

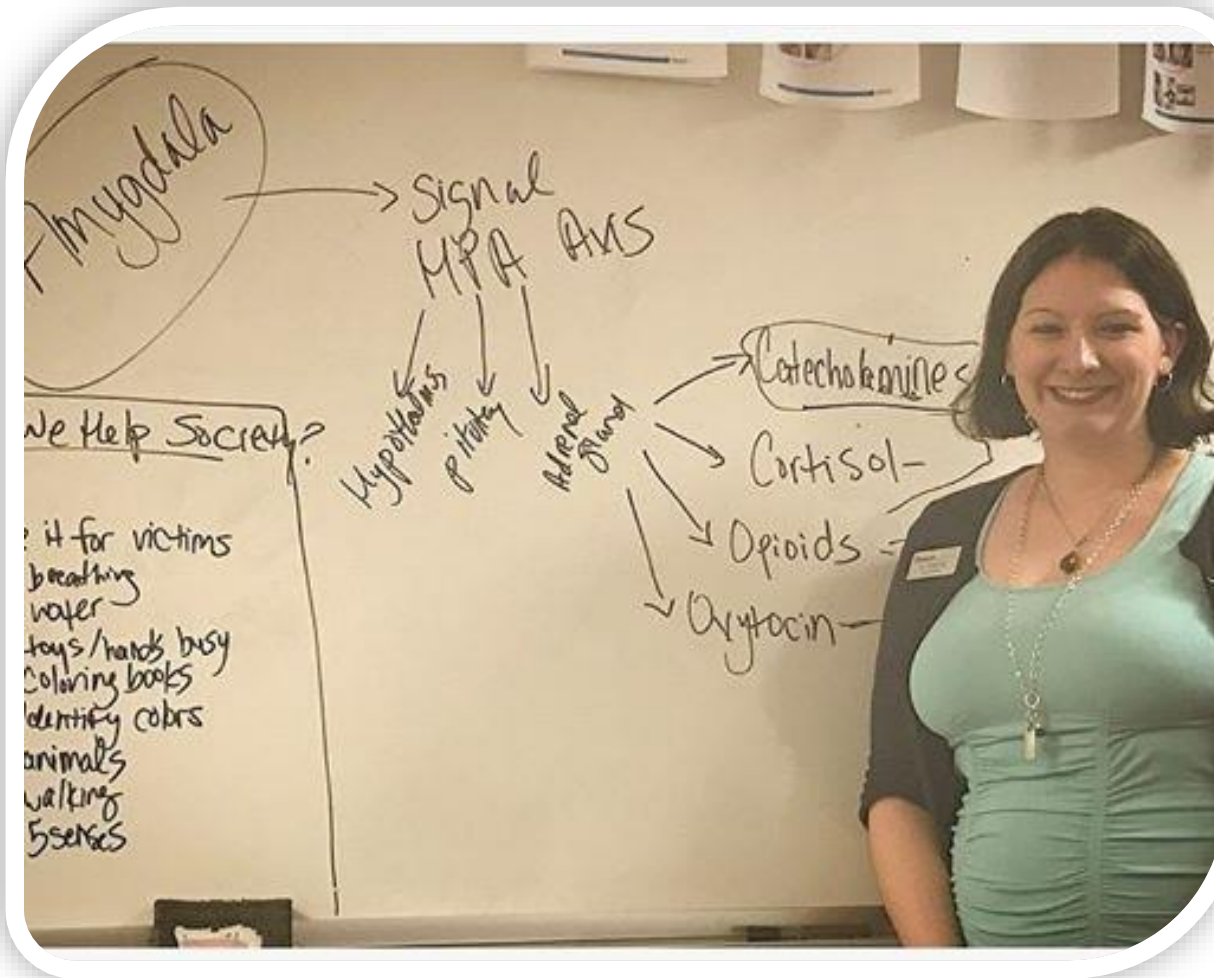


Neurobiology of trauma workshop

FOR PROFESSIONALS

Dr. Christy Sim

Author of the Chapter: Celebration
of Strength in *Talking Taboo*
(White Cloud Press, 2015)



Dr. Christy Sim

TRAUMA LENS - RESPONSE

How do we respond?
What does society say when we
see those behaviors?



DEFINITIONS

Violence

Exerting power and control over another person in order to control the outcome of activities or events to the point it dehumanizes, objectifies, and takes away a sense of autonomy.

Trauma

That which occurs in the moments a person is overwhelmed by the intrusive of behaviors, innuendos, or choices of another person to the point it evokes survival mechanisms in the victim.

TRAUMA MARKERS

The person perceives they are close to death.

