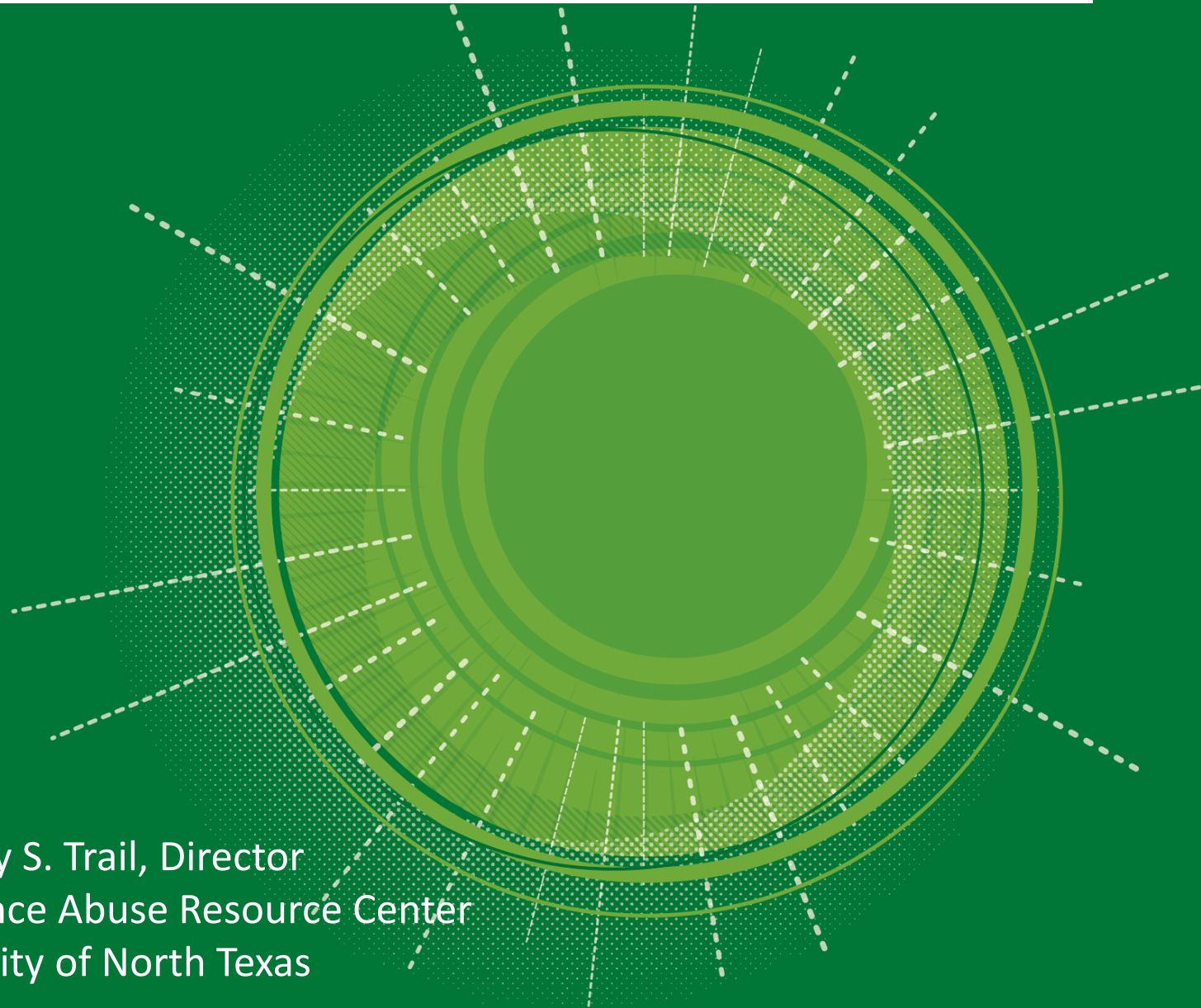


Neuroscience of Addictions made Simple



Timothy S. Trail, Director
Substance Abuse Resource Center
University of North Texas

Hope

Beer

Physiology

Disease

NEUROLOGY

Natural

AA

Choice

Too Weak

Hitting Bottom

REHAB



Use it

Try **HARDER!!**

Addiction

What is will? How much of
it do I need to stop?

