



THE NEUROBIOLOGY OF TRAUMA

August 12, 2021



**OHIO VICTIM WITNESS ASSOCIATION
WENDY RICKS HOFF, RA CA TRCC
TRAINING AND TECHNICAL ASSISTANCE COORDINATOR**

Ohio Victim Witness Association

Our Mission

To be an Ohio leader for crime victims, advocates, and allied professionals by promoting best practices that result in meaningful rights and quality services

Our Vision

Access to meaningful and equitable victim services

Our Values

OVWA's trauma-responsive work, values:

- Equity
- Empathy
- Integrity
- Leadership
- Empowerment
- Cultural Humility

Objectives

Participants will:

- Gain an understanding of what trauma is and the brain/body response to traumatic events
- Learn common trauma responses and trauma's impact on memory
- Identify tools to work with survivors experiencing a trauma response

Things to Remember

Establish and provide safety

- What helps you feel safe?

Underlying Question is...

- What happened to you?

Symptoms are...

- Adaptations to traumatic events

Healing happens...

- In relationships

What is Trauma?



Individual trauma results from an event, series of events, or set of circumstances that is experienced by an individual as physically or emotionally harmful or life threatening and that has lasting adverse effects on the individual's functioning and mental, physical, social, emotional, or spiritual well-being.

Traumatic Events



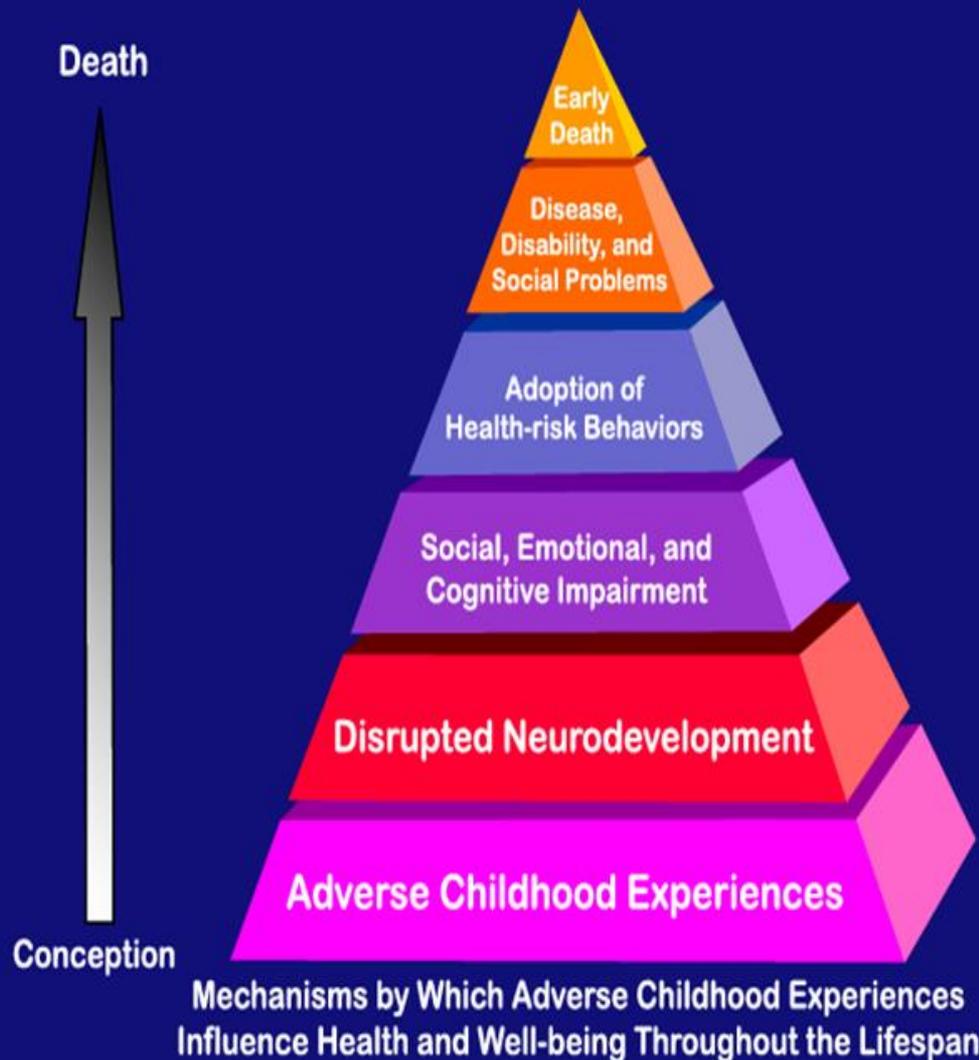
- (1) render victims helpless by overwhelming force;*
- (2) involve threats to life or bodily integrity, or close personal encounter with violence and death;*
- (3) disrupt a sense of control, connection, and meaning;***
- (4) confront human beings with the extremities of helplessness and terror; and*
- (5) evoke the responses of catastrophe.*