The experience is overwhelming. It overcomes normal capacity to respond and act.

No action is imaginable. A sense of autonomy is taken away.

Meaning is violated.

TRAUMA DEFINED: Judith Herman

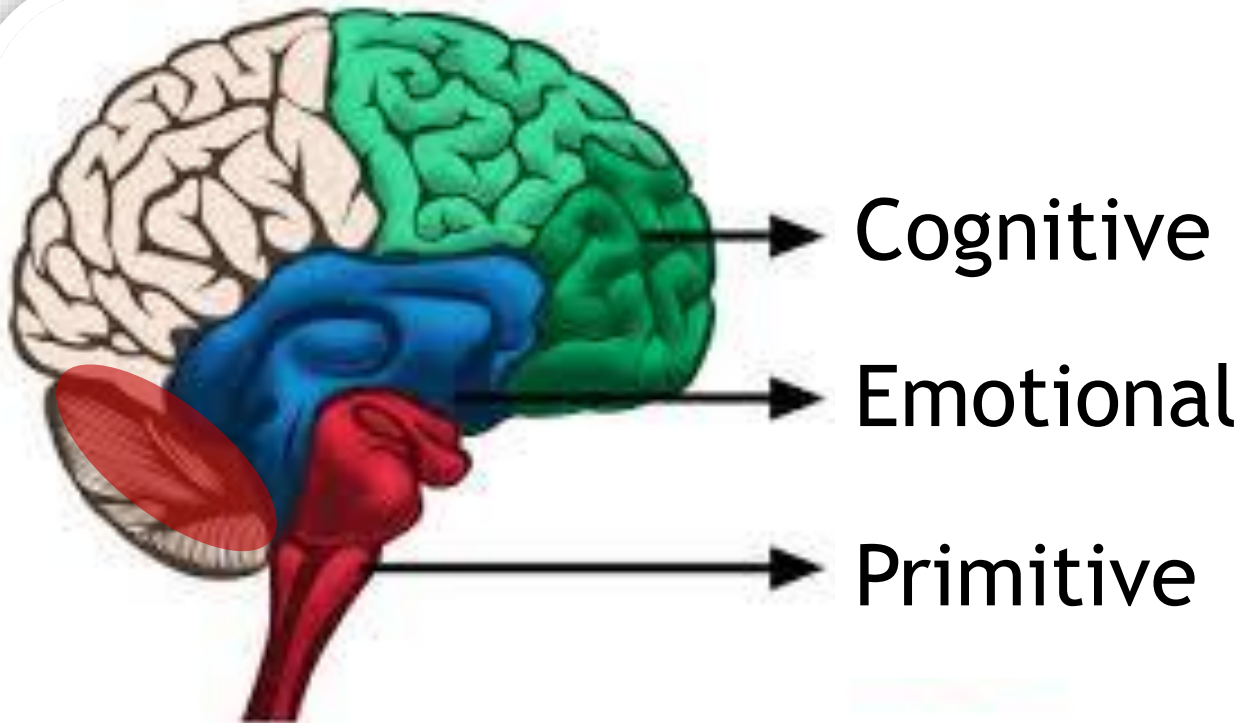
“Traumatic events are extraordinary” because
**“they overwhelm ordinary human
adaptions to life”** in that they “confront human
beings with the extremities of helplessness, terror,
and evoke the responses of catastrophe” (33)

“Traumatic reactions occur” **when there is no
action imaginable** and when neither
“resistance nor escape is possible” (34)

“Traumatic events” **violate the very
“autonomy of a person”** (52).

Herman, Judith MD, *Trauma and Recovery: The Aftermath
of Violence—from Domestic Abuse to Political Terror* (New
York: Perseus, 1992).

