



Prevent It!

Taking Action to Stop Child Sexual Abuse



The Little Warriors
Be Brave Ranch

by Kay Latham & Family

How the Brain Responds to Trauma

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Little Warriors / Be Brave Ranch

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Overview

1. What is Trauma?
2. The Brain/Body Process of Trauma
3. Affect of Trauma on Mental Health
4. Parenting and the Traumatized Child

What is Trauma?

Trauma is an emotional response to an intense event that threatens or causes harm. The harm can be physical or emotional, real or perceived. Trauma can be the result of a single event, or it can result from exposure to multiple events over time.

Examples of Traumatic Events

- **Attack, rape, abuse**
- **Abandonment, loss, neglect**
- **Witnessing domestic and community violence**
- **Motor vehicle accidents**
- **Medical/dental trauma; surgeries, anesthesia**
- **Near drowning, electrocution, hallucination, high fever, poisoning**
- **Natural disasters, e.g. fire, flood, hurricane**
- **War**

Traumatization

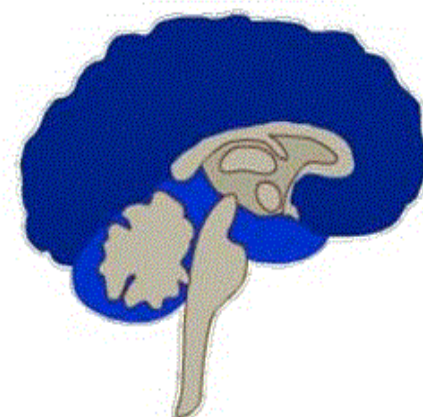
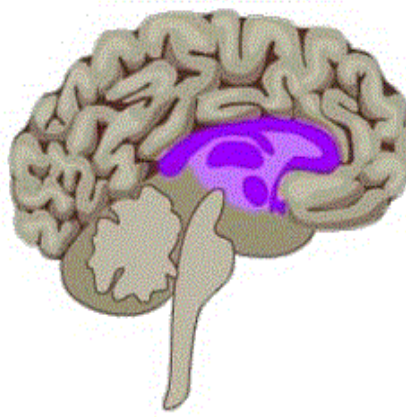
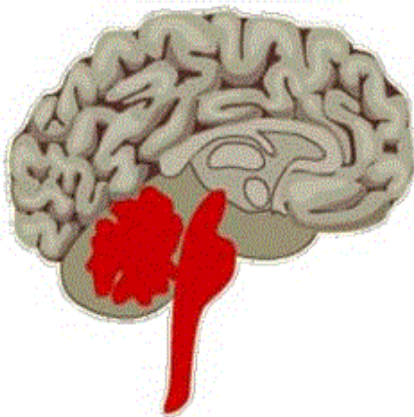
Traumatic events become problematic when we stay stuck in survival mode.

When our body mobilizes its defenses in response to threat by either fighting, fleeing or freezing, and then is unable to complete the response or to discharge those defensive energies, it is left in a state of overall arousal and disequilibrium.

