Trauma and Substance Use in College Students

A Neuroscience-Informed Approach

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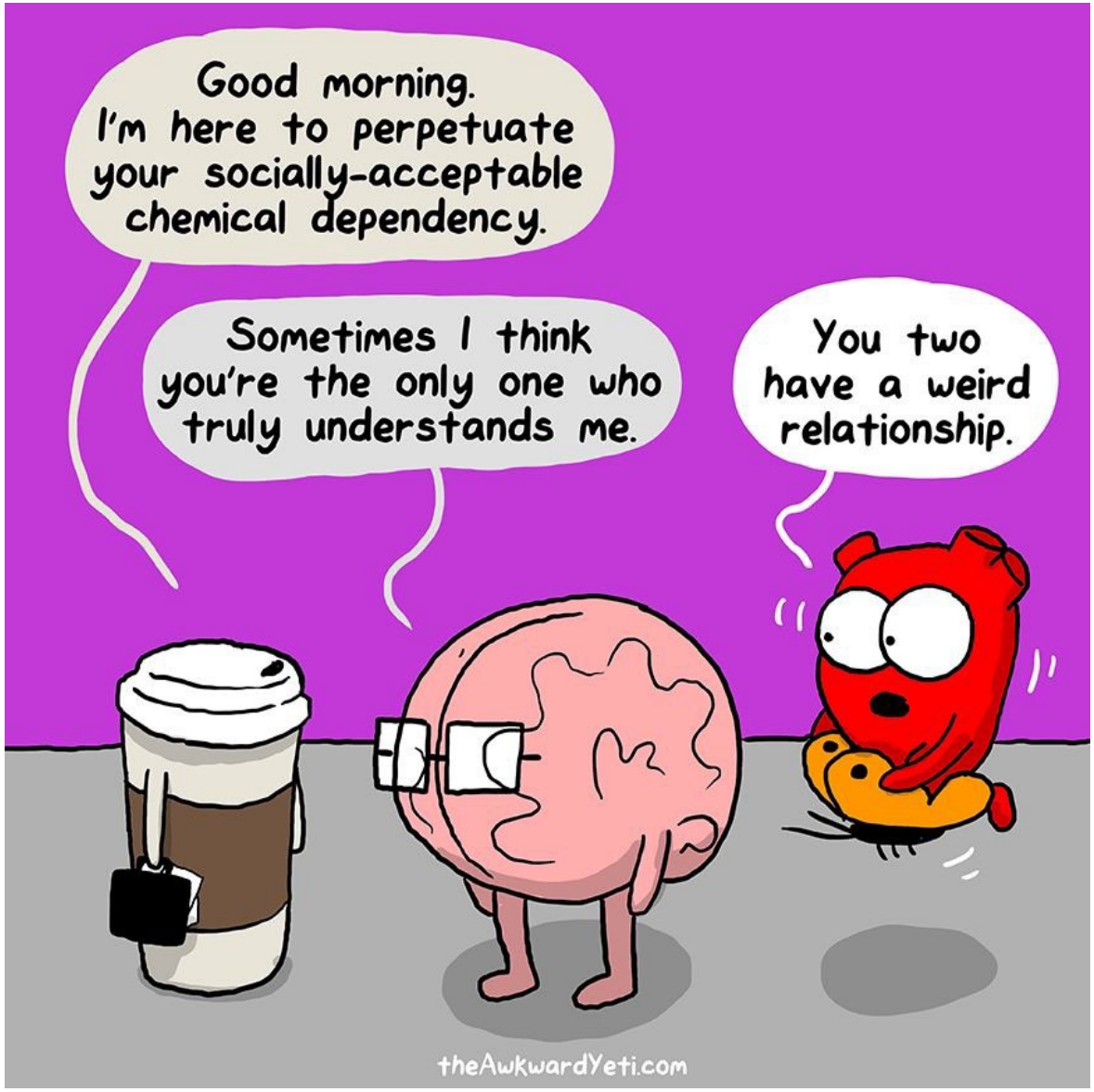

Good morning. I'm here to perpetuate your socially-acceptable chemical dependency.
Sometimes I think you're the only one who truly understands me.
You two have a weird relationship.
theAwkwardYeti.com

Learning Objectives

Understand trauma and substance use connections

Learn neuroscience of addiction

Recognize addiction stages and behavior impact

Explore trauma-informed prevention and response

Introduction

Is it a problem?

What are your Challenges with student substance use?