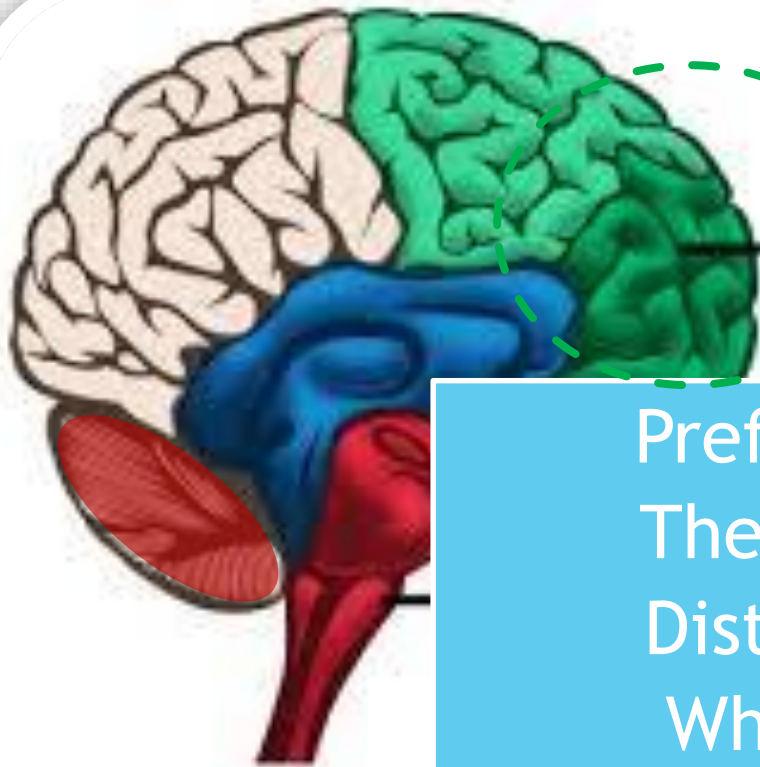
3 BRAIN RESPONSE SYSTEMS



RESPONSE SYSTEM

	Cognitive	Emotional	Primitive
IMPORTANT BRAIN AREAS:	<p>Prefrontal Cortex— (foremost part of the cortex) - The Frontal Lobe. This is where we are distinctly human. Where complex cognition takes place</p> <p>Cerebral Cortex/Neo Cortex- the outer layer</p>	<p>Limbic System (incredibly vast but two main parts crucial for this discussion):</p> <ol style="list-style-type: none">1. Amygdala (searches for danger)2. Hippocampus (long-term memory encoding)	<p>The Brain Stem Contains nerve cells that control heartbeat/breathing - glands/muscles for eating & communicating</p> <p>The Cerebellum (for body memory/procedural action)</p>

1. Cognitive RESPONSE SYSTEM



Cognitive

Prefrontal Cortex
The Frontal Lobe
Distinctly human
Where complex
cognition takes place

1. Cognitive RESPONSE SYSTEM

NORMAL

Planning

Organizing

Analyzing

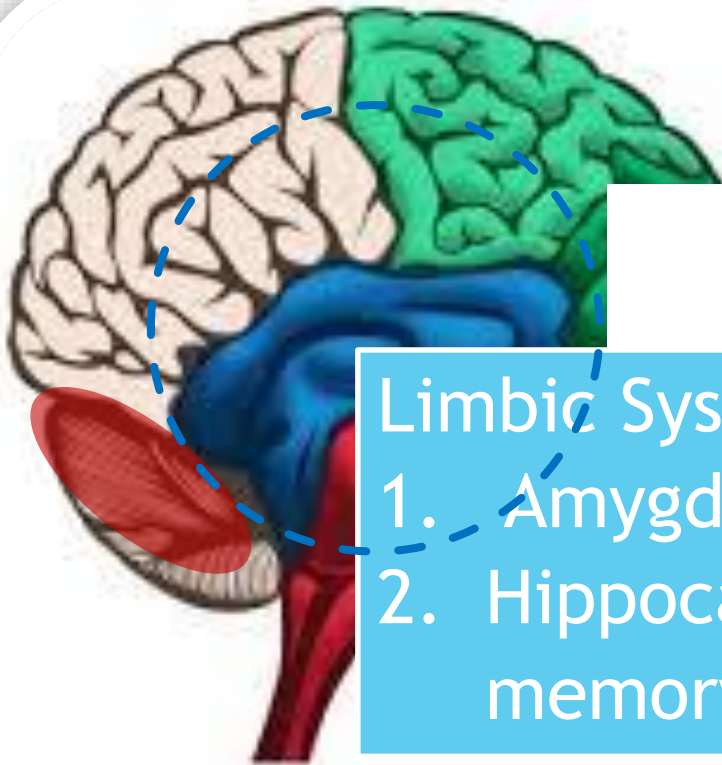
Thinking about
best choices

Problem solving

Before Immediate DANGER

Survival requires
assessment of
threat to make
the best decision
possible.