Judy Herman, Trauma and Recovery, (1992)

Potential Traumatic Events

Abuse	Loss	Chronic Stressors
Emotional	Abandonment	Poverty
Sexual	Neglect	Racism
Physical	Separation	Involved medical procedures
Domestic Violence	Natural Disaster	Community trauma
Witnessing Violence	Accidents	Historical trauma
Bullying	Terrorism	Family members with substance use disorder
Cyberbullying	War	
Institutional		

ACE Study



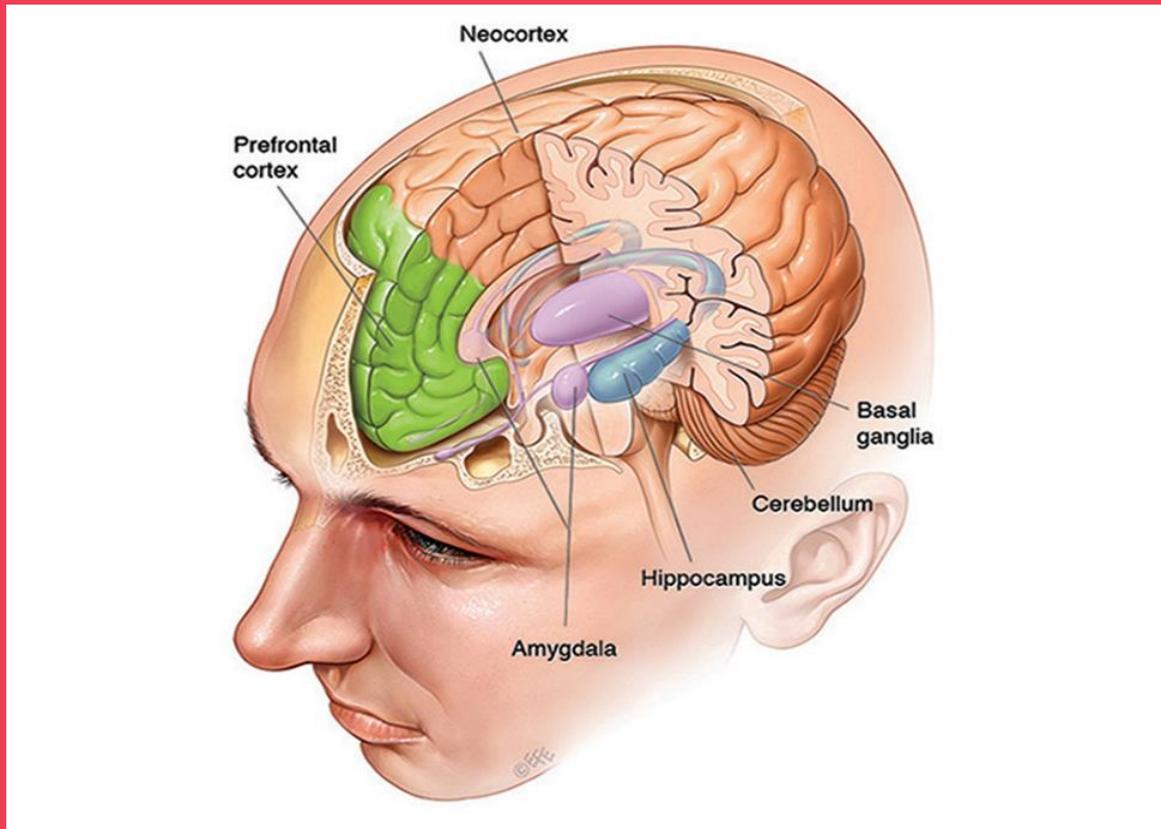
The **Adverse Childhood Experiences Study (ACE Study)** is a research study conducted by Kaiser Permanente health maintenance organization and the Centers for Disease Control and Prevention (CDC). Participants were recruited to the study between 1995 and 1997 and have been in long-term follow up for health outcomes.

