleratedresolutiontherapy.com](http://www.acceleratedresolutiontherapy.com)

Emotion arises at the place where mind and body meet. It is the body’s reaction to mind.

Eckhart Tolle

Next: Sensorimotor Psychotherapy
Sensorimotor Psychotherapy

- Formalized and popularized by Peter Levine, Dan Siegel, and Pat Ogden.
- Based on neuroscience that confirms physical/bodily feelings form emotional states.
- Also on concept of fight-flight-freeze: movement is survival, and freeze is what happens to traumatized people.
- Negative schema (“I am marked,” “I am never safe,” “I am worthless”) manifest in the body and affect posture, movements, respiration, and heart rate.
- Cognitive processing + emotional processing = sensorimotor processing.
- Talk therapy while paying specific attention to somatic responses in the body, paying attention to how the body affects and influences the processing of information.

Sensorimotor Psychotherapy

- **Cognitive processing** (the process for reasoning, decision-making, problem solving, meaning making) is disrupted in traumatized people because they have maladaptive interpretations of life based on their experience of the trauma.
  - “It was my fault.” “I am bad.” “All men are dangerous.”
- Cognitive processing is inextricably linked to our bodies.
- If the body shapes reason and beliefs, then capacity for insight and self-reflection is limited.
- Reflecting on, exploring, and changing the posture and movements of the body may bring the mind back to consciousness (reality of true cognition).

Sensorimotor Psychotherapy

- Cognitive processing: e.g. client says he knows he is safe but does not feel safe.
- Shoulders are hiked up, holds breath, describes tightness in chest and stomach.
- Therapy promotes mind-body connection and work on relaxing his shoulders and deepening his breath.
- During exploration through talk therapy, memories of his trauma emerge, are dealt with, and resolve.
- After several sessions, client says he feels a shift in his body and beliefs.
- Feels safer with relaxed shoulders, smoother breathing, and less stress in his torso.

Sensorimotor Psychotherapy

- Emotional processing (the process of interpreting signals and cues based on the emotions experienced in response to stimuli) is disrupted in traumatized people because they may lose the capacity to rely on emotions to guide their actions.

- Traumatized people may also not be in touch with their emotions or may be unable to describe them in words.

- Often, traumatized people are fixated on trauma-related emotions of grief, fear, terror, or anger.

- e.g. client comes in with hunched shoulders but is unsure why.

- Asked to explore the feeling in her shoulders, she says it feels like her shoulders are holding back anger.

- Processing explores the source of that anger (anger at her abusive father).

Sensorimotor Psychotherapy

Sensorimotor processing has three components to processing.

1. Inner-body sensation: traumatized people suffer from feeling too much and feeling too little.
   1. Increases capacity to sense and describe sensation separate from the trauma-related emotions (fear, shame, terror, etc.).

2. Five-sense perception: taking in information through the five senses, both physical act of sensing and individual perception of sensory input.
   1. Trauma-related perception is based on past trauma-related cues, and incongruous with current reality.
   2. Awareness of real trauma-related cues is compared to internal beliefs, images, and emotions to help distinguish real danger versus nonthreatening situations.

3. Movement: same parts of the brain that generates reason and helps problem solve is involved in movement.

1. When a person feels danger is imminent, a sequence of responsive (defensive) motor actions are predictable.

2. If the person is attacked and overpowered, unable to fight back, the sequence of defensive motor actions may persist in distorted forms (tightened muscles, held breath, sudden aggression).

3. The traumatized person relies on the message the body (muscles, motor actions) gives rather than the reality of the environment (traumatized person always ready to react to danger).

4. Movement component helps bring the body awareness into congruence with the reality of the environment.

Sensorimotor Psychotherapy

Three phases of treatment.

- Phase I: clients learn to keep arousal (hyperarousal) within a window of tolerance (neither numbness nor hyper-reactivity).
  - Recognize triggers, ground body, and limit access to overstimulating situations.
  - Awareness in the body is emphasized.
  - Self care is promoted (regular sleep patterns, eating habits).

Phase II: unintegrated memory fragments (physical sensations, emotions, actions) are addressed.

- Clients identify and embody resources that help coping with traumatic events and learn to use the body to develop mastery over remembering past traumatic events.
- Clients overcome past feelings of helplessness and shame by finding the innate defenses that failed in the midst of the original trauma (the “acts of triumph”) and empowering these actions to develop mastery over the (memory of the) trauma.

Sensorimotor Psychotherapy

- Phase III: clients integrate the skills of phase I and phase II to begin practicing in their daily lives.
  - Skills are used to support healthy risk taking and more active engagement in the world.
  - Cognitive distortions are explored and challenged.