Quick stats: Trauma and SUDs in college populations

Understanding Trauma & Substance Use in a College Population

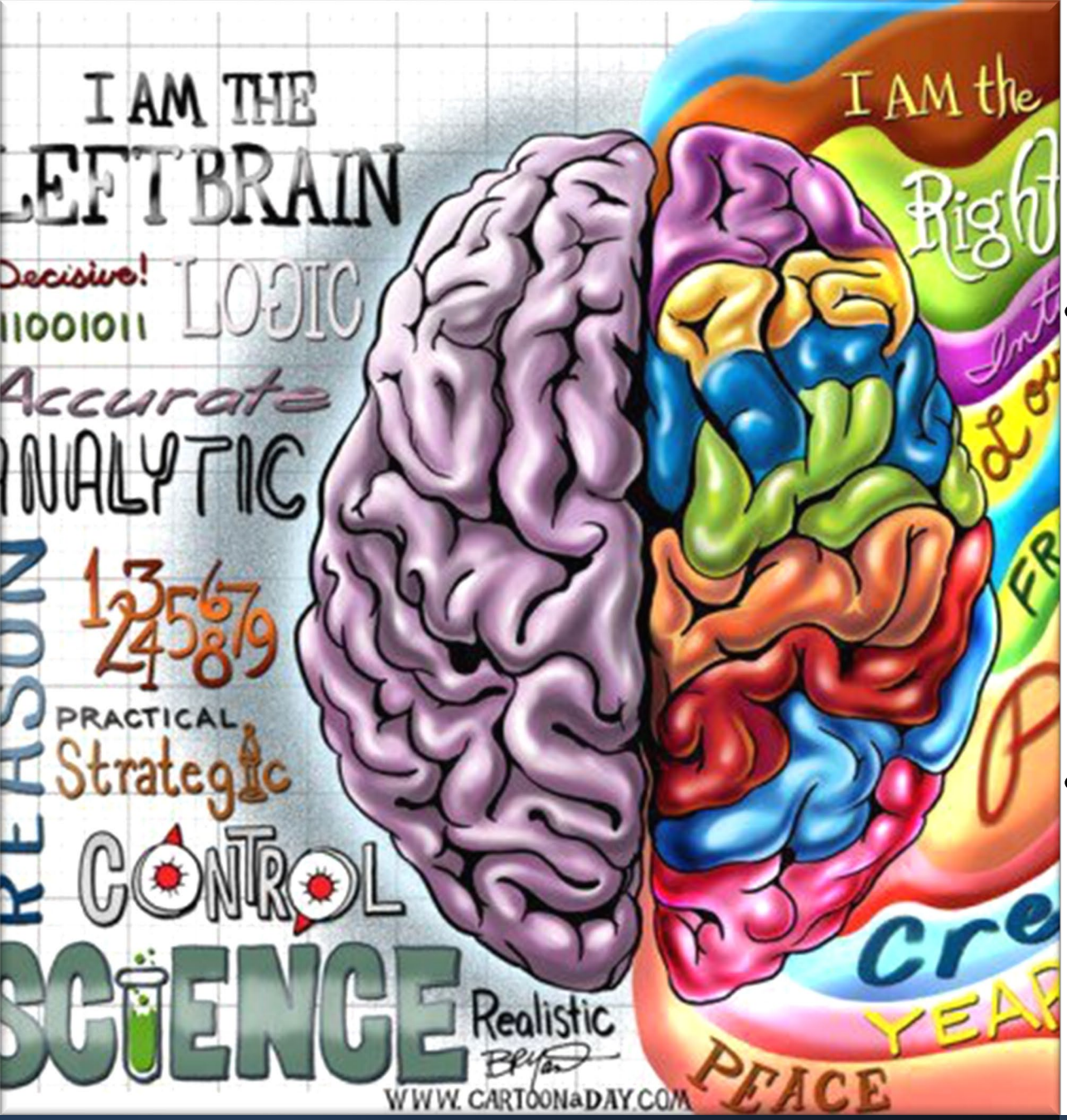
- Define trauma and mental health implications
- What is the Link? Trauma → Substance use

Trauma 101

What is trauma?

VS

Common college stressors: academic, social, childhood experiences



Becoming Brain Wise

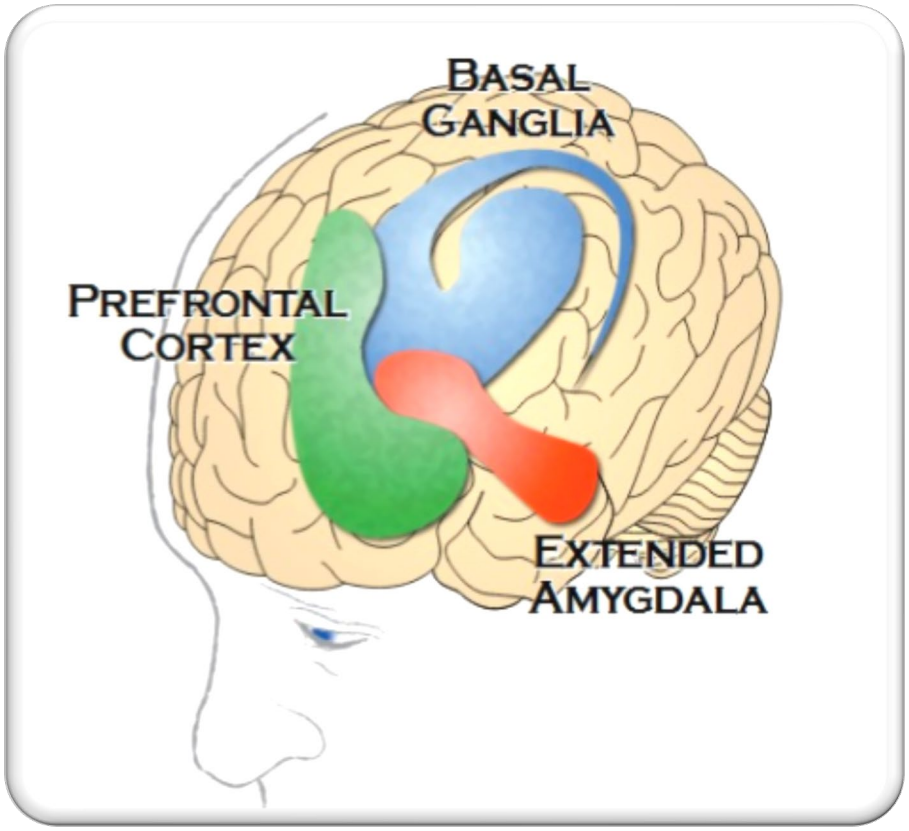
- The brain is organized into two hemispheres connected by the ***corpus callosum,*** a thick band of nerve fibers that allows the two hemispheres to communicate.
- The brain is further divided into 4 sets of lobes, the most important for us to understand is the ***frontal lobe.***

- The ***frontal lobe*** is the executive command center of the brain, critical in problem solving, decision making, moral reasoning, and emotional regulation.