Brain Building

- Experiences Build Brain Architecture
- Serve & Return Interaction Shapes Brain Circuitry
- Toxic Stress Derails Healthy Development

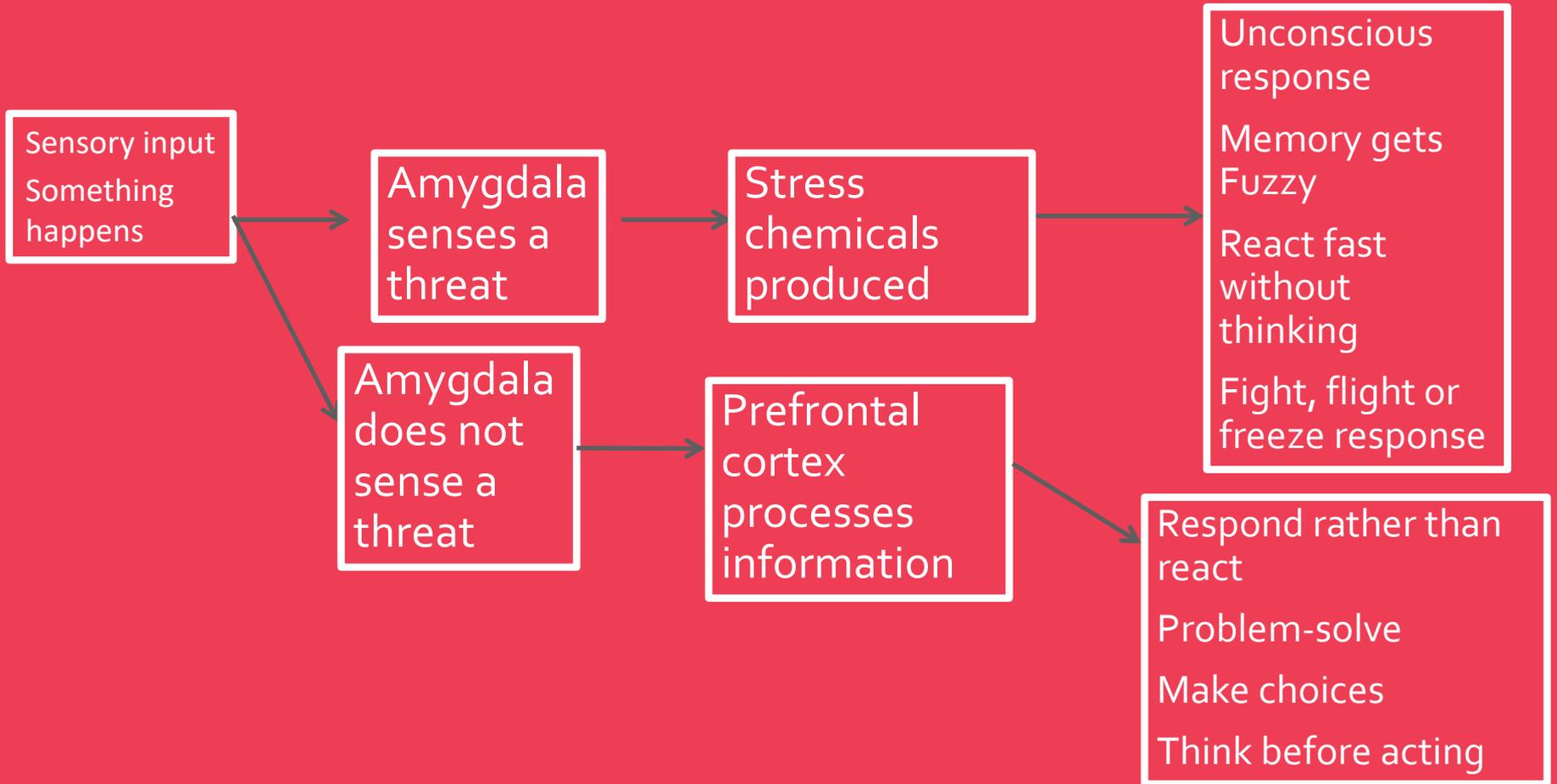
These titles are also the titles of a three part video series from the Harvard University Center on the Developing Child and the National Scientific Council on the Developing Child