Will power

RECOVERY

Tolerance

Weed

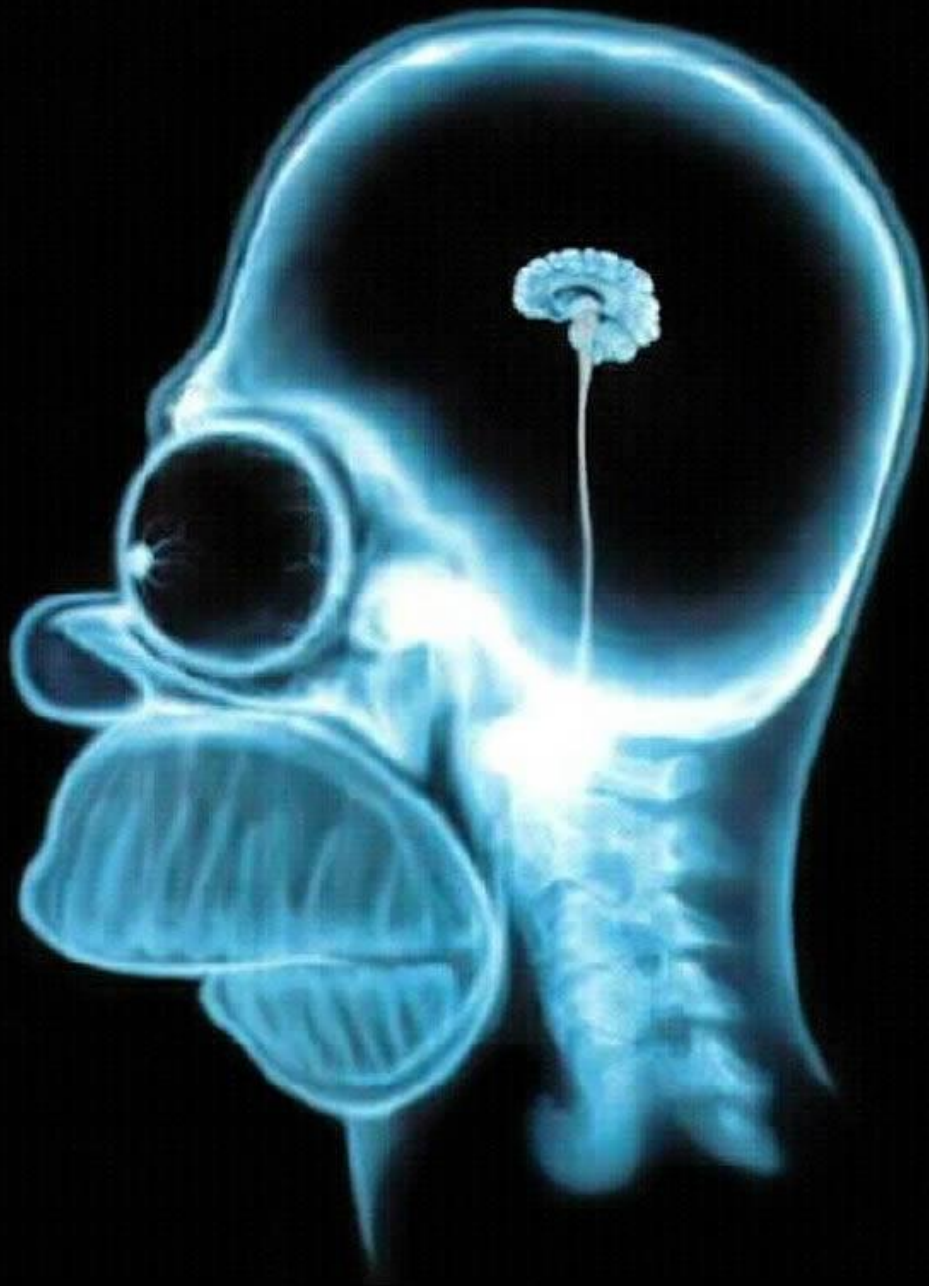
Can brain structure change?

Problem???

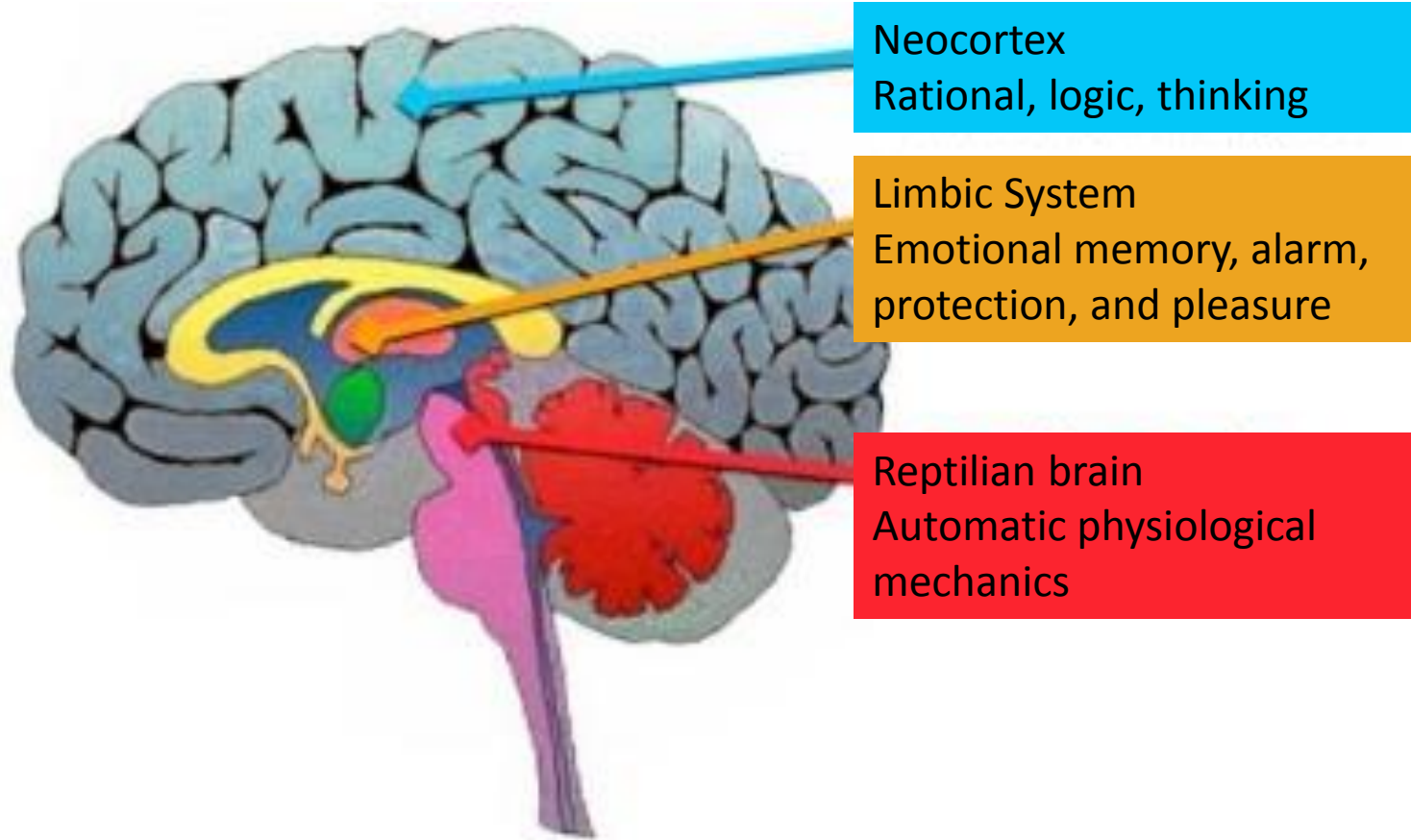
Just the few I focus on when speaking/consulting

