

Gateway to Hope
UNIVERSITY
Training Program of HHCI

Lunch & Learn Webinar: Neuroscience of Trauma

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What is Trauma?

- A traumatic event is a life experience that involves actual or perceived threats to the safety and well-being of an individual or to someone close to the individual.
- Traumatic experiences often overwhelm a person's coping strategies, causing extreme emotional, psychological and physiological distress.
- Traumatic experiences may be a single occurrence; recurring events of a similar nature; or multiple unrelated events.

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PEOPLE WHO HAVE EXPERIENCED TRAUMA ARE:



15x
COMMIT SUICIDE

- 4 Times More Likely To Become An Alcoholic
- 4 Times More Likely To Develop A Sexually Transmitted Disease
- 4 Times More Likely To Inject Drugs
- 3 Times More Likely To Use Antidepressant Medication
- 3 Times More Likely To Be Absent From Work
- ALCOHOLISM
- DEVELOP STD
- INJECT DRUGS
- USE ANTIDEPRESSANT
- MISSING WORK
- SMOKING
- JOB PROBLEMS
- 15 Times More Likely To Commit Suicide
- 2.5 Times More Likely To Smoke Tobacco
- 3 Times More Likely To Have Serious Job Problems
- 3 Times More Likely To Experience Depression

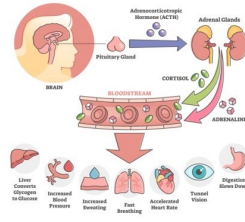
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Fight or Flight Response

An acute stress response is activated by the hypothalamic-pituitary-adrenal (HPA) axis.

- Hypothalamus signals the pituitary gland.
- Pituitary releases ACTH, stimulating adrenal glands.
- Adrenal glands release cortisol and adrenaline.

Effects include increased heart rate, blood pressure, and glucose metabolism.



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Important Brain Structures

- **Hippocampus** – Involved in the formation and retrieval of long-term memories, especially episodic and spatial memories; it helps convert short-term memories into lasting ones and plays a role in learning.
- **Prefrontal Cortex** – Responsible for complex cognitive behavior, including decision-making, planning, attention, and moderating social behavior; it also helps regulate emotions and impulse control.
- **Amygdala** – Processes emotional responses, particularly fear, aggression, and pleasure; it helps attach emotional significance to memories and influences how we react to perceived threats.



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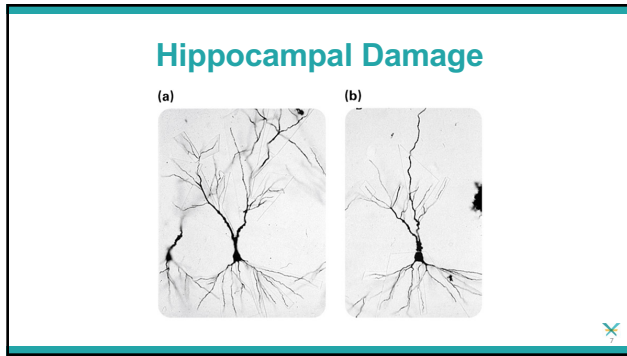
Neurotoxic Effects of Glucocorticoids

Chronic exposure to glucocorticoids (like cortisol) can damage brain cells:

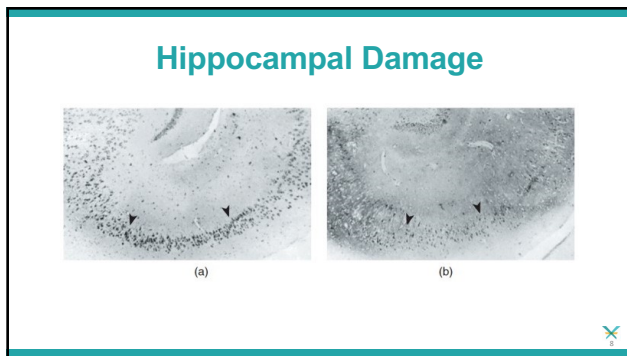
- **Hippocampus**: Reduced volume, impaired memory formation.
- **Prefrontal Cortex**: Affects decision-making, emotional regulation.
- **Amygdala**: May become hyperactive, heightening anxiety and fear responses.



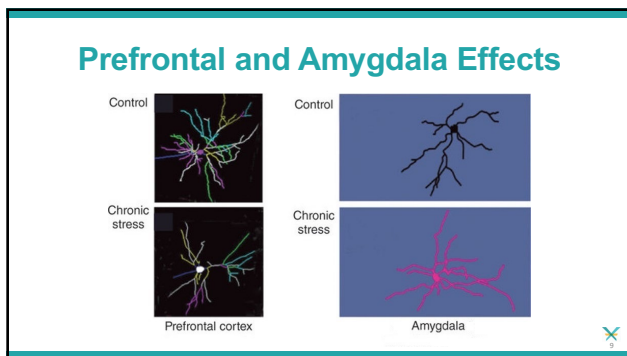
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Chronic Stress Hijacks the Brain

- When the amygdala stays activated (repeated stimulation or no external regulation), the adrenal glands continue to release cortisol and adrenaline.
- The brain becomes "hijacked" or flooded with cortisol.
- Cognitive processing of information (regulation) is disrupted, as connections to the prefrontal cortex are inhibited.
- The hippocampus is unable to classify and organize memories properly.
- Trauma causes cortisol surge → cortisol impacts brain structures → brain changes lead to HPA dysregulation → HPA becomes hypersensitive → overreactions to new stimuli feel like the original trauma.