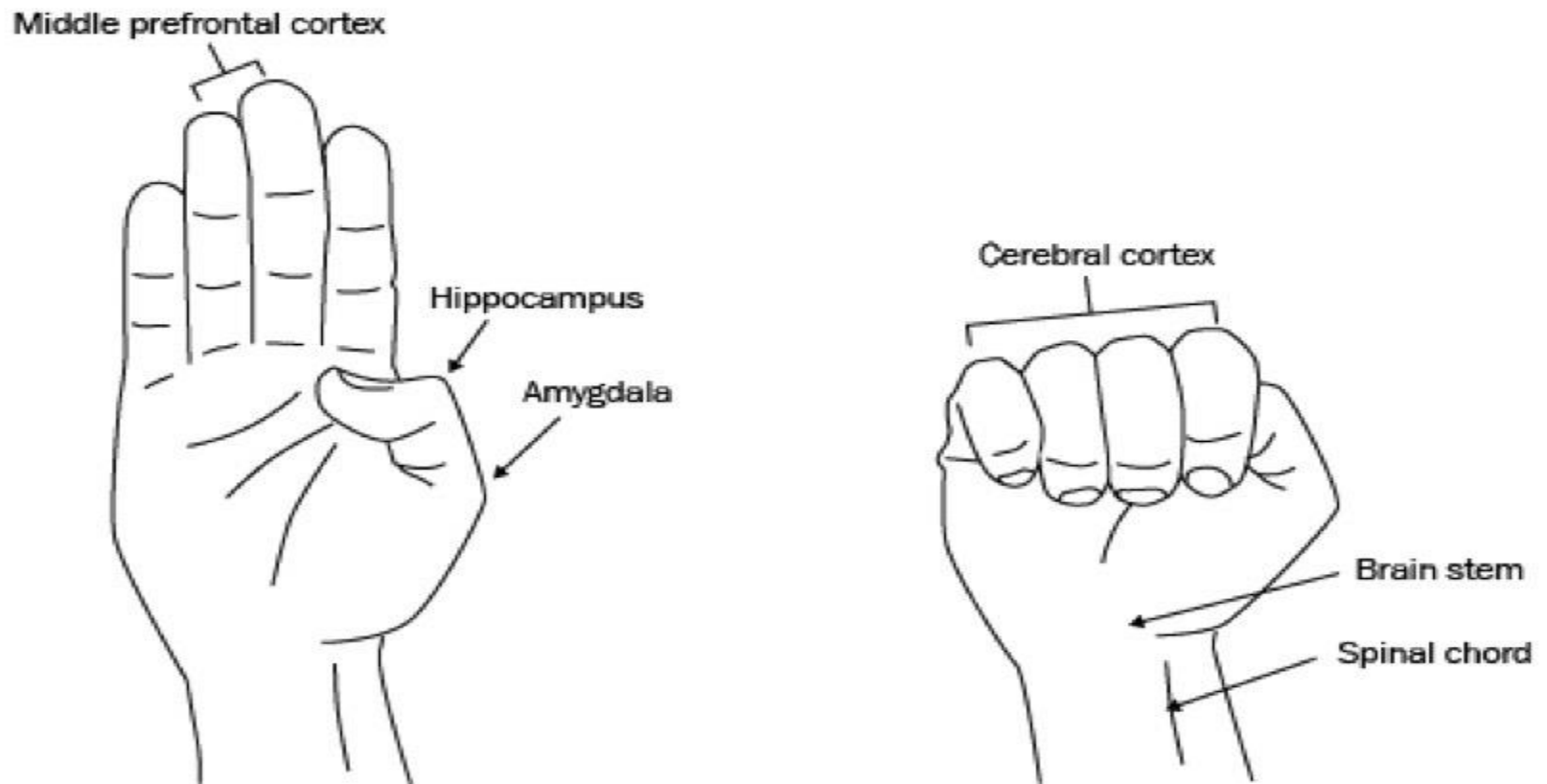
The Triune Brain

Triune Brain Theory

| Lizard Brain | Mammal Brain | Human Brain |
|-------------------------|----------------------------|--|
| Brain stem & cerebellum | Limbic System | Neocortex |
| Fight or flight | Emotions, memories, habits | Language, abstract thought, imagination, consciousness |
| Autopilot | Decisions | Reasons, rationalizes |



Hand Model of the Brain



Hand model courtesy of Dan Siegel

How the Brain Develops

- **100 billion neurons (and 10X as many glial cells) each with a unique:**
 - structural and chemical composition
 - functional capacity
- **Neurons connect and organize into functional units with specific roles to sense, perceive, process and act on internal and external information**
- **The first priority of this connecting and organizing is to promote survival, and then other actions and transactions of being human**