- Education is lacking and often incorrect
- Education that is given is often too technical
- Not addressing the entire person
- Focusing on the surface (SUD may be Self-medication)
- Addressing all mental health is too brief

BASICS



The
important
brain stuff



CHANGE

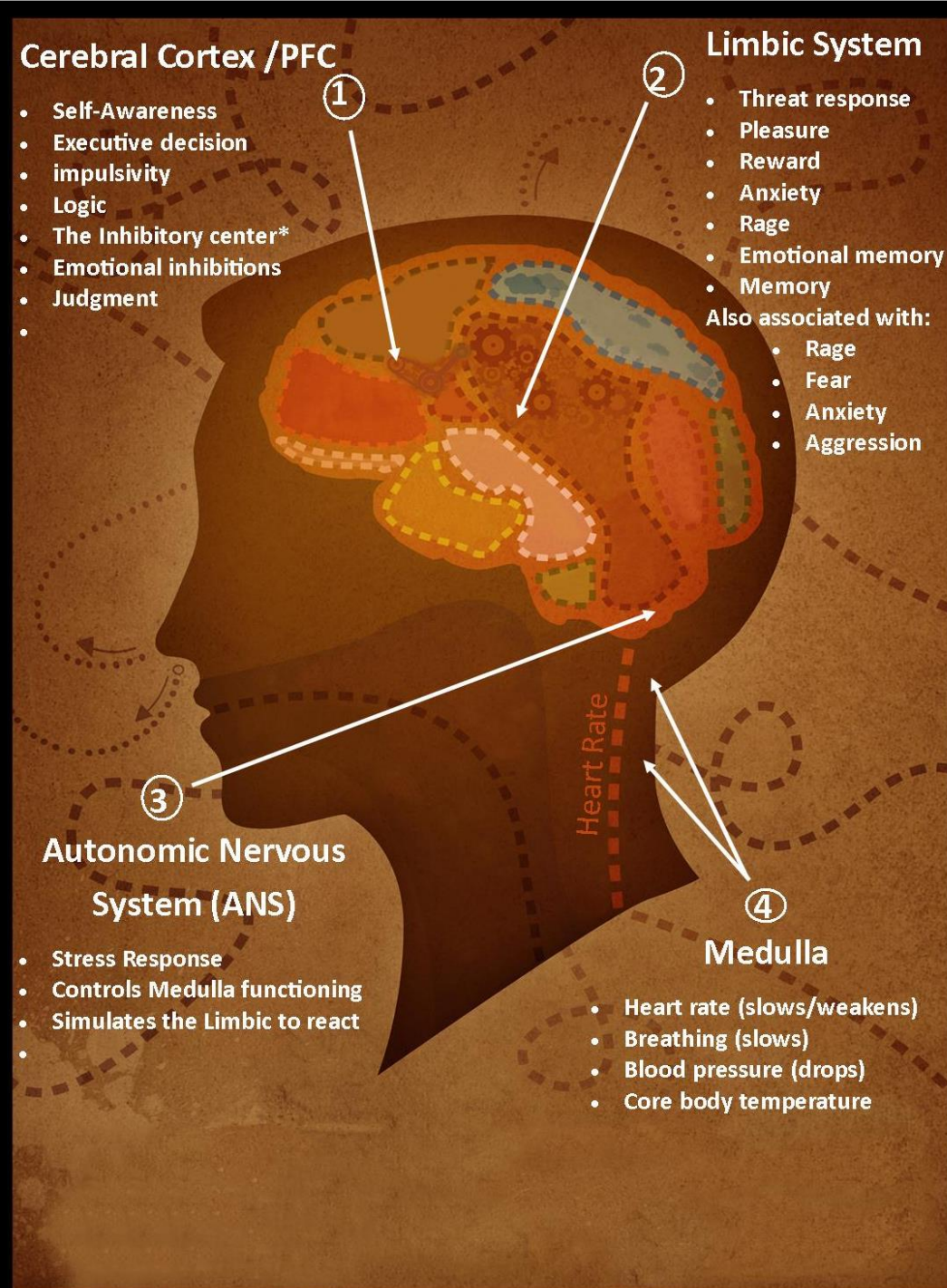
MECHANISMS of CHANGE in the BRAIN

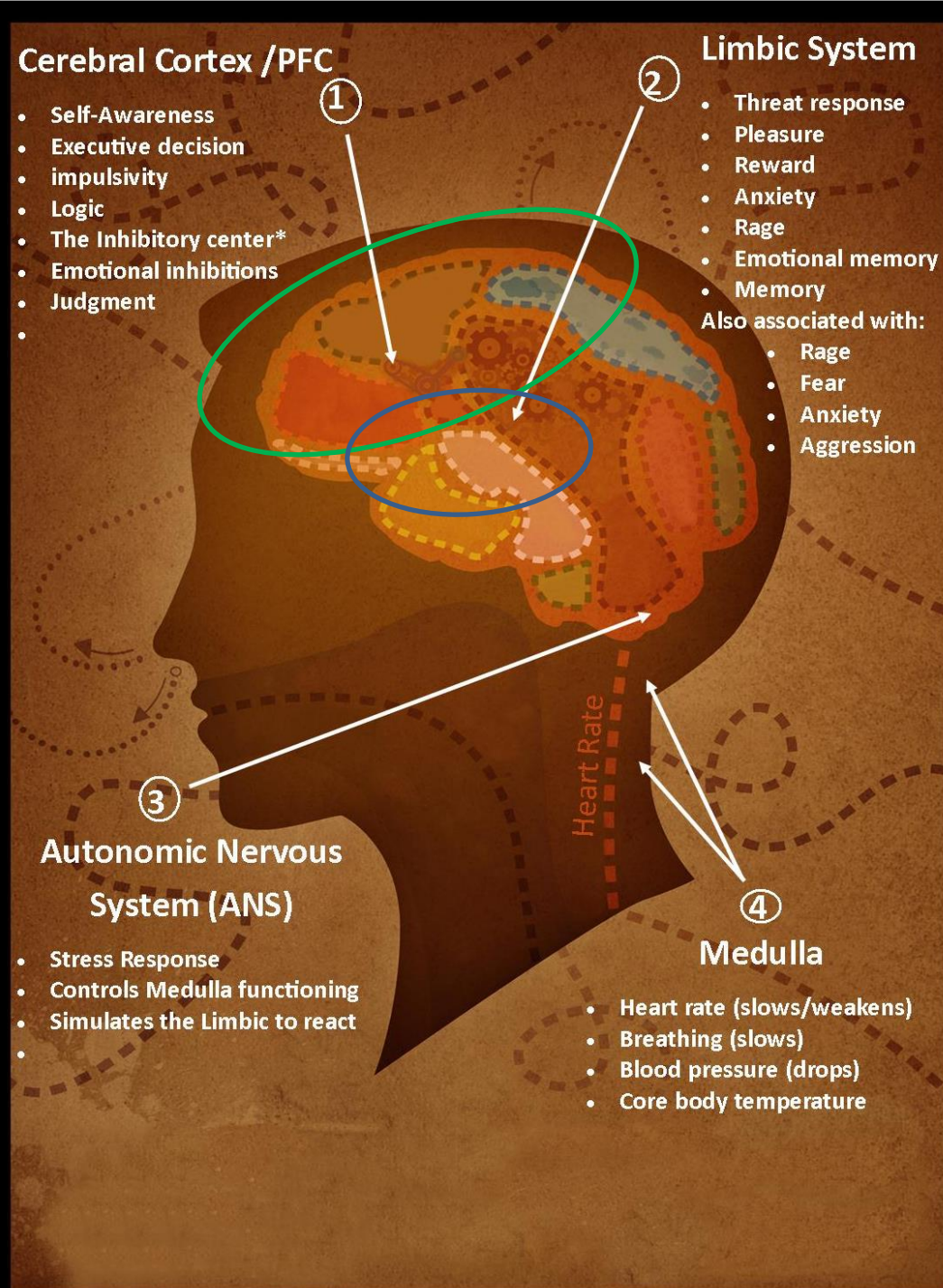
- Tissue Damage
- Tissue Dependence: adaptation of body to constant presence of a substance
- Conditioned response: Any stimulus experienced repetitively or that has a strong enough impact on our brain, begins to change our structure accordingly
- Reward (drugs, sex, gambling, avoidance)
- Physical vs. Psychological addictions