2. Emotional (Midbrain) RESPONSE



Emotional

Limbic System

1. Amygdala (searches for danger)
2. Hippocampus (long-term memory encoding)

2. Emotional (Midbrain) RESPONSE

NORMAL

Emotional
Responses
Long term
memories

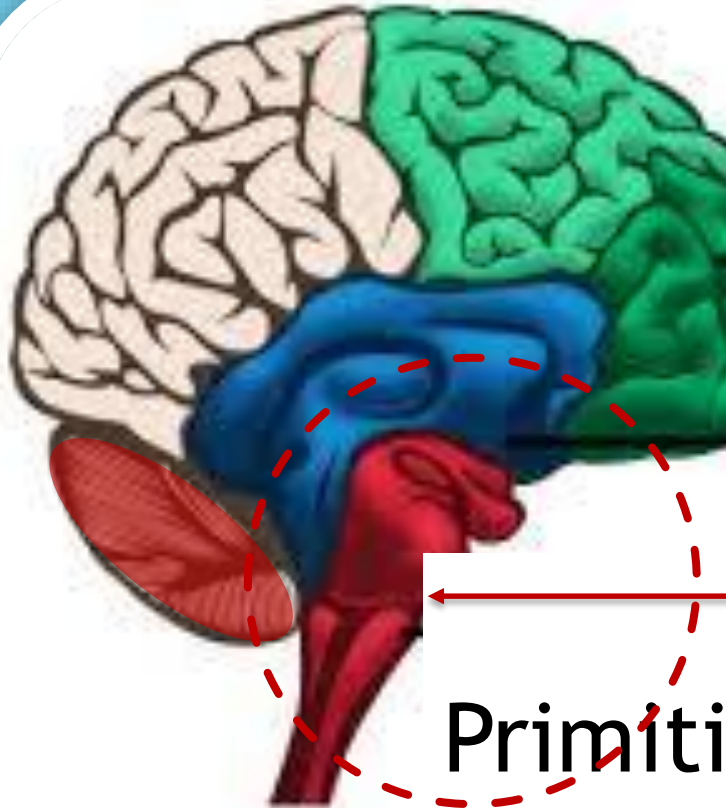
IN DANGER

Flight, fight, or
freeze

This is
unconscious,
survival tactic.

Our body trying
to survive.

3. Primitive RESPONSE



The Brain Stem. Controls heartbeat/breathing - glands/muscles for eating & communicating.

The Cerebellum (for body memory/procedural action)

Primitive

3. Primitive RESPONSE

NORMAL

Conserves energy, slows heart rate, slows breathing.

Goal of the brainstem is to maintain homeostasis.

IN DANGER

Tonic Immobility, cannot move.

Heart rate slows, breathing slows, we become immobile.

Body trying to survive.

THE TIPPING POINT



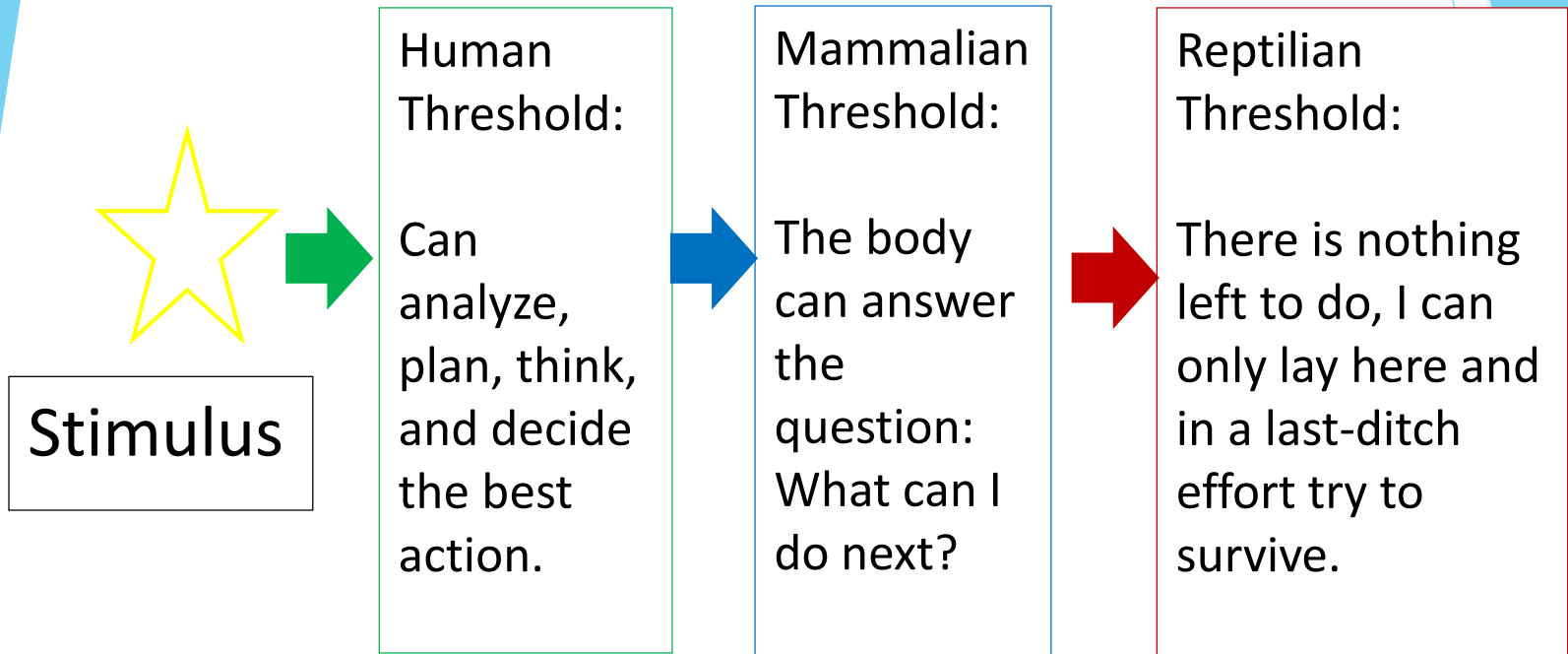
Threshold one: Becomes difficult to think or plan