- Deep inside the brain there are many important subcortical structures. These structures are connected into systems that affect mental health and healthy brain functioning.

From Structures to Systems

- The most important functional brain system in the discussion of addiction is the ***limbic system.*** The limbic system is primarily known for helping people to respond to emotional cues and threats and also plays a role in motivation, addiction, and sexual behavior.
- There are several subcortical structures involved in the limbic system however the most important ones for us to understand are the ***basal ganglia*** and the ***amygdala.***



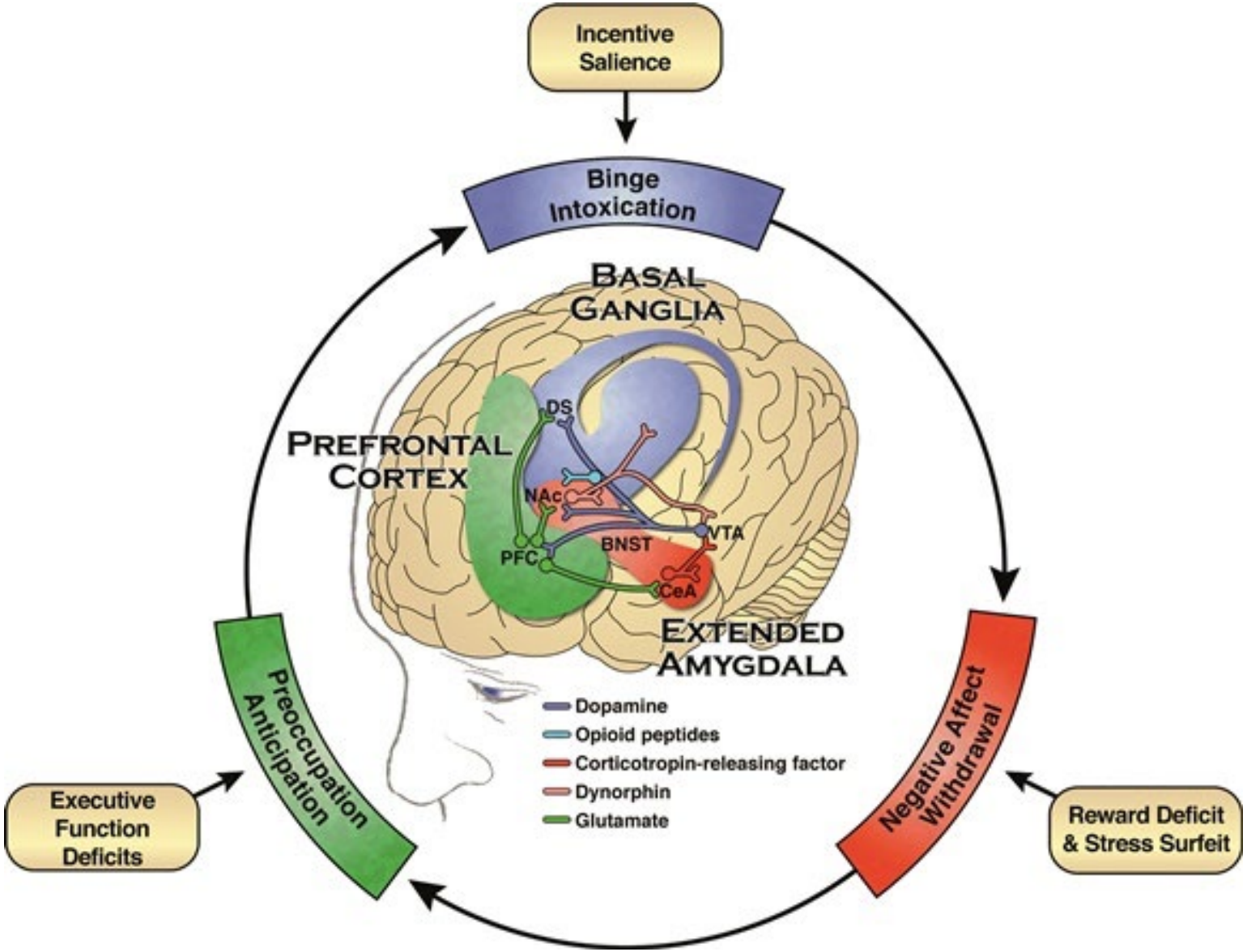
• The ***basal ganglia*** functions as the reward and motivation system as it has a high concentration of dopamine projections. The basal ganglia controls the rewarding or pleasurable effects of substance use and are responsible for the formation of the habitual use of substances.

• The ***amygdala*** is involved in responding to threats and stress. The feelings of unease, anxiety, and irritability as occurs with withdrawal from substances reside here.