BALANCE

The 4 Major Areas





The 2 Areas

① The PFC

&

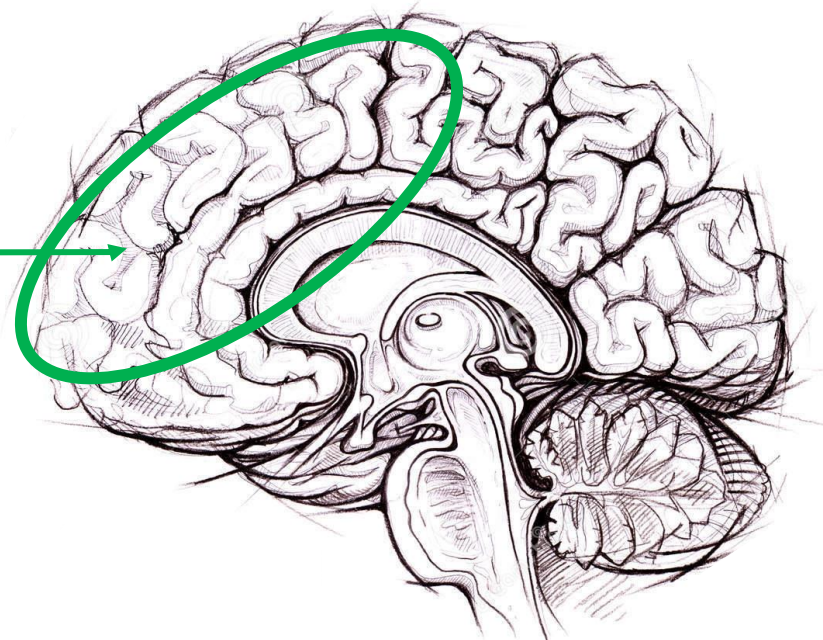
② Limbic System

SLOW

Having too much slow wave activity in the front part of our head:

Fogginess
Impulsive
Unmotivated

Poor Decision Making
Depression
Reduced Memory



FAST

Having too much fast wave activity
(BETA) in the limbic system (middle):