Threshold two: Can no longer answer the question: "What can I do next?"

For each system of survival (that's in the brain) there is a certain threshold, or tipping point, that sends a person into the more primitive reaction in order to stay alive.

Crossing these thresholds are unconscious and not an active choice. The body automatically does these things in order to survive.

RESPONSE THRESHOLD



EXAMPLE:

Stimulus

Cognitive Response -

It's a cute little bunny.



Fight/Flight/Freeze Response-

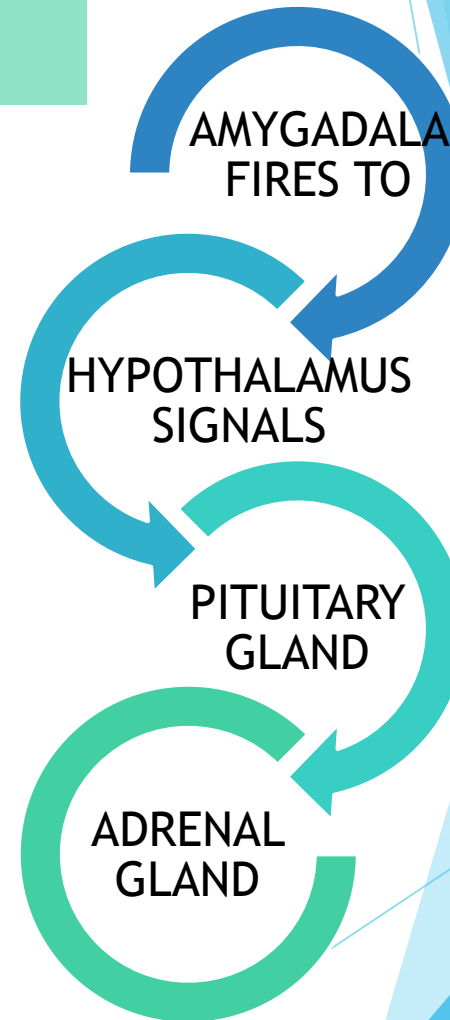
It's huge and massive!

Tonic Immobility Response- There's nothing I can do to leave or fight.

HORMONE RELEASE

HPA stands for Hypothalamus,
Pituitary Gland, and Adrenal Gland.

Amygdala detects threat.
Activates the HPA Axis.
Secretion of hormones.



HORMONE RELEASE

The adrenal gland produces many hormones in threat.

ADRENAL
GLAND

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graph LR; A[ADRENAL GLAND] --- B[Catecholamine]; A --- C[Cortisol]; A --- D[Opioids]; A --- E[Oxytocin];
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Catecholamine

Cortisol

Opioids

Oxytocin

HORMONE RELEASE

Catecholamine

- Gets you ready for fight/flight

Cortisol

- Meant to gather energy available in the body to carry out action

Opioids

- Meant to push away pain

Oxytocin

- Bonding and good feelings

TOO MUCH HORMONES

Catecholamine

- Impaired ability to think. Cannot make decisions. Cannot piece together rationally.

Cortisol

- Bottom out on the energy

Opioids

- No affect. No emotion.

Oxytocin

- Giggly, laughing
- Defends perpetrator

After Trauma



Practice
Awareness
Exercises

Strengthen parts of the brain that
focuses attention.

After Trauma



Override
brain
alarm
systems

Take deep breaths. Focus attention on colors and surrounding items. This will bring the moment to the present.

HEALING

Journeying toward
THRIVING and
reclaiming power

even after the
survival response
systems are
altered due to
extreme trauma.



Photo Credit: David Sim

Resources:

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