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Symptoms of PTSD

- **Intrusive Symptoms**
 - Flashbacks (reliving the trauma over and over)
 - Bad dreams
 - Frightening and intrusive memories
- **Avoidance Symptoms**
 - Staying away from reminders of the experience
 - Trauma-related thoughts and feelings
- **Negative Alterations in Cognitions and Mood**
 - Feeling emotionally numb
 - Feeling strong guilt, depression or worry
 - Loss of interest in enjoyable activities
 - Having trouble remembering the traumatic event
- **Hyper-Arousal Symptoms**
 - Jumpy and easily startled
 - Feeling tense or "on edge"
 - Difficulty sleeping
 - Irritability or outbursts of anger



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Trauma and Brain Development

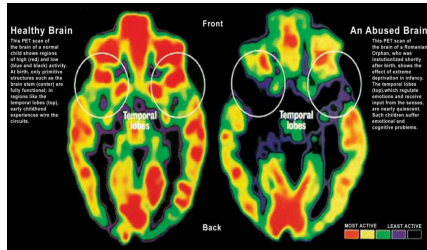
Early abuse/neglect disrupts normal brain development:

- Reduced activity in temporal lobes, affecting emotional and cognitive processing.
- Long-term alterations in brain function and structure.
- Increased risk for mental health disorders such as PTSD and depression.



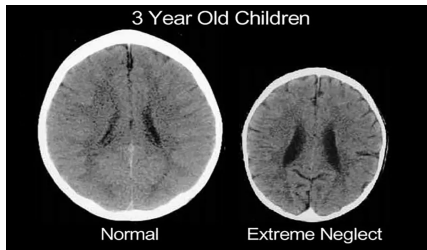
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Trauma and Brain Development



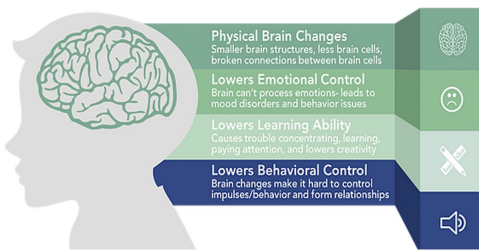
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Trauma and Brain Development



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Trauma and Brain Development



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Summary

- Trauma is a deeply distressing experience that overwhelms coping mechanisms and causes psychological, emotional, and physiological distress.
- Threat activates the HPA axis (fight or flight response) → cortisol and adrenaline release → heightened heart rate, blood pressure, and alertness.
- Chronic exposure to glucocorticoids is neurotoxic and has been shown to damage the hippocampus and prefrontal cortex.
- Early abuse/neglect alters brain structure/function, increasing vulnerability to PTSD, depression, and cognitive deficits.

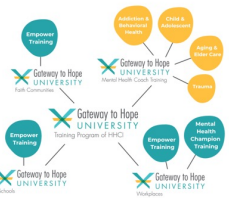


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Gateway to Hope University (GTHU)

We offer evidence-based mental and behavioral health training, educational resources, and ongoing support to individuals, faith communities, schools, and workplaces.

We developed GTHU to provide you with the training needed to recognize, refer, relate, and effectively and compassionately respond to those in mental distress.



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Mental Health Coach Training

- Evidence-based training incorporating ongoing research and feedback from GTHU network of Mental Health Coaches.
- Learn essential information, skills, practical scenarios, and actionable steps to compassionately respond to those in mental distress.
- Deepen your knowledge and response skills through our Specialization Trainings:
 - Addiction and Behavioral Health Disorders
 - Child and Adolescent Mental Health
 - Aging and Elder Care
 - Trauma

Mental Health Coach

Mental Health Coach Training is an evidence-based training to help those in mental distress, and support and serve as a mental health resource to their organization.

Small tasks you may offer help, hope, and encouragement to those that need guidance throughout their journey to mental health recovery and wellness.

Purchase this course for \$75.00

[Get course](#)

Specialty Courses: Available once you've completed our Mental Health Coach Course



SIGN UP



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Mental Health Coach Benefits

- Personalized Learning Profile
- Access to Mental Health Coach forum to connect with other Mental Health Coaches
- Access to Directory of Community Resources map
- Certification at the end of Mental Health Coach Training
- Mental Health Coach meetings and online events



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GTHU Websites



GatewaytoHopeUniversity.org



Learn.GTHU.org



MischerBehavioralHealth.org

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GTHU Resources

- **Unlock the Power of Knowledge with Grace**
Our goal is to empower you with knowledge and support, ensuring you never feel alone on your journey to better mental health. Learn more at MischerBehavioralHealth.org
- **The Hope Line: Relief. Just a Call Away.**
Are you going through a tough time? Do you need someone to talk to? Call The Hope Line.
- **Download our Mental Health Gateway App**





The Hope Line
(832) 831-7337

Open daily, 5 PM - 8 PM CT
www.hope.org | 1-800-950-5000

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