Anxiety

Anger

Memory issues

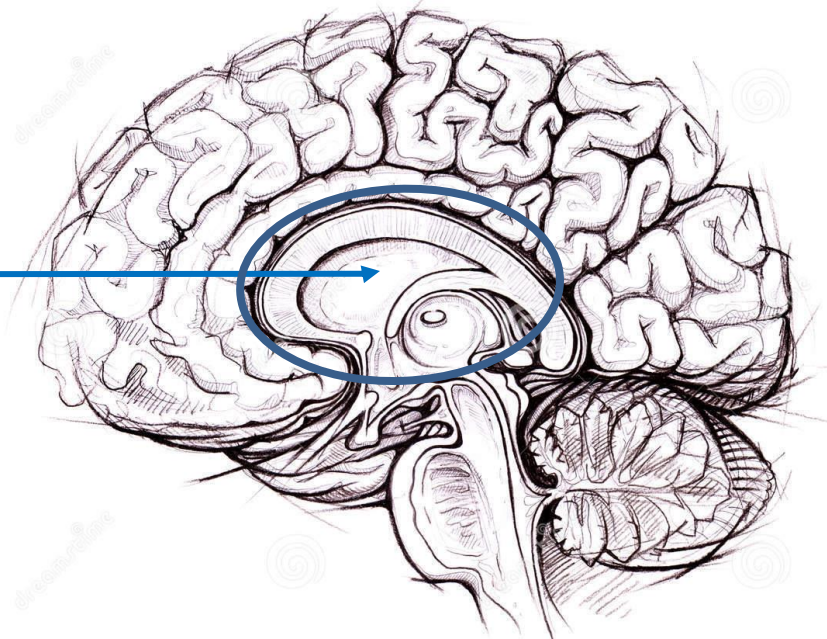
Addictive behaviors

Impulsivity

Heightened fight/flight

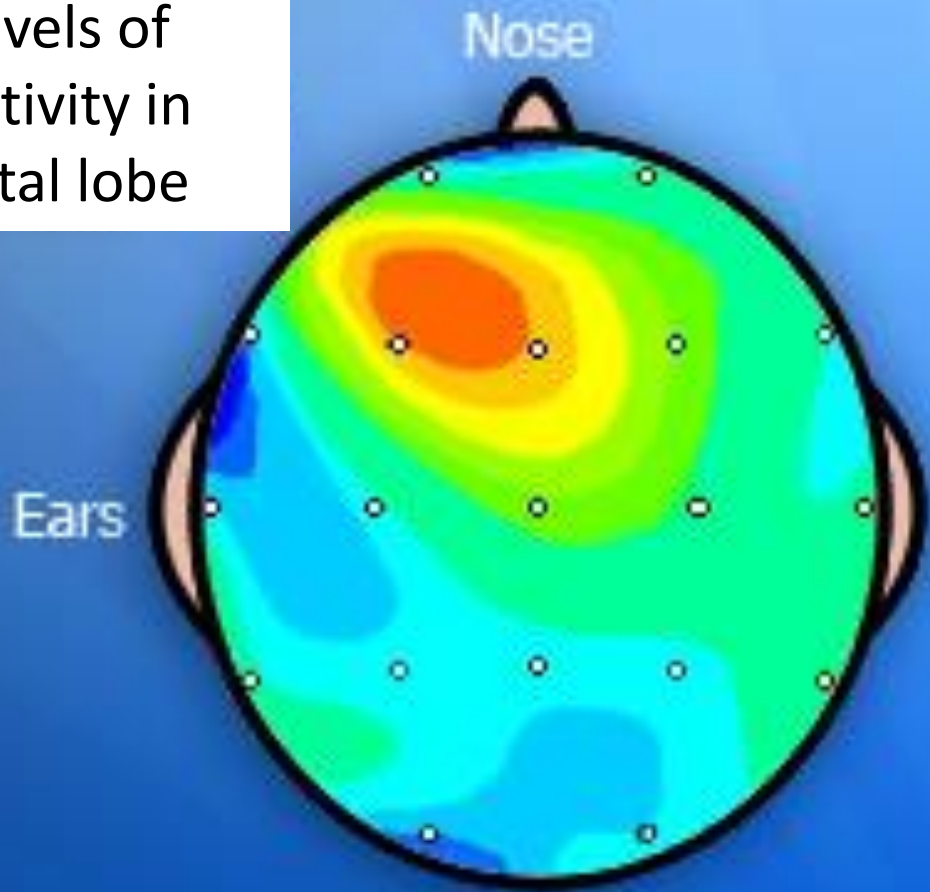
Stress

Driven to use

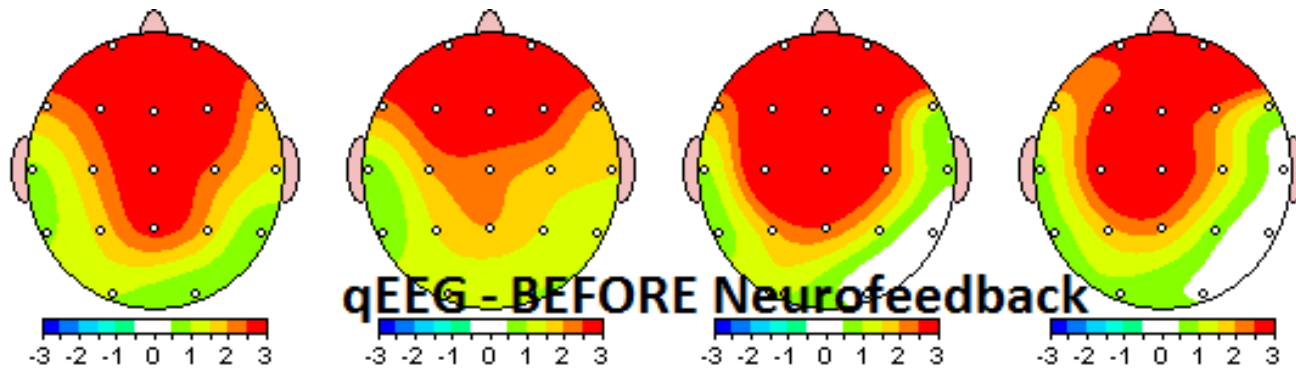


How do we know?

Abnormal levels of
low wave activity in
the left frontal lobe



The brain of someone with addiction as his/her main issue



LASTING CHANGES