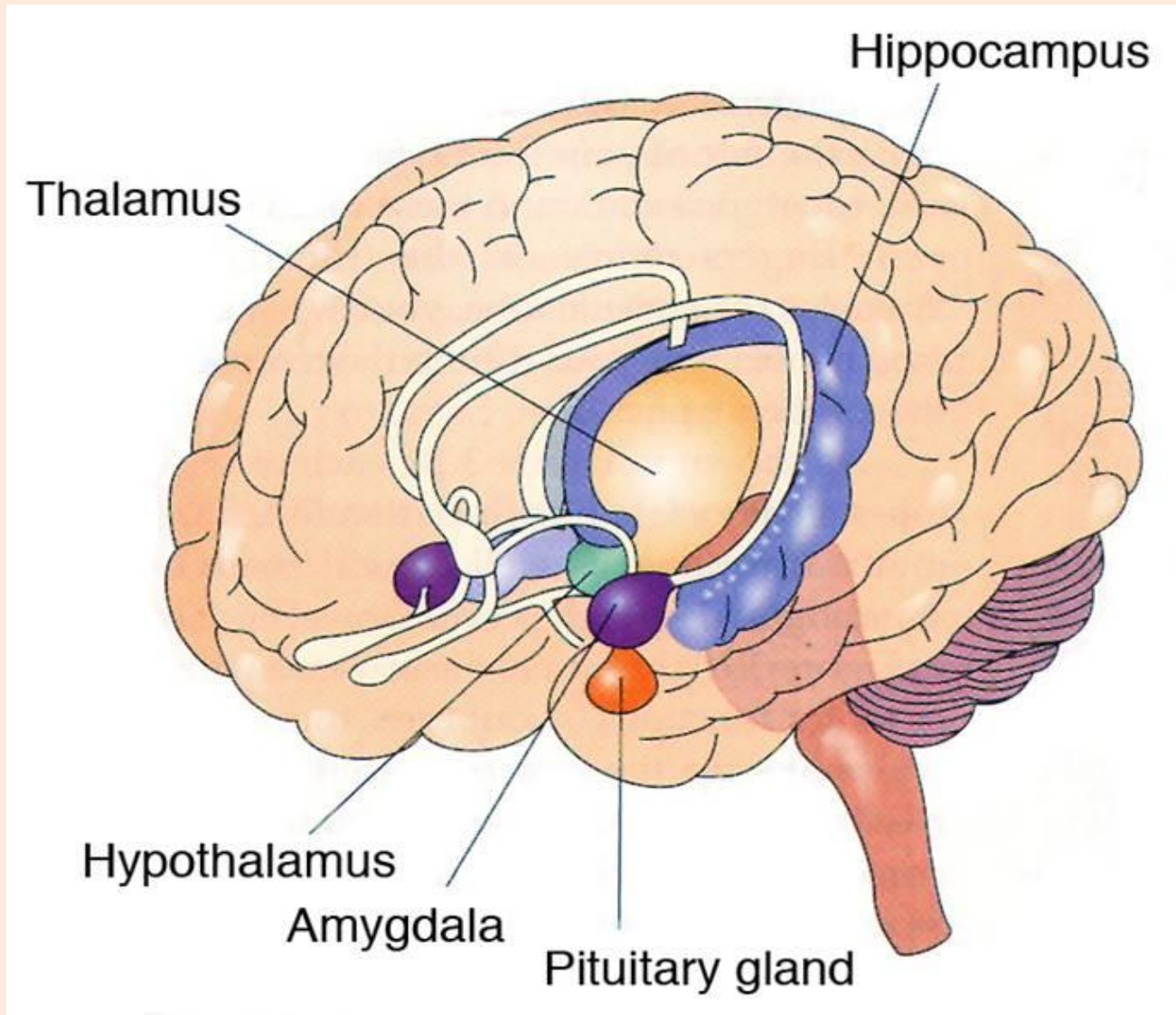


How the Brain Reacts to Traumatic Events

When a **child** or **adult** is faced with real or perceived danger there is a set of complex, interactive neurophysiological reactions in the:

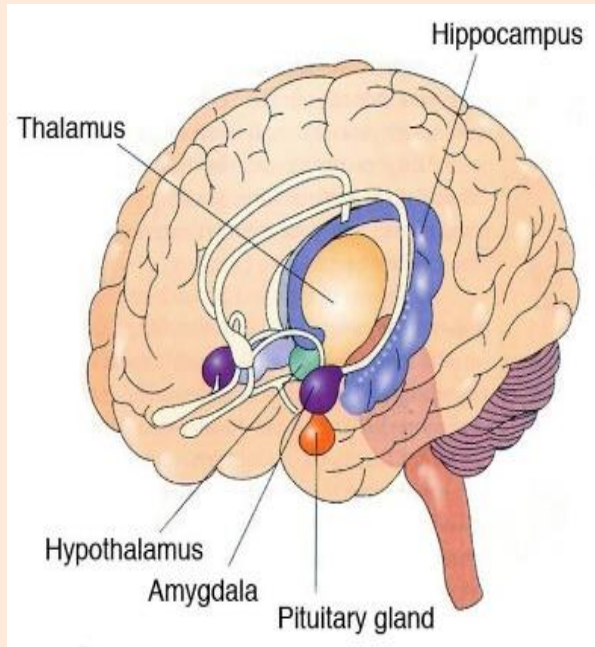
- **Brain**
- **The autonomic nervous system**
- **The hypothalamic-pituitary adrenocortical (HPA) axis**
- **The immune system**

The Limbic System



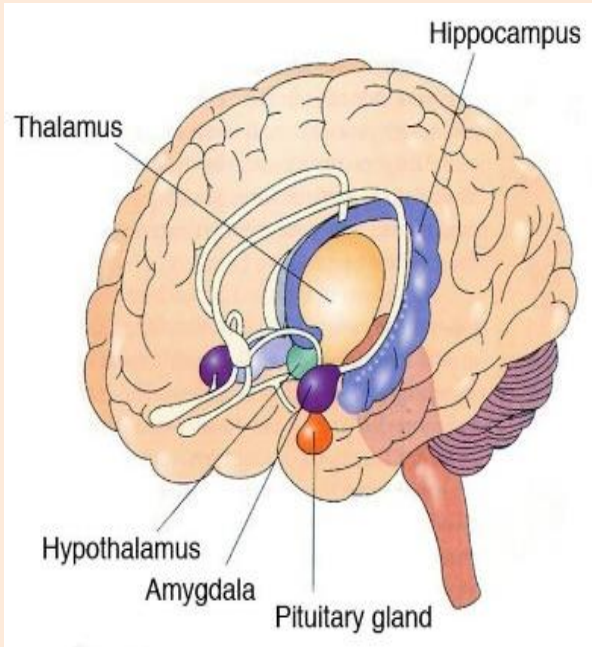
The Hippocampus

Function: Plays a critical role in memory function, learning, emotional regulation and behavior inhibition.



Impact of Trauma: Repeated trauma has been associated with deficits in memory cognitive impairments, ineffective coping responses, dissociation, problems processing and storing special information, and impairments in associative learning.

