SAKI
SEXUAL ASSAULT
KIT INITIATIVE
Reform. Accountability. Justice.

The Neurobiology of Trauma

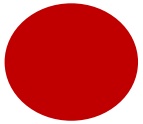
What You Need to Know About the Brain and Trauma (PART 1)

Rebecca Campbell, Ph.D.
Professor of Psychology
Michigan State University

This project was supported by Grant No. 2015-AK-BX-K021 awarded by the Bureau of Justice Assistance. The Bureau of Justice Assistance is a component of the U.S. Department of Justice's Office of Justice Programs, which also includes the Bureau of Justice Statistics, the National Institute of Justice, the Office of Juvenile Justice and Delinquency Prevention, the Office for Victims of Crime, and the SMART Office. Points of view or opinions in this document are those of the author and do not necessarily represent the official position or policies of the U.S. Department of Justice.

In this three-part webinar series,

I want to share with you how research on the brain can help us connect the dots . . .



Sexual
Assault

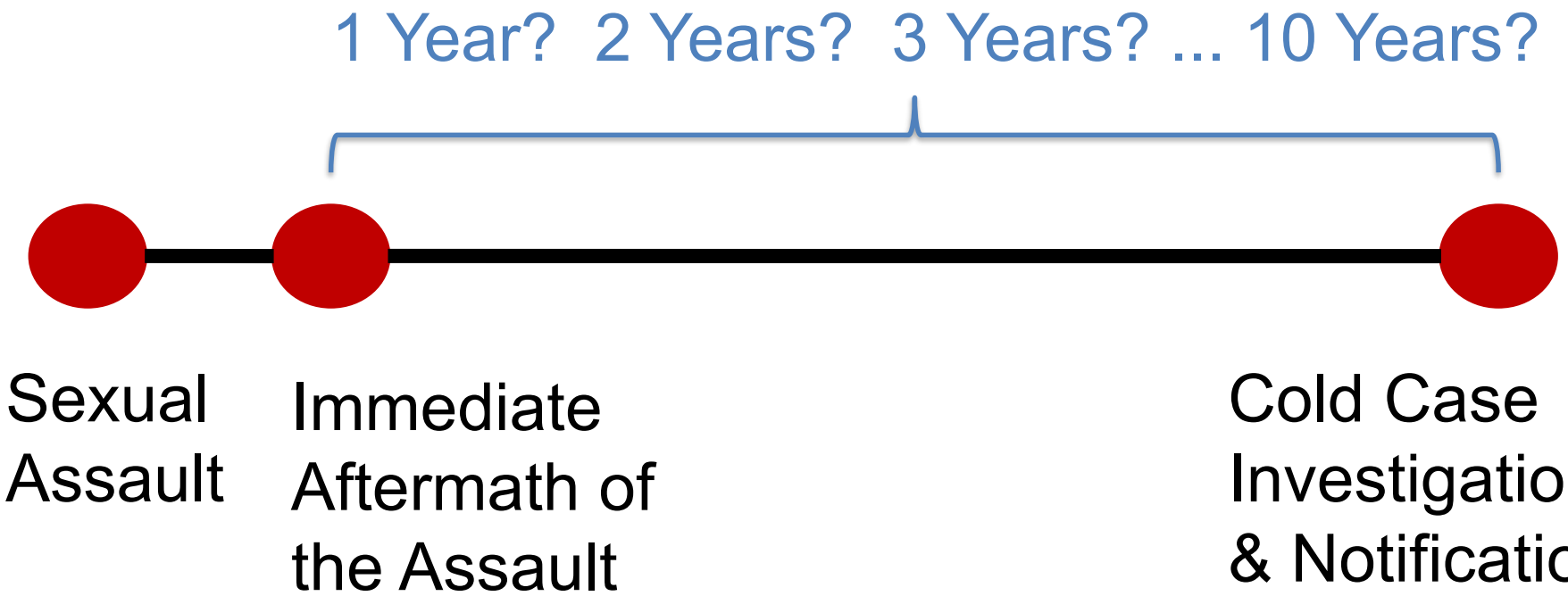
Sexual Assault

Immediate Aftermath of the Assault

Sexual Assault

Immediate Aftermath of the Assault

Cold Case Investigation & Notification


1 Year? 2 