Sensorimotor Psychotherapy

Video source from YouTube at Somatic Experiencing Trauma Institute, retrieved from https://www.youtube.com/watch?v=bjeJC86RBgE
Next: Therapeutic Techniques
Mindfulness Meditation

- Originating from Buddhist meditation techniques but not religious in present practice.
- Focus is on being aware of the present moment and simply noticing feelings and thoughts, nonjudgmentally, as they come and go.
- Accepted therapy for anxiety, depression, stress, addiction, chronic pain, and trauma.
- Foundation for other trauma therapies (sensorimotor and EMDR).
- Formalized into Mindfulness-Based Stress Reduction by Jon Kabat-Zinn
- Mindfulness practice combines breathing, body awareness, sensation awareness, and focused attention.
Mindfulness Meditation

- MRI scans show that after an 8-week course in mindfulness, the amygdala shrinks and the pre-frontal cortex becomes thicker.
  - Amygdala associated with fear and emotion; responsible for fight or flight response and body response to stress, where trauma and addictive responses are stored.
  - The pre-frontal cortex is associated with awareness, concentration, and decision-making – supervisory or executive function.
- Mindfulness practice decreases primal responses to trauma and cortisol (stress) release while increasing thoughtful responses.
- These brain improvements were lasting for practitioners and were noticeable in brain scans even when the practitioner was not practicing mindfulness meditation.

Up Next:
15 Second Breathing Exercise
Breath Work

- Researchers have recently found the “breathing pacemaker” in the brains of mice.
- Cluster of 3,000 neurons that sit in the brainstem, control autonomic breathing.
- 175 of those neurons in mice direct the brain to calm or stimulate.
- In a study that eliminated the 17 neurons, researchers found the mice to be extremely mellow.
  - Researchers named this the pranayama pathway.
- If humans have the same pathway as mice, then we can better control how to calm ourselves.
- Many studies have looked at the connection of the breath to the body.
- Runners exhale quickly to gear up for a race; focus on the exhale in yoga to calm down (remember polyvagal theory?).

Nothing can bring you peace but yourself.

Ralph Waldo Emerson

Next: Trauma Sensitive Yoga
Trauma Sensitive Yoga – Overcoming Trauma through Yoga
David Emerson and Elizabeth Hopper, Ph.D.
Trauma Sensitive Yoga

- David Emerson works at The Trauma Center (Bessel van der Kolk is Medical Director there), started as a social worker 10 years before yoga teacher.
- Trauma Center Trauma-Sensitive Yoga (TC-TSY).
- Idea to make yoga accessible to persons experiencing trauma.
- Hatha-based yoga (focuses on physical forms, breathing in position).
- Promotes trusting relationship between teacher, student (non-coercive).
- Yoga reconnects the trauma survivor to the body.
  - Encourages relaxation in muscles.
  - Decreases release of cortisol.
  - Increases ability to self-calm.
- SAMHSA NREPP says it shows promise for reducing trauma and stress-related symptoms.
Trauma Sensitive Yoga

- Makes modifications for trauma yoga (no suggestive language, no touching) to support emotion regulation, stabilization, and skill-building.
- For adults with chronic, treatment-resistant posttraumatic stress disorder (PTSD); complex PTSD; dissociative disorders; and other related emotional and behavioral problems.
- Four overarching themes of the intervention are to:
  1. Experience the present moment;
  2. Make choices;
  3. Take effective action; and
  4. Create rhythms.
- Designed for 10, 1-hour groups, but also can be longer and revolving enrollment.
- Adaptations of the practice are available for implementation with youths.
- Designed to be implemented by licensed mental health professionals and certified yoga teachers, but additional training required (~ $4,000).
- Promising for reducing trauma and stress-related symptoms.
Forgiveness is the gift of releasing yourself from the past and unclogging your barrier to joy.

Amara Honeck

Next: Next Steps in Trauma Treatment
Next Steps in Trauma Treatment

- Acupuncture;
- Massage;
- Art therapy (particularly concurrent with talk therapy process);
- Biofeedback/Neurofeedback (new again with modern gadgets);
- Acceptance and Commitment Therapy (need more PTSD-specific research);
- Medical Cannabis;
- New pharmacological medications and old medications for new uses (Doxycycline study, http://theconversation.com/how-we-discovered-that-a-common-antibiotic-may-be-able-to-treat-post-traumatic-stress-disorder-75645);
- Brain-specific treatment
  - e.g. using repeated light pulses to tune down the input from the amygdala to the PFC to decrease memory of fear (http://www.nature.com/neuro/journal/vaop/ncurrent/full/nn.4523.html).
- What have you heard about?
You don’t have to see the whole staircase. Just take the first step.

Martin Luther King

Final: Books and Resources
Book Recommendations
Book Recommendations
Resources

- The Trauma Center, [http://www.traumacenter.org/](http://www.traumacenter.org/)
- National Institute for the Clinical Application of Behavioral Medicine (NICABM), [http://www.nicabm.com](http://www.nicabm.com)
- Sensorimotor Psychotherapy Institute, Pat Ogden, [https://www.sensorimotorpsychotherapy.org/home/index.html](https://www.sensorimotorpsychotherapy.org/home/index.html)
- Peter Levine, somatic experiencing, [https://somaticexperiencing.com/](https://somaticexperiencing.com/)
- U.S. Department of Veterans Affairs, PTSD: National Center for PTSD, [https://www.ptsd.va.gov/](https://www.ptsd.va.gov/)
- Palouse Mindfulness (online MBSR free), [https://palousemindfulness.com/](https://palousemindfulness.com/)
- PESI online behavioral health training, [https://www.pesi.com/](https://www.pesi.com/)
Thank you!

Stephanne.c.Thornton@wv.gov for questions