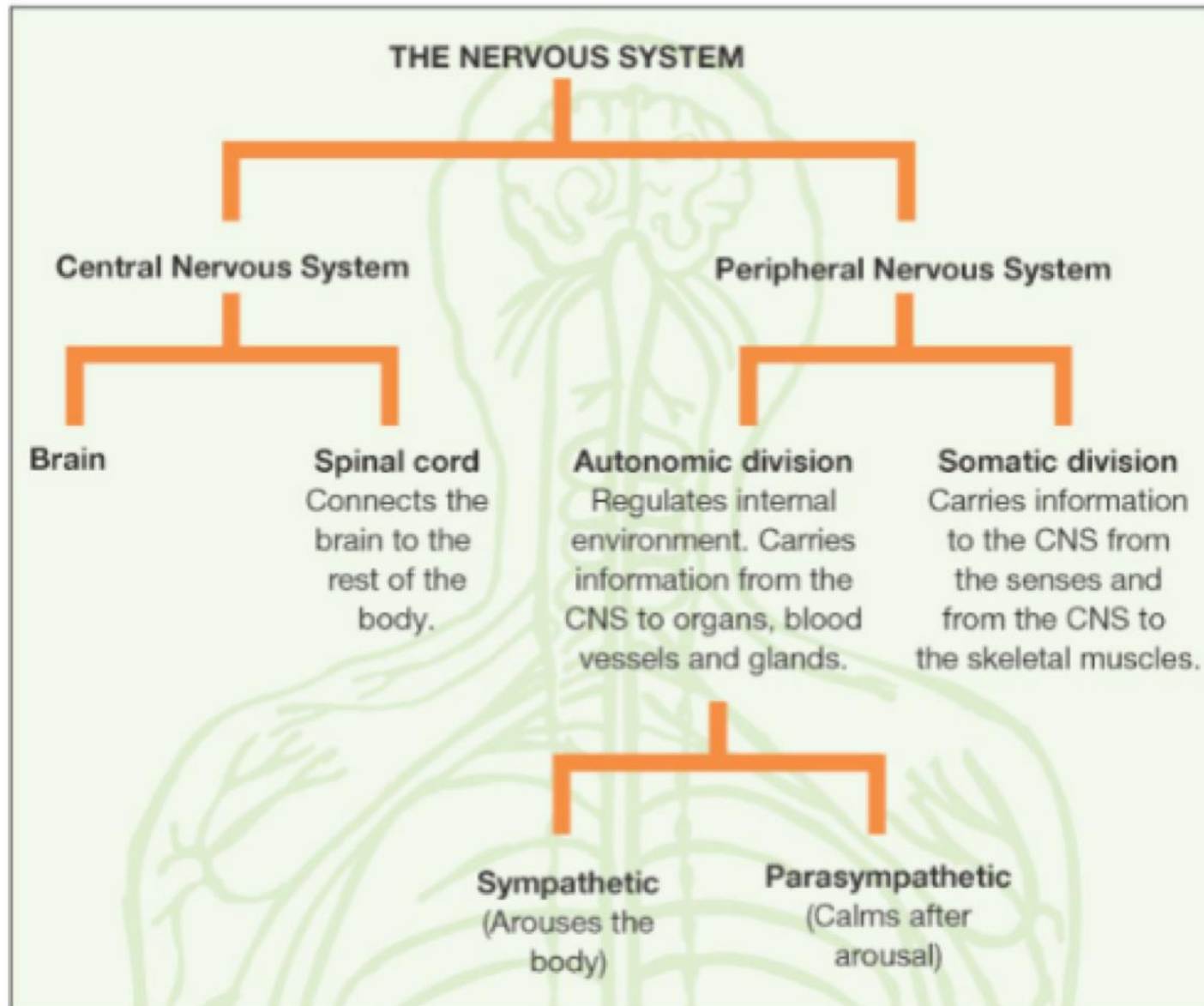
The Amygdala



Function: Emotions are processed in this region of the brain. It is involved in the memory of emotional reactions and evaluating the meaning of incoming information. It has a role in the controlling aggression, sexual behaviors, and in mediating the fear response.