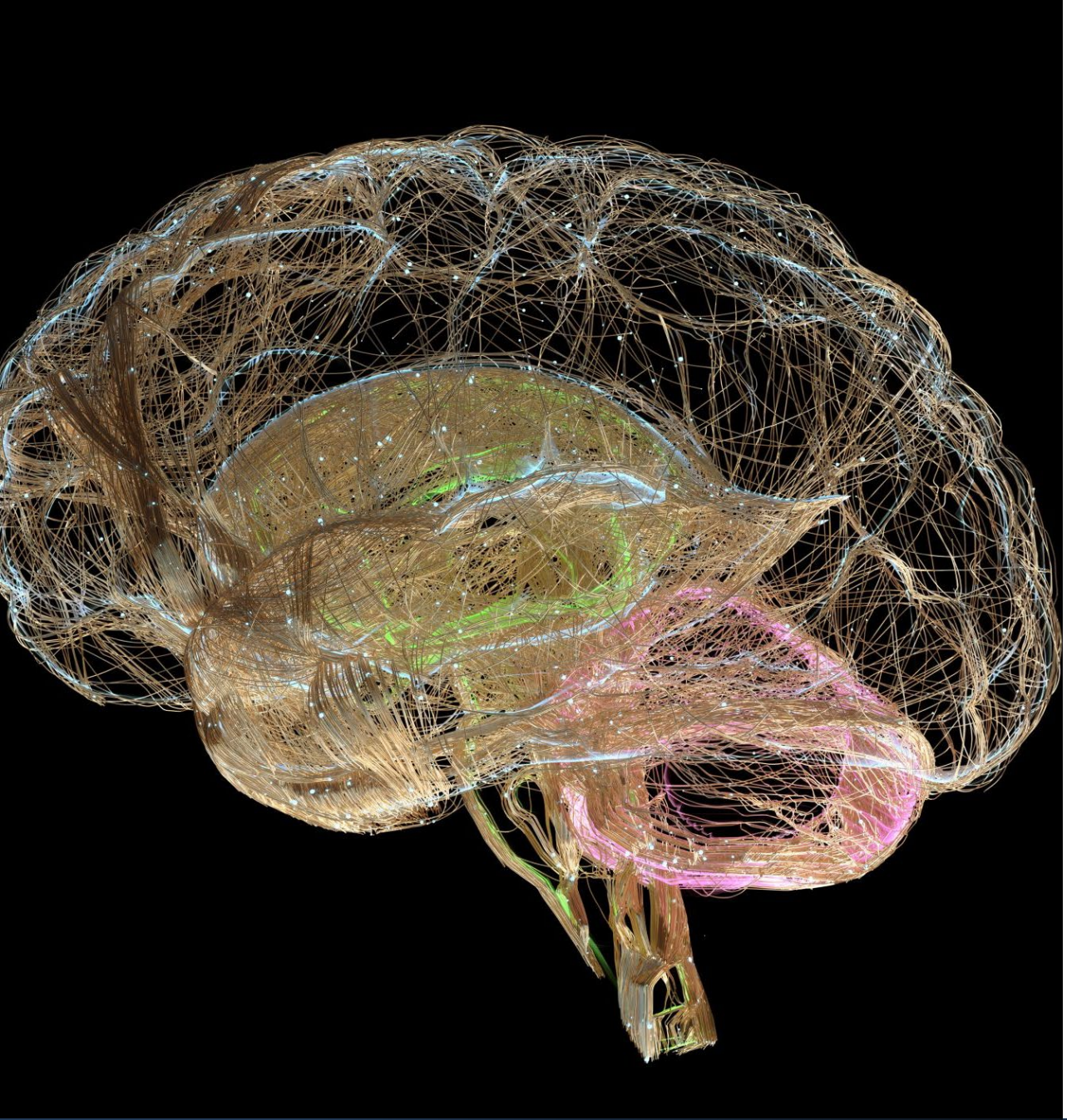
How the Brain Communicates

- Communication in the brain is carried out via neurotransmission. Neurotransmitters carry messages across the millions of neurons located in the brain.

- ***Dopamine*** and the brain's natural occurring ***opioid neurotransmitters*** are key communicators in the brain's reward system. This system is ***hijacked*** in substance use disorders.


Incentive Salience
Binge Intoxication
Basal Ganglia
Prefrontal Cortex
DS
NAc
VTA
BNST
PFC
CeA
Extended Amygdala
Dopamine
Opioid peptides
Corticotropin-releasing factor
Dynorphin
Glutamate
Preoccupation Anticipation
Negative Affect Withdrawal
Executive Function Deficits
Reward Deficit & Stress Surfeit

What happens when you ice-cream binge?



Neuroscience of Addiction Overview

- 3 key brain stages in addiction
- Cycle: Binge → Withdrawal → Craving
- Brain areas: Basal Ganglia, Amygdala, Prefrontal Cortex

Binge/Intoxication Stage – Basal Ganglia

Reward system activation

Dopamine & opioid signals → pleasure, habits

Compulsive substance seeking

Withdrawal Stage – Amygdala

Stress, dysphoria during withdrawal

Dopamine depletion

Emotional imbalance drives continued use

Preoccupation/Craving – Prefrontal Cortex

Craving and anticipation mechanisms

Loss of impulse control

"Go" vs. "Stop" imbalance

HOW Trauma IMPACTS THE BRAIN

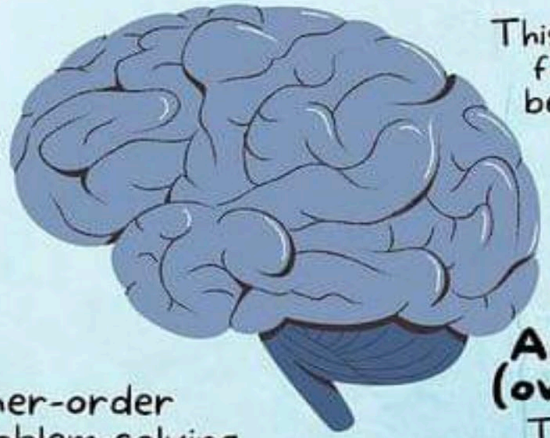
Trauma can alter the structure and functioning of the brain.