Even though a person stops/cuts back use, the brain imbalance will often stay close to the same. This leaves behind:

Depression

Anger

Anxiety

Confusion

Bipolar-type symptoms

Dulled affect

Inability to control emotions

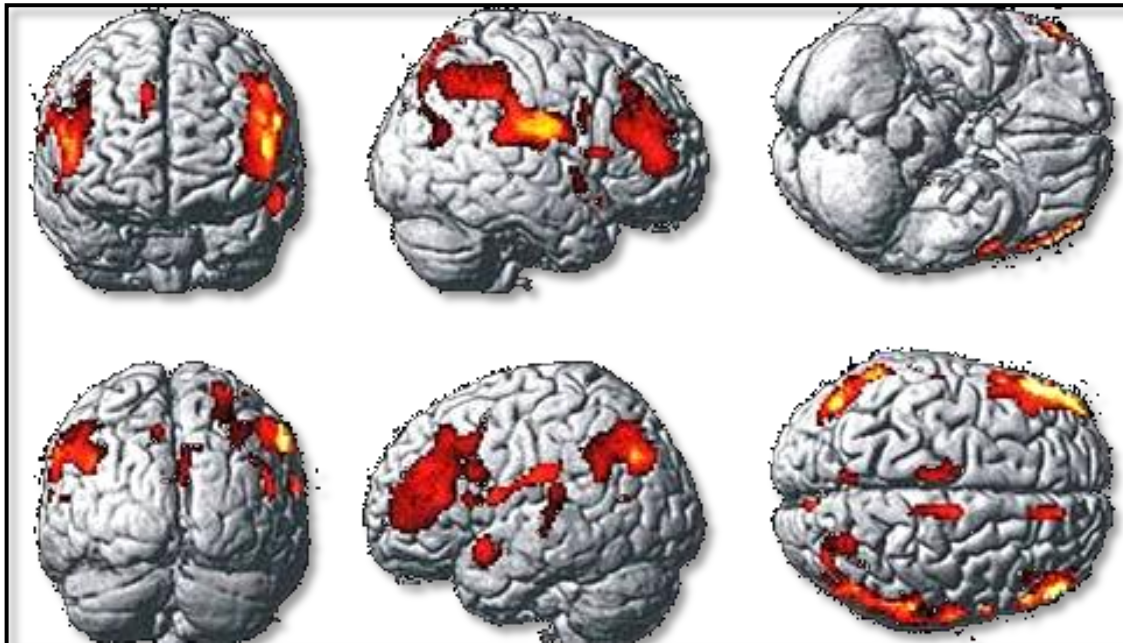
ADHD symptoms

YES!
EVEN MARIJUANA

- 67 participants
- Began between 16-17 years-old
- Average: 1 time per day for 3 years