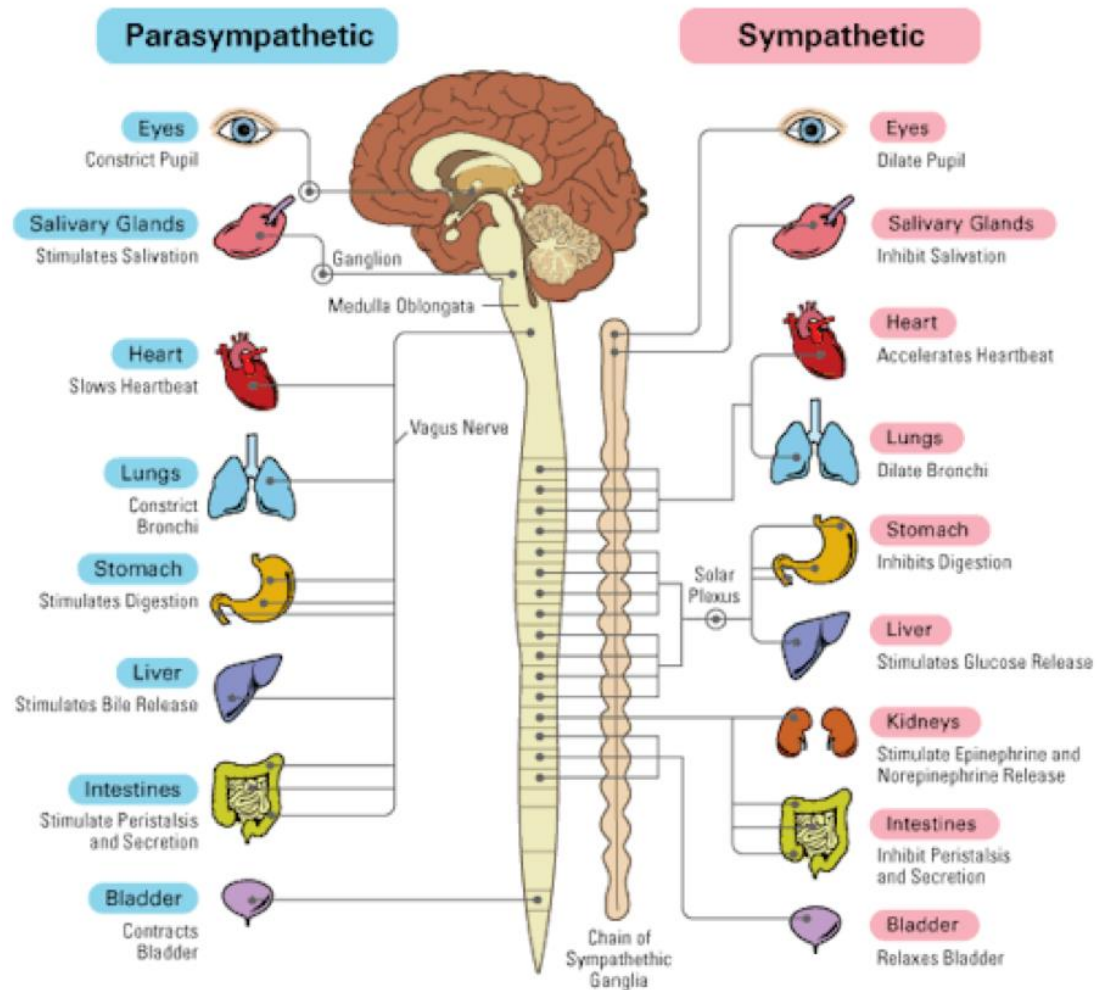
Impact of Trauma: During a traumatic event the amygdala automatically remembers all elements of the experience (smell, sounds, sensations). Prolonged trauma can over stimulate the amygdala leading to hyper-arousal in the form of aggression, anxiety and impulsivity.