Ventromedial Prefrontal Cortex (shrinks)

This area is responsible for mood and emotion regulation & rational thought.

Hippocampus (shrinks)

This area is responsible for differentiating between the past & present.

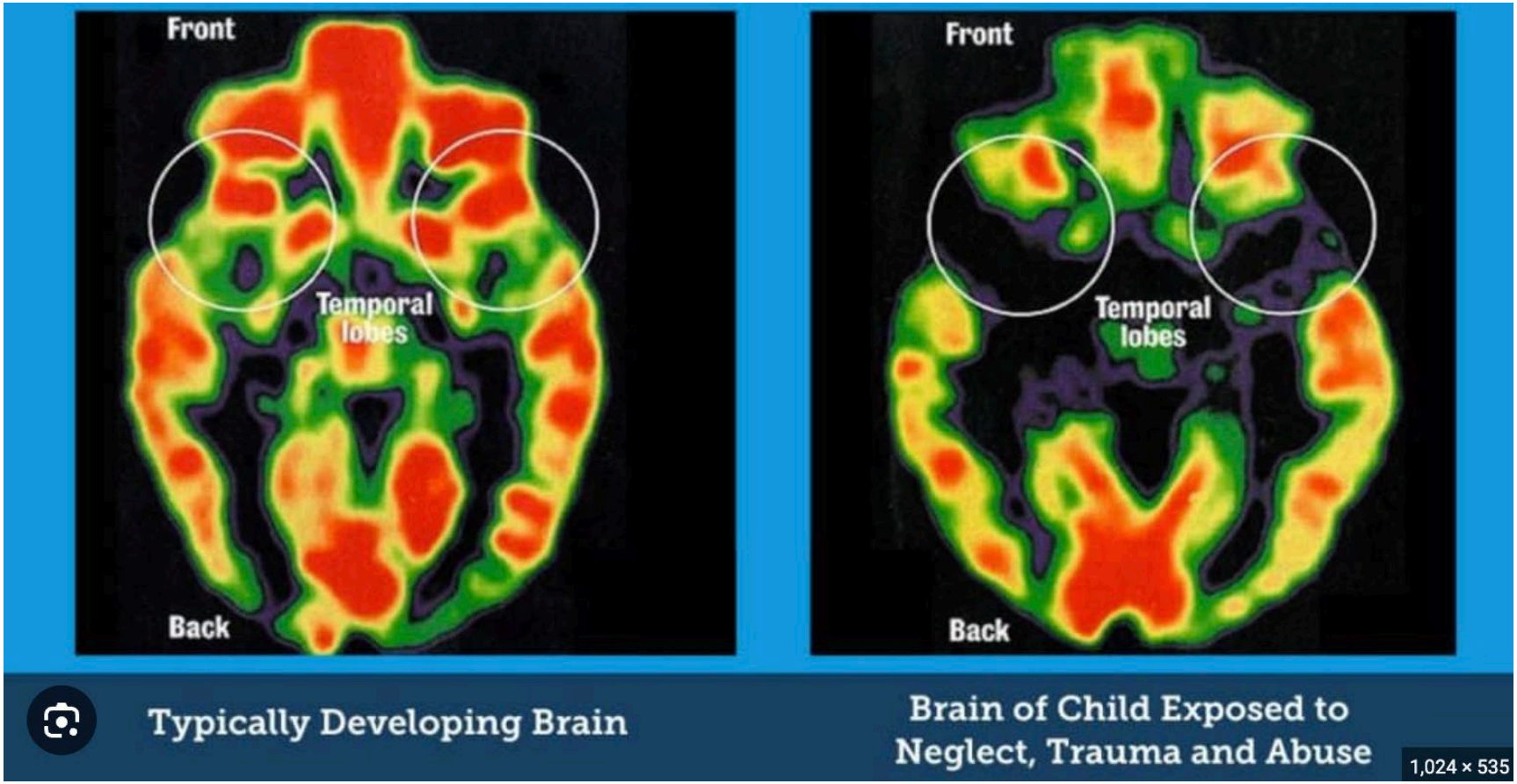


Amygdala (overactive)