Neuroeducation can give us insights into how we respond to and manage stress, distress, and trauma



The Brain and Trauma

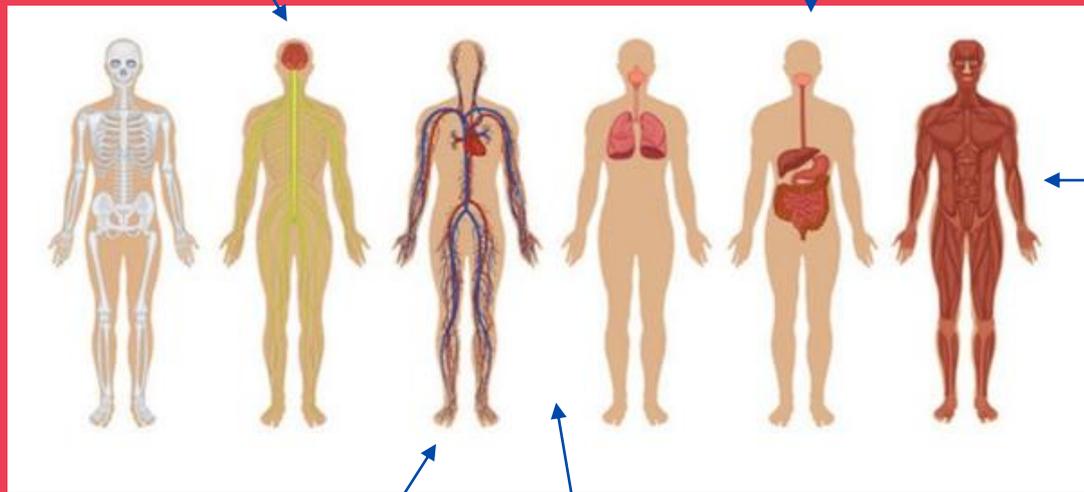
Brain Responses



What is happening to our body?