The Human Nervous System

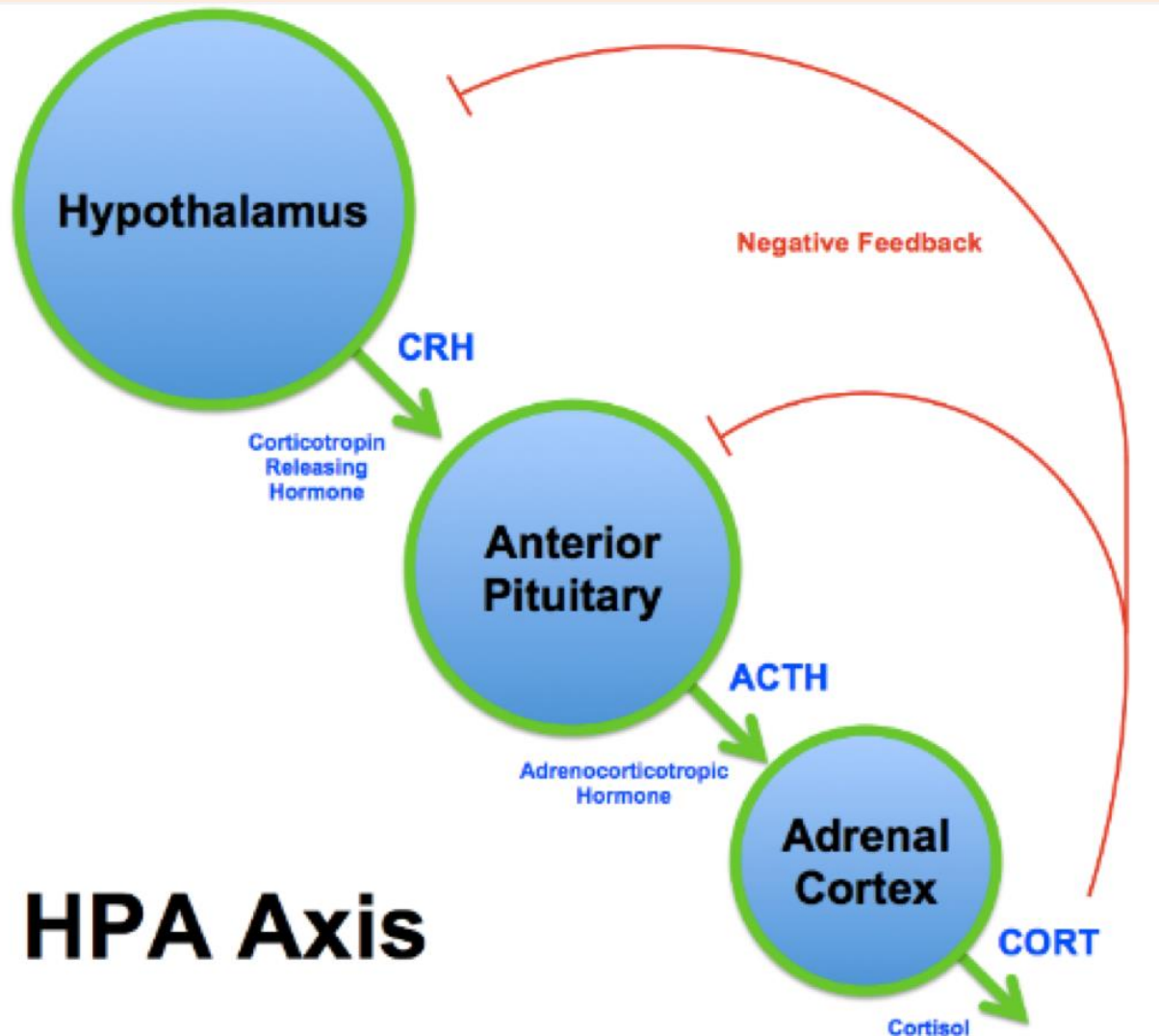


Function of the parasympathetic and sympathetic system

Schema Explaining How Parasympathetic and Sympathetic Nervous Systems Regulate Functioning Organs



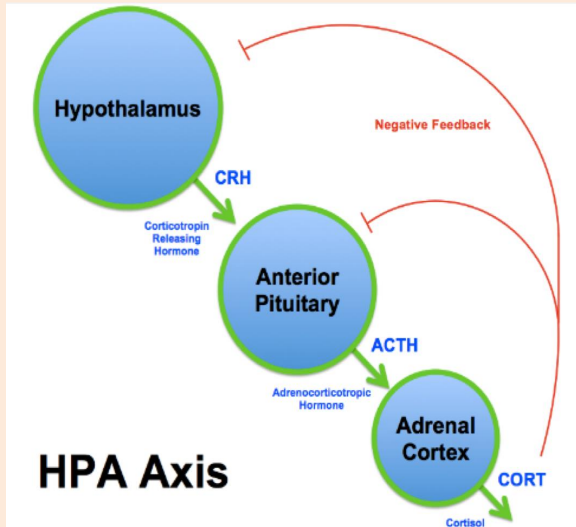
HPA Axis (The Hypothalamic-Pituitary Adrenocortical)



How our bodies handle stressful situations involves a **circuit of chemicals** called the HPA Axis (Hypothalamic Pituitary Adrenal Axis).

This axis essentially represents the **relationship between your brain and your stress hormones** as they interact in what we call a feedback loop, when your body reacts to the information it is receiving.

The Hypothalamic-Pituitary Adrenocortical (HPA) Axis



- Stressors cause the hypothalamus to release certain stress hormones.
- The hormones stimulate the pituitary gland to release more hormones.
- This cascade of chemicals signals your adrenal glands to release two stress hormones - cortisol and epinephrine (adrenaline).
- Cortisol raises the sugar in your bloodstream and prepares your body for **'fight-or-flight'**.
- Your adrenals also release adrenaline - raises heart rate and increases blood pressure.
- These interactions continue until your hormones reach the levels that your body needs, and then a series of chemical reactions begins to switch them off.

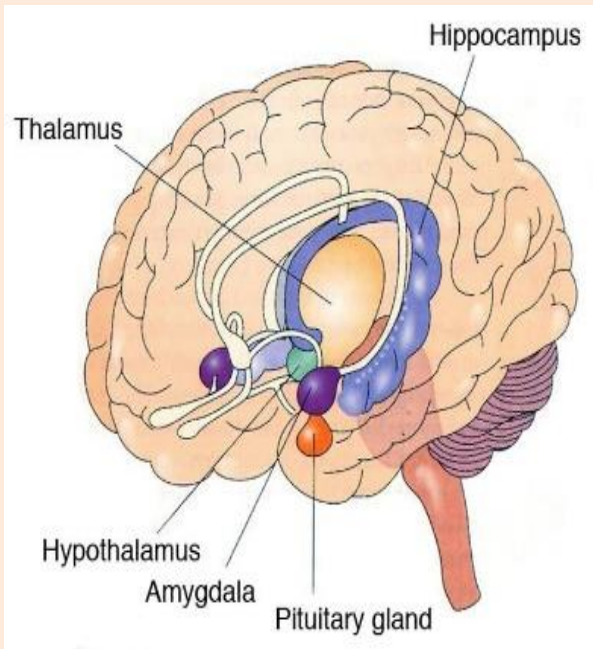
The Immune System

The brain and the immune system are in constant communication in this delicate balance that can be **disrupted** by any kind of physical or emotional stress.

The brain sends defense signals to the endocrine system, which then releases an array of hormones that not only gets us ready for **emergency situations** but severely depresses our immunity at the same time.

The way it does this is by triggering chemical reactions and flooding the body with cortisol. In short spurts cortisol can **boost your immunity** by limiting inflammation. But over time, your body can get used to having too much cortisol in your blood. And this opens the door for more inflammation.