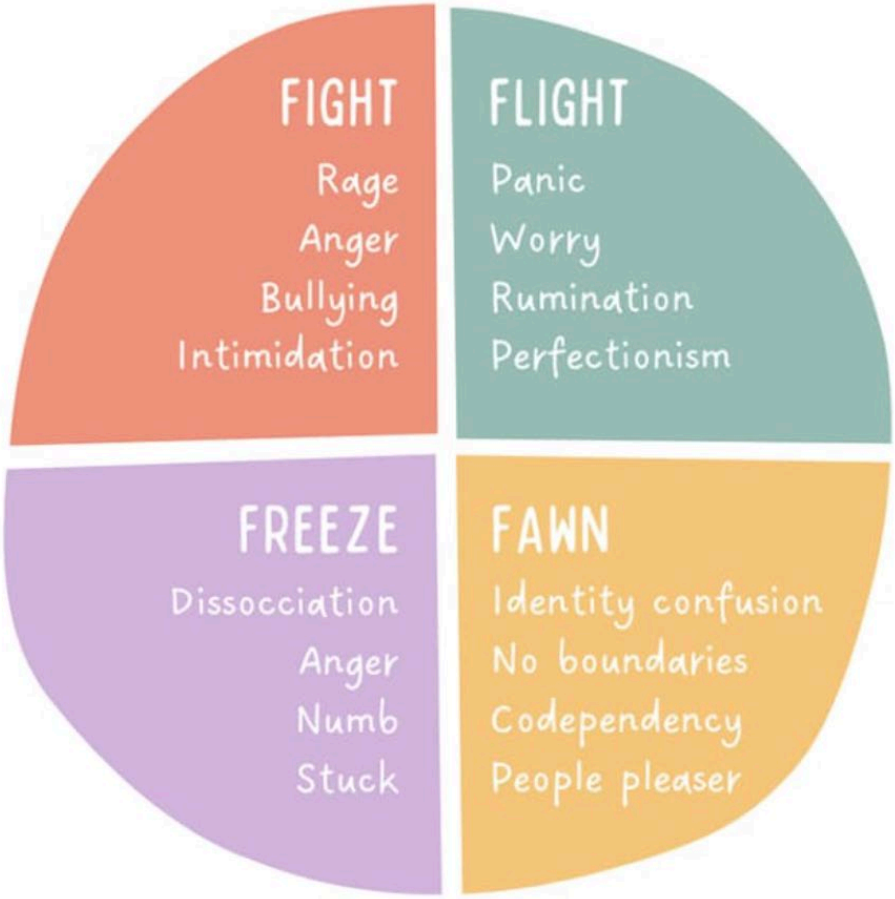
This area is responsible for responding to stress.

It causes higher-order processes like problem-solving to become underfunctioning, while processes geared towards defense become overactive.

@laci.mcgarry

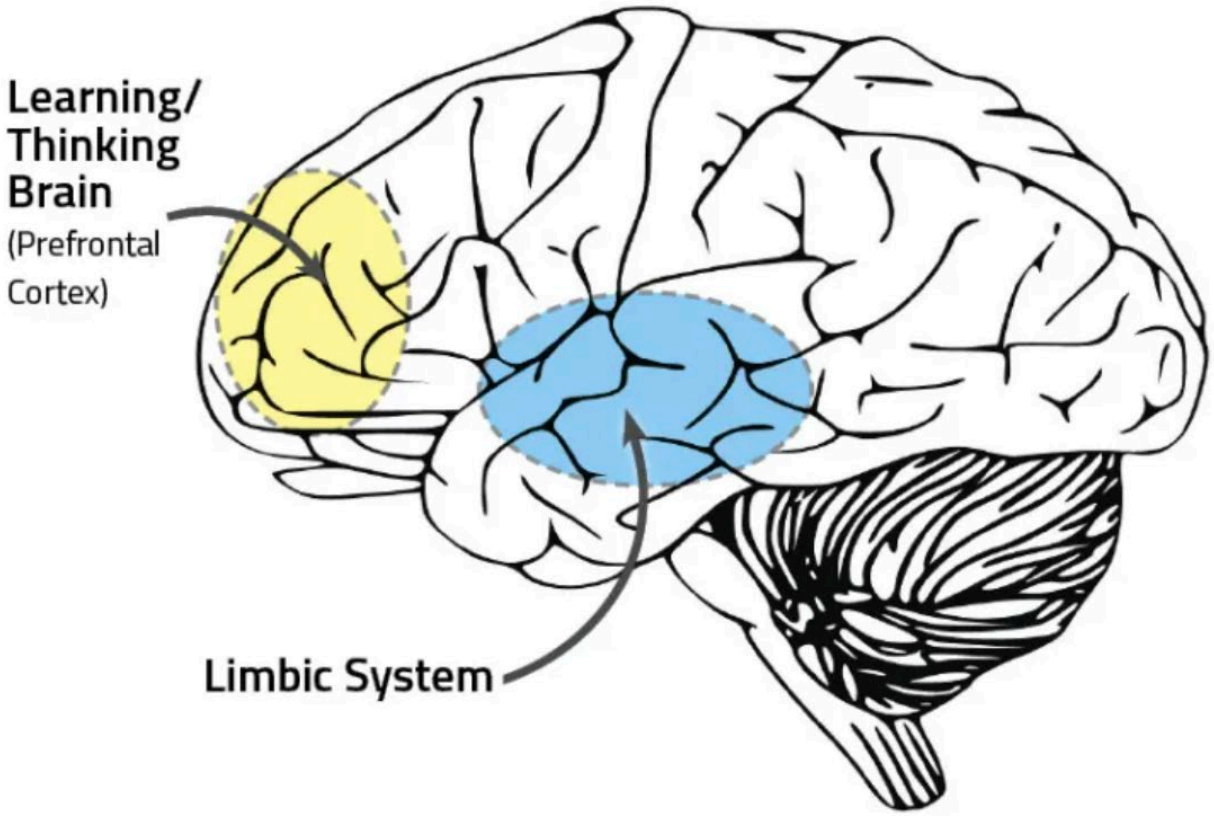

Front
Temporal lobes
Back
Front
Temporal lobes
Back
Typically Developing Brain
Brain of Child Exposed to Neglect, Trauma and Abuse
1,024 × 535