Amygdala determines safety; then releases stress chemicals

Shuts down digestion, reproduction, and growth

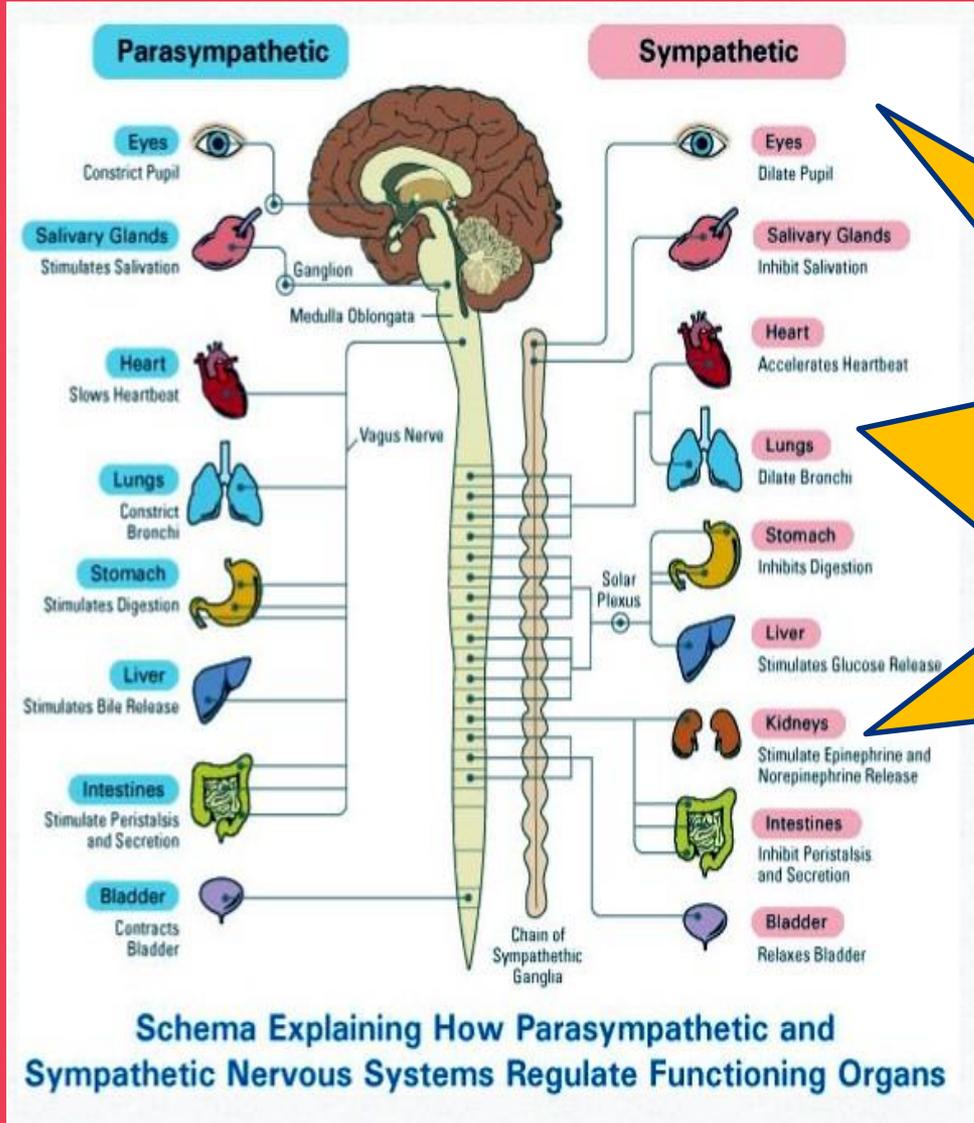


Diverts blood to the muscles and brain.

Body releases stored energy by releasing glucose into the bloodstream

Increases heart rate, blood pressure, increases respiration, increases perspiration, and dilutes the pupils