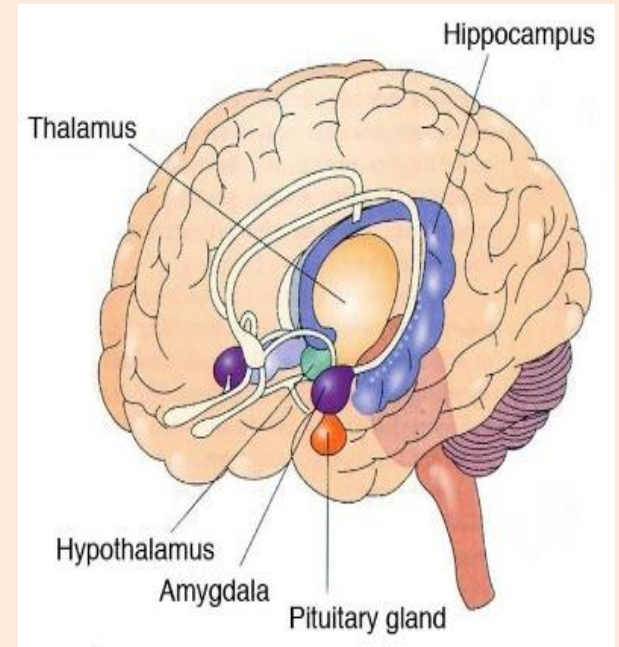
To Summarize:



- During traumatic event brain goes into survival mode.
 - Shifts control to brain stem which is responsible for survival instincts and automatic physiological processes.
 - Nervous system releases stress hormones to prepare the body for fight, flight, or freeze response.
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- This shift is meant to be temporary.
 - Once threat has passed, the brain shifts into recovery mode and restores control to the forebrain, responsible for higher level and rational thinking.
 - If this doesn't occur, brain remains in survival mode.

To Summarize (continued):

- If this happens, the amygdala remains hyper stimulated.
- The amygdala's role is to identify threat.
- A hyperactive amygdala begins to see threat even in non-threatening situations.
- Causes the hippocampus, processing experience and memory, to send the message that the trauma, or something similar, is happening in the present.
- Continued release of stress hormones – inability to self-regulate
- SNS remains ready for fight, flight or freeze
- Body – heart palpitations, perspiration, survival mechanisms
- Exhausting – prevents the brain from processing the event as part of the past.



Trauma, Stress and the Brain

Studies reveal that long-term and severe stress have a harmful effect on the brain.

Behavioral & Psychological disorders, e.g. depression, anxiety disorders, alcoholism, drug use.

Physical health, e.g. cardiovascular disease, diabetes, stroke.

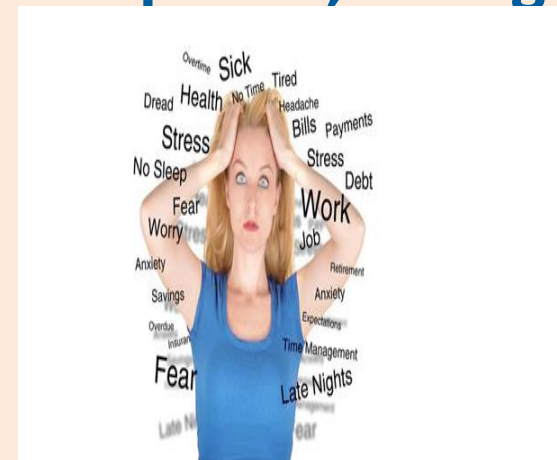


Trauma, Stress and the Brain

Sustained activation of hormonal system = serious developmental consequences.

Exposure to toxic stress = cortisol levels remain elevated.

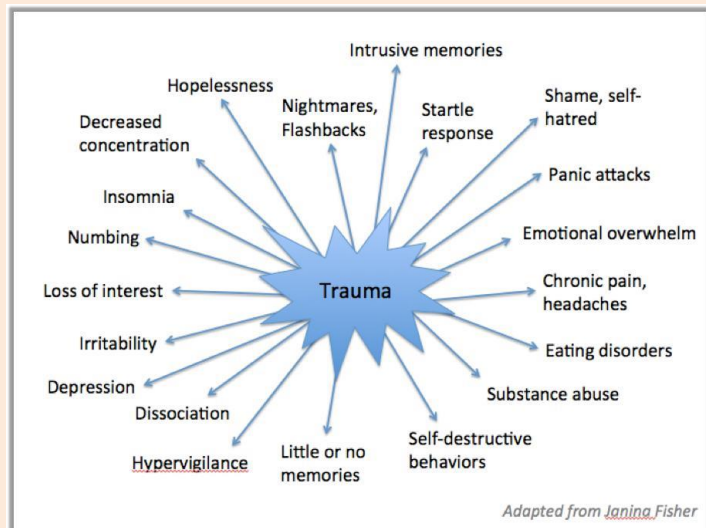
Long term elevations of cortisol levels = altered function of some neural system, suppress immune response, change architecture of regions in brain that are essential for learning and Memory.



Trauma, Stress and the Brain

Stress turns some specific genes 'on' and others 'off' – cortisol plays a key role.

High levels of cortisol or CRH (corticotropin-releasing hormone) – brains chemical that regulates HPA system.



Result in damage to the hippocampus (learning, memory, some types of stress response regulation.)