- Stopped use at 19-20 years-old
- Monitored for Two years after stopping

Imaging two years after completely stopping

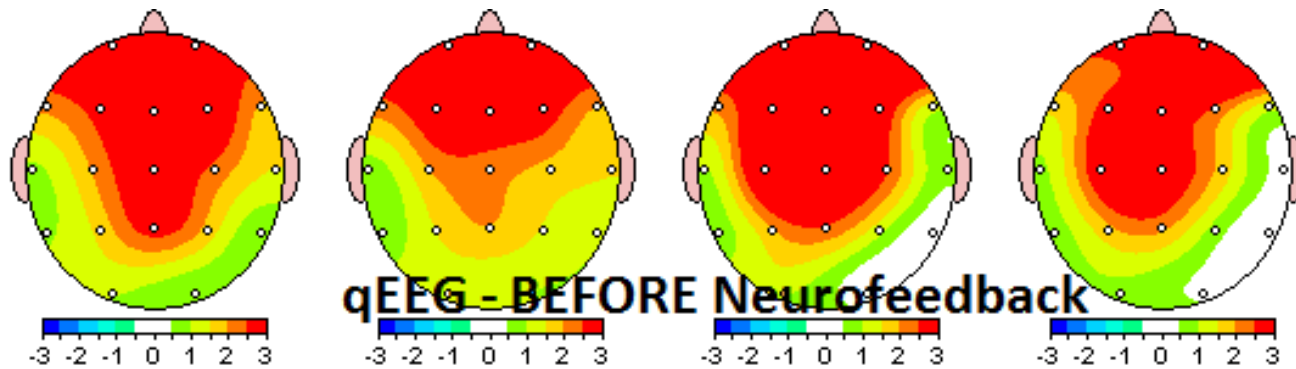


OPTIONS

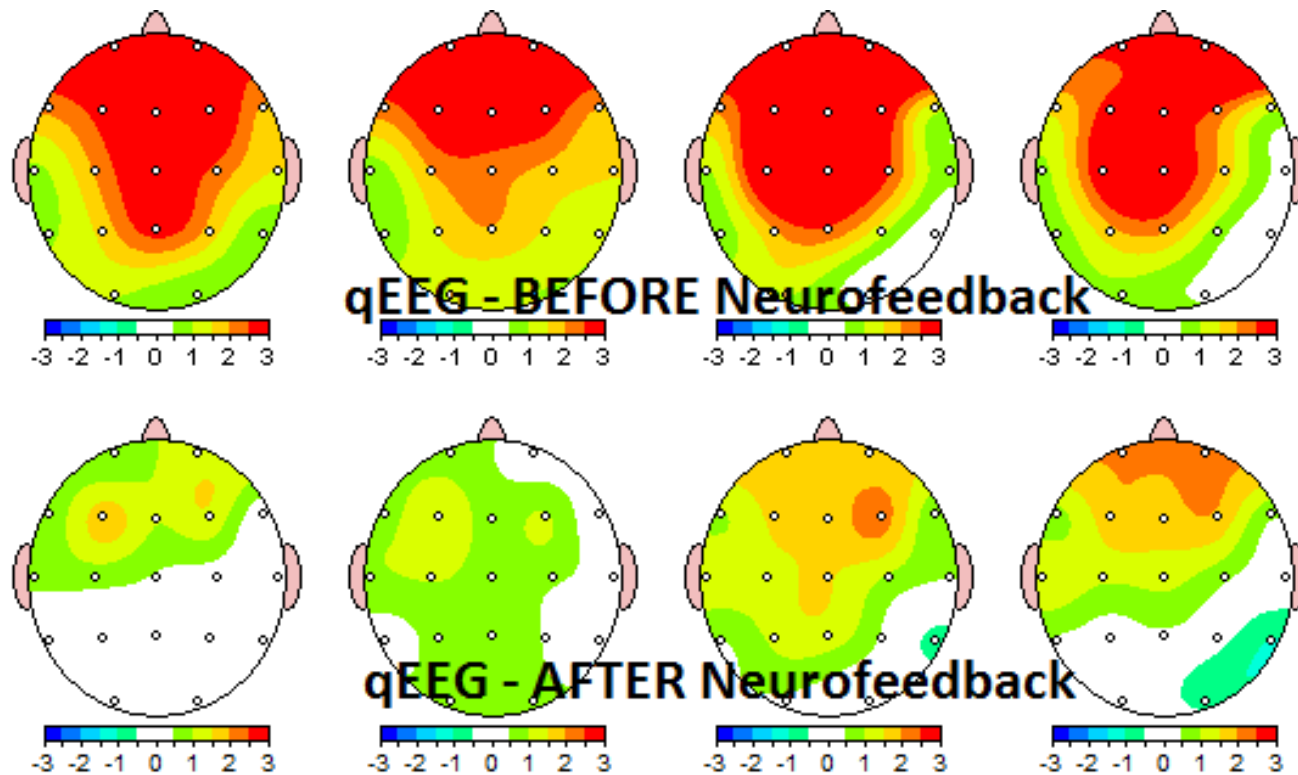
An Alternative

NEUROFEEDBACK

The brain of someone with addiction as his/her main issue



The brain of someone with addiction as his/her main issue



An Alternative

Mindful-Meditation

IF ADDICTIONS IS CHARACTERIZED AS:

- 1 TOO MUCH LOW WAVE ACTIVITY IN THE PFC
- 2 TOO MUCH HIGH WAVE ACTIVITY IN THE LIMBIC SYSTEM

MINDFUL-MEDITATION:

- 1 INCREASES HIGH WAVE ACTIVITY IN THE PFC
- 2 DECREASES HIGH WAVE ACTIVITY IN THE LIMBIC SYSTEM

MINDFUL-MEDITATION ALSO:

INCREASES GREY MATTER IN PFC

DECREASE CHANCE OF HEART DISEASE BY 87%

STRENGTHEN NEURONAL ACTIVITY IN REGIONS RESPONSIBLE FOR:

- ① SELF-CONTROL
- ② SELF-AWARENESS
- ③ HAPPINESS AND JOY
- ④ CALMNESS
- ⑤ MEMORY FUNCTIONS
- ⑥ CLARITY & UNDERSTANDING
- ⑦ INHIBITORY PROCESSES (compulsivity, anxiety, stress, anger, emotional deregulation, etc)

An Alternative

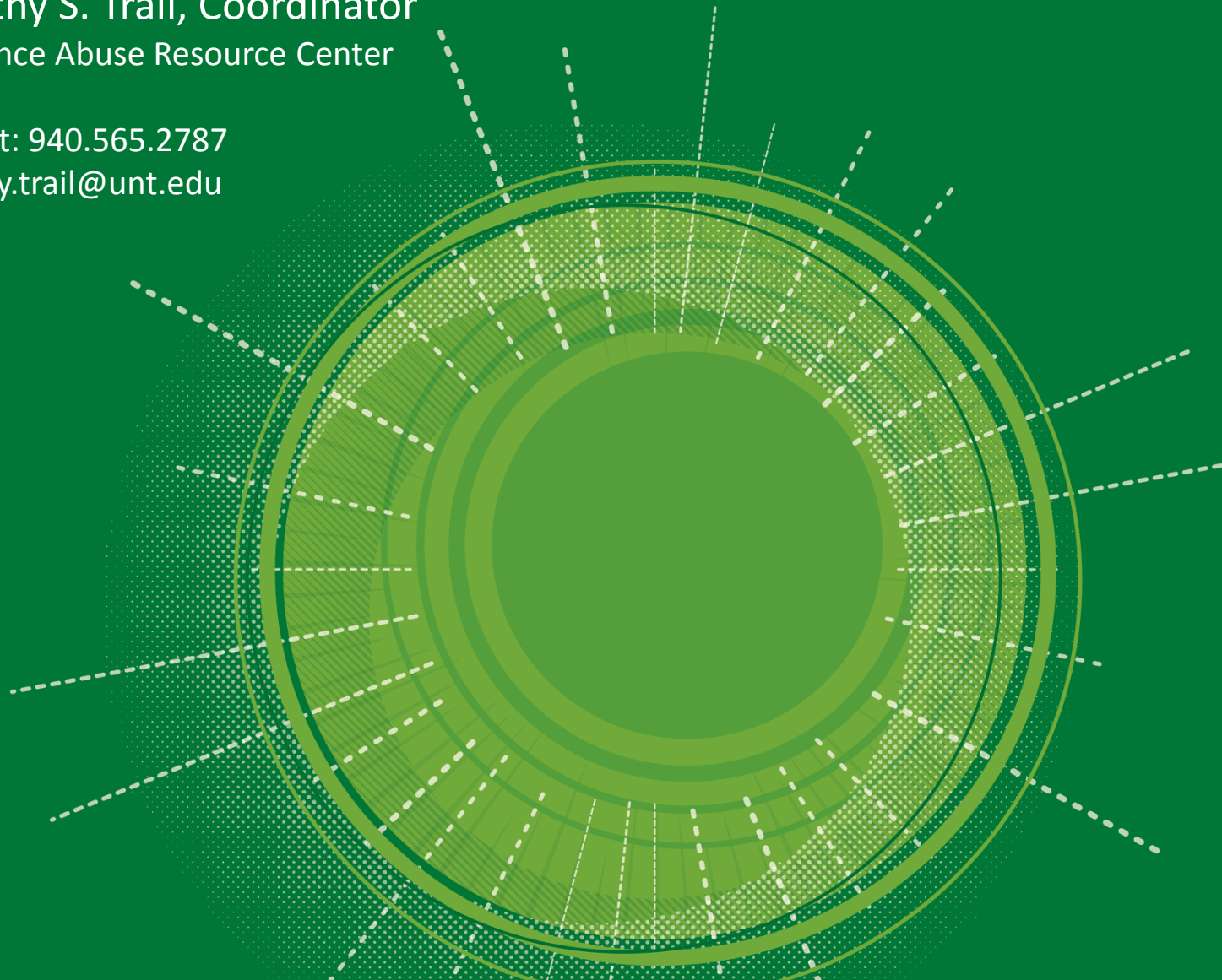
Counseling

What most groups or self-help does not address (or address well at least).

- ① Trauma (sometimes hidden or normalized)
- ② Family dynamics and on-going issues
- ③ Gives coping skills (although a group can be a CS, it can't be the only one)
- ④ Many counselors have access to multiple newer wave treatment techniques: neurofeedback, mindfulness, Alphastim, etc
- ⑤ Many counselors have deep training and understanding of extenuating issues most often involved in SUD: anxiety, depression, and addressing family dynamics
- ⑦ Insights often hidden from conscious view
- ⑧ Counseling has been shown to change neurological structures and events as well

Timothy S. Trail, Coordinator
Substance Abuse Resource Center

Contact: 940.565.2787
timothy.trail@unt.edu



Cigna Behavioral Health Awareness

If you are a Cigna customer and have questions about Substance Use treatment or about your benefits and how to use them, please contact:

Chantelle Hoogland – 888.244.6293 x 329159

Lisa Osborne – 770.779.2023