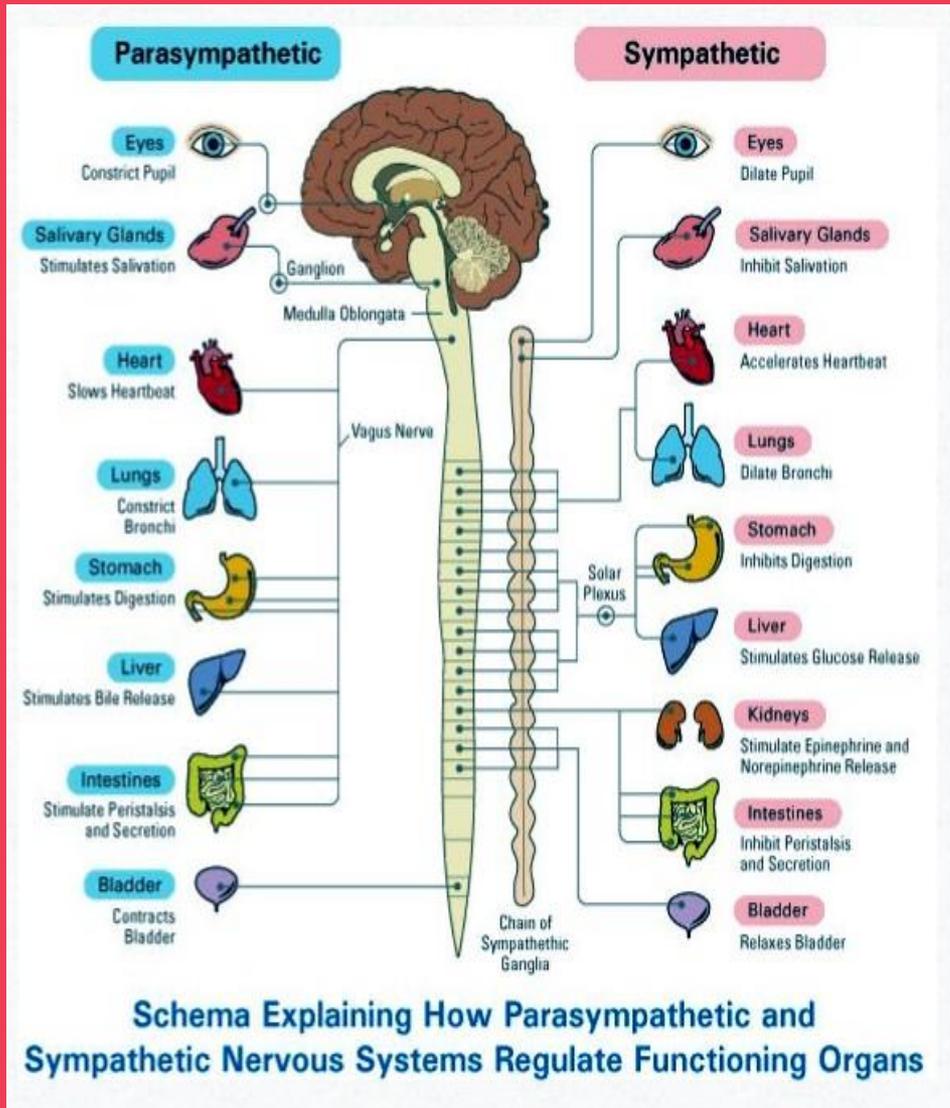
Autonomic Nervous System



SYMPATHETIC BRANCH: Activates

- Stress chemicals such as cortisol, adrenaline, and dopamine are released
- Increased heart rate, faster, shallower breaths, blood pumping
- Prepares us for a fight, flight, or freeze response to threat

Autonomic Nervous System



PARASYMPATHETIC BRANCH: Calms

- Prepares us to return to balance
- Like a parachute drifting down gently
- Skills such as grounding can help us to return to the parasympathetic calm when we are activated

IMPLICIT MEMORY

EMOTIONAL MEMORY

What It Is

The memory of the emotions you felt during an experience.

Example

When a wave of shame or anxiety grabs you the next time you see your bicycle after the big fall.

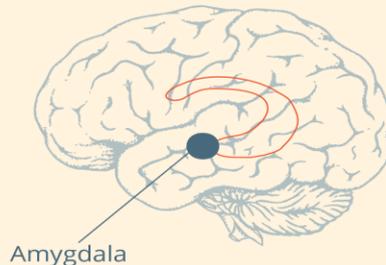


How Trauma Can Affect It

After trauma, a person may get triggered and experience painful emotions, often without context.

Related Brain Area

The amygdala plays a key role in supporting memory for emotionally charged experiences.



PROCEDURAL MEMORY

What It Is

The memory of how to perform a common task without actively thinking

Example

You can ride a bicycle automatically, without having to stop and recall how it's done.

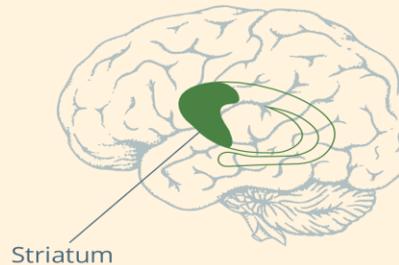


How Trauma Can Affect It

Trauma can change patterns of procedural memory. For example, a person might tense up and unconsciously alter their posture, which could lead to pain or even numbness.