The Effect of Childhood Trauma on Genes

- **Researches (Romens et al., 2014)**
- **Affect the way in which genes are turned on and off.**
- **Biochemical process called methylation.**
- **Epigenetic mechanism used by cells to control gene expression.**
- **Maltreated children – increase of methylation on specific gene (NR3C1).**
- **Codes for a receptor that sense the hormone cortisol.**
- **If this gene is methylated, the body won't be able to produce enough receptors – won't be able to regulate stress.**

The Effect of Childhood Trauma on Genes

- **Short term result – child on alert all the time.**
- **Misinterpret innocent behavior as threatening.**
- **They can be aggressive and struggle with change.**
- **Can lead to chronic psychological problems like anxiety and depression.**
- **The gene identified affects the HPA Axis in rodents.**
- **Disruptions of this system – difficult for people to regulate their emotional behavior and stress levels.**

- Sarah E. Romens, Jennifer McDonald, John Svaren, Seth D. Pollak. **Associations Between Early Life Stress and Gene Methylation in Children.** *Child Development*, 2014; DOI: [10.1111/cdev.12270](https://doi.org/10.1111/cdev.12270)

The Adaptable Brain – Neuroplasticity

- **GOOD NEWS!!!**
- **The ability to change and reorganize itself.**
- **Can help the brain heal from the damage.**
- **Under certain conditions can rewire itself, correcting faulty circuitry and alleviating the behavioral and emotional problems caused by the original damage.**
- **Complex process, incremental steps, needs time.**
- **Process can occur at any age; however brain is most changeable during early life.**



Understanding Traumatized Children

The Arousal Continuum

| <i>Adaptive Response</i> | REST | VIGILANCE | FREEZE | FLIGHT | FIGHT |
|--------------------------------|---------------------|------------------|--------------------------------|-------------------------------|------------------------|
| <i>Hyperarousal Continuum</i> | REST | VIGILANCE | RESISTANCE Crying | DEFIANCE Tantrums | AGGRESSION |
| <i>Dissociative Continuum</i> | REST | AVOIDANCE | COMPLIANCE Robotic/detached | DISSOCIATION Fetal Rocking | FAINTING |
| <i>Regulating Brain Region</i> | NEOCORTEX Cortex | CORTEX Limbic | LIMBIC Midbrain | MIDBRAIN Brainstem | BRAINSTEM Autonomic |
| <i>Cognitive Style</i> | ABSTRACT | CONCRETE | EMOTIONAL | REACTIVE | REFLEXIVE |
| <i>Internal State</i> | CALM | AROUSAL | ALARM | FEAR | TERROR |

Trauma Informed Parenting

I think it is important for a person who is parenting a traumatized child to have some understanding of what trauma is and how it can affect a child.

Different Response to Trauma

- **The child's age and developmental stage**
- **The child's perception of the danger faced**
- **Whether the child was a victim or a witness**
- **The relationship the child has to the perpetrator or victim**
- **Whether the child has had other traumatic experiences**
- **Challenges the child faces after the trauma**
- **Whether adults are around to offer help and protection**

Helping your Child

- **Help children feel safe.**
- **Be emotionally and physically available.**
- **Be a good listener.**
- **Give your children choices.**
- **Respond, don't react**
- **Be consistent and predictable**
- **Understand trauma's impact on your child**
- **Consider therapy**
- **Take care of yourself**

<https://www.childwelfare.gov/pubPDFs/child-trauma.pdf>

<https://www.childwelfare.gov/pubPDFs/child-trauma.pdf>

children-tips.blogspot.com/2011/05/parenting-traumatized-child-seven-tips.html

When to Seek Help

- **Long term denial and/or avoidance of the traumatic event**
- **Extended period of depression (loss of interest in activities, feelings of hopelessness and helplessness, inability to experience moments of joy, profound emptiness)**
- **Vague and generalized feelings of guilt and depression**
- **Persisting anxiety about the traumatic event**
- **Inability to respond to comfort and rejection of support**
- **Purposeful withdrawal from friends, loss of sociability**

When to Seek Help

- **Sleep or appetite problems, unusual loss or gain of weight**
- **Prolonged rather than transient physical complaints**
- **Acting younger for a prolonged period**
- **Destructive outbursts**
- **Accident-proneness**
- **Inappropriate/illegal behavior**
- **Decline in school performance or refusal to attend school**
- **Excessive Grief**

How Trauma Affects Families

Traumatic experience can change a person's mood, behaviors and attitudes – can affect everyone in family

Feelings of guilt that person we care for was affected and we were not – survival guilt

Experience the same or some of the feelings of the traumatized person – empathy

How Trauma Affects Families...cont'd

Become angry towards the person who is suffering – faulty thinking or beliefs

May experience sadness, depression or grief in response to their loved one's trauma.

May not know what to say or do – avoid contact

There are numerous more ways a family are affected. Important to recognize that there are behavioral responses to these emotions.

Resiliency

- **Healthy relationships with competent, caring, supportive adults**
- **Connections with positive role models or mentors**
- **Having their strengths and abilities acknowledged and cultivated**
- **A sense of control over their lives**
- **Being part of a community (e.g., family, dance group, church, etc.)**

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WARRIORS



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