TRAUMA RESPONSES - THE 4 F'S



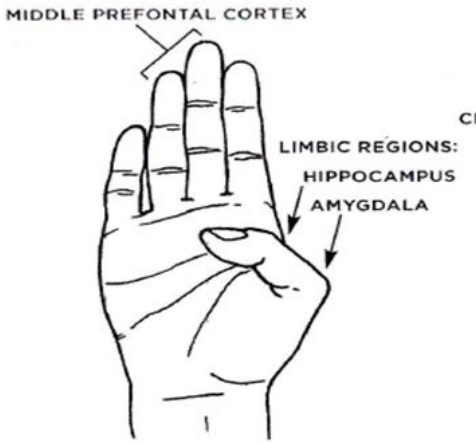
Survival Mode: Flight/Fight/Freeze

Frontal lobe (Prefrontal cortex) goes offline
Limbic system / mind and lower brain functions take over

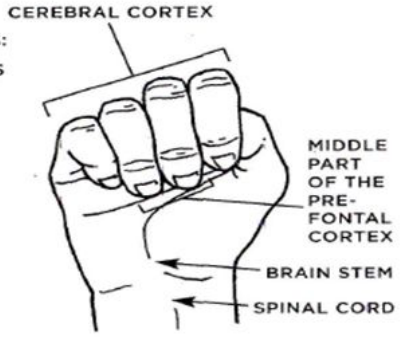


The hand model of the brain

Daniel J. Siegel, *Mindsight* (Melbourne: Scribe, 2010), p.15

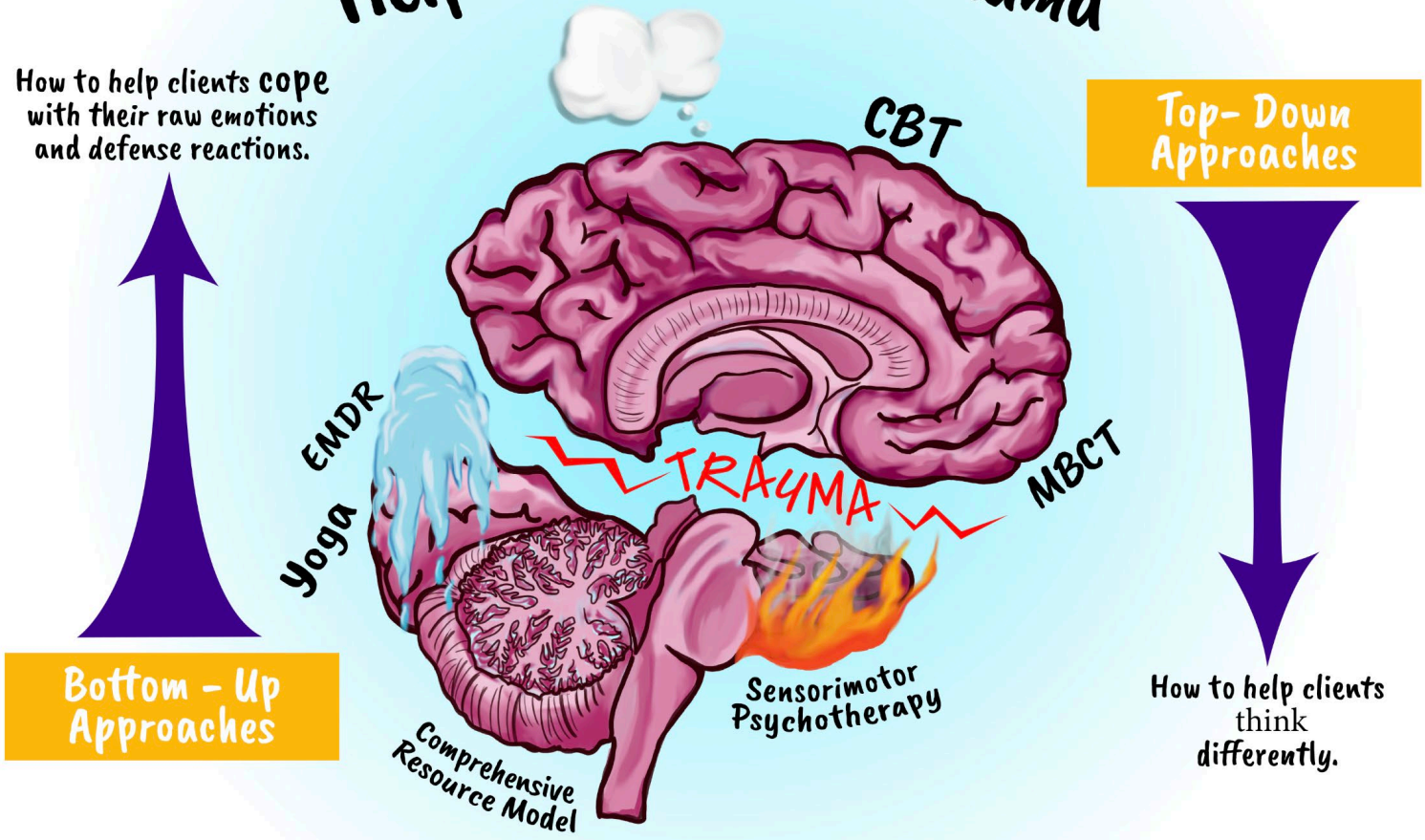


Place your thumb in the middle of your palm as in this figure.



Now fold your fingers over your thumb as the cortex is folded over the limbic areas of the brain.

Brain-Based Approaches to Help Clients After Trauma



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TRAUMA-INFORMED CARE:

What does it look like?