Related Brain Area

The striatum is associated with producing procedural memory and creating new habits.



Implicit Memory

- The brain's implicit memory system develops before birth
- Does not have a sense of linear time, space or sense of self
- Mental models (templates) are formed from experience (somatic sensory motor emotional)
- Body memories are formed that include sensations associated with traumatic experiences
- Accessed by sensory cues

EXPLICIT MEMORY

SEMANTIC MEMORY

What It Is

The memory of general knowledge and facts.

Example

You remember what a bicycle is.

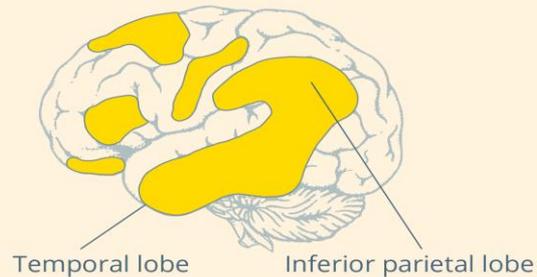


How Trauma Can Affect It

Trauma can prevent information (like words, images, sounds, etc.) from different parts of the brain from combining to make a semantic memory.

Related Brain Area

The temporal lobe and inferior parietal cortex collect information from different brain areas to create semantic memory.



EPISODIC MEMORY

What It Is

The autobiographical memory of an event or experience – including the who, what, and where.

Example

You remember who was there and what street you were on when you fell off your bicycle in front of a crowd.

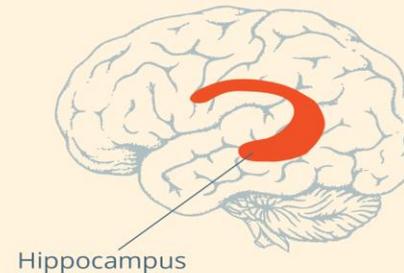


How Trauma Can Affect It

Trauma can shutdown episodic memory and fragment the sequence of events.

Related Brain Area

The hippocampus is responsible for creating and recalling episodic memory.



Explicit Memory

Process of **conscious** learning and retention of information like facts and events

Uses “slow system” of information processing and can be put in “story form”

Accessed by **intent**

- Factual
- Autobiographical
 - Features a sense of self and time
 - Develops between 18 and 24 months of age

Effects of Trauma on Victims' Behavior

The effects of trauma can influence behavior of a victim during an interview.

- Memory loss
- Lack of focus
- Emotional reactivity
- Multiple versions of a story
- Lack of Linear Memory

Effects of Trauma on Victims' Behavior

- Initial interviews can ask “What else happened?” instead of “What happened next?”
- Allows law enforcement to focus on the elements of the crime while the victim is recovering and piecing together parts of the trauma.
- Interviewers should be familiar with the signs of trauma and not assume the victim is evading the truth.

Connection

- Grounding by Orienting
- Neuroeducation
- Validation
- Realistic Expectations
- Power With vs. Power Over
- Identifying Supportive Systems and People
- Ending on Resilience

Shift in Thinking: The 4 “R’s”

Evidence of a trauma informed approach:

Realizes

- widespread impact of trauma and understands potential paths for recovery

Recognizes

- signs and symptoms of trauma in clients, families, staff, and others involved with the system

Responds

- by fully integrating knowledge about trauma into policies, procedures, and practices

Resists

- re-traumatizing

Resiliency

ResiliencyOhio.org

Resiliency is an inner capacity that when nurtured, facilitated, and supported by others—empowers people to successfully meet life’s challenges with a sense of self-determination, mastery, hope, and well-being.

In our work with survivors, remember:

Relationships matter:

The currency for systemic change was trust, and trust comes through forming healthy working relationships.

People, not programs, change people.

Bruce D. Perry

Thank You!

Questions?

Wendy Ricks Hoff BA RA CA TTRC
Training and Technical Assistance Coordinator
Ohio Victim Witness Association

wendy@ovwa.org

1-614-787-9000