@therecoverycenterusa

Language and Communication

Helpers use non-judgmental and empathetic language. They avoid making assumptions about an individual's past experiences. For instance, instead of asking, "What's wrong with you?" they might ask, "What happened to you?"

Providing Choices

In healthcare settings, offering choices to patients can be empowering. For example, allowing a patient to choose their meal preferences or the time of their therapy sessions gives them a sense of control.

Sensory-Friendly Environments

Recognizing that sensory sensitivities can be triggered by trauma, trauma-informed care might involve providing calming sensory rooms or ensuring that lighting and noise levels are adjustable to individual preferences.

Active Listening

Helpers actively listen to individuals without interrupting or rushing through appointments. They validate their feelings and experiences.

Training and Self-Care

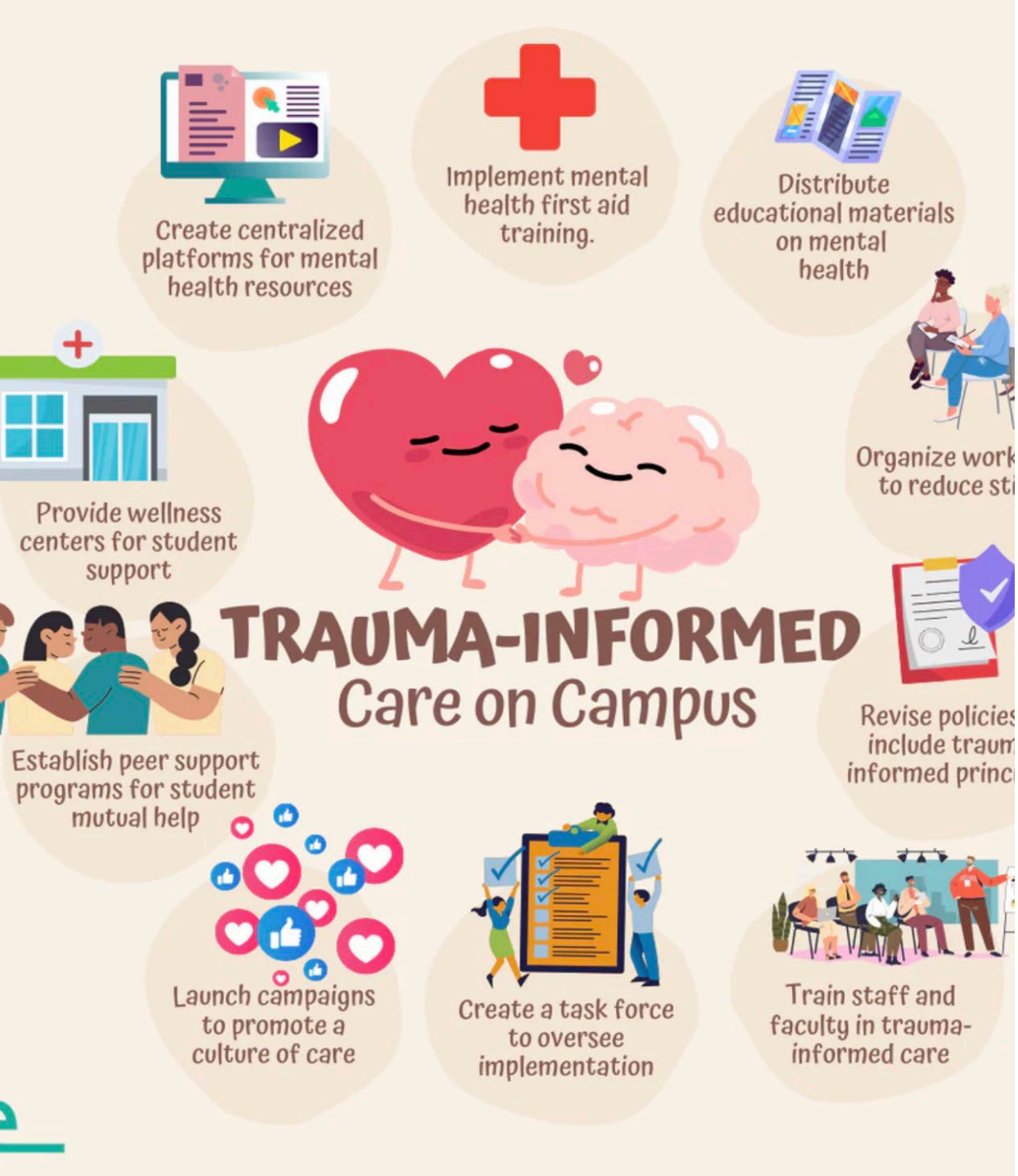
Healthcare staff are trained in trauma-informed care principles and are encouraged to practice self-care to prevent burnout. This ensures that they can provide the best possible care to their patients.

De-escalation Techniques

In situations where patients may become agitated or distressed, trauma-informed care involves de-escalation techniques that prioritize safety and minimize re-traumatization.

Case Study Discussion

Walk through	Walk through a hypothetical student case
Apply	Apply addiction stages and trauma factors
Reflect	Group reflections



Trauma-Informed Strategies

Core principles: safety, trust, empowerment

Campus interventions: Mental health services, peer recovery, mindfulness

Group Discussion

WHAT CAN YOUR CAMPUS IMPLEMENT?

SHARE CURRENT EFFORTS AND GAPS

Q&A and Wrap-Up

OPEN FLOOR FOR QUESTIONS

SUMMARY OF TAKEAWAYS

FURTHER RESOURCES

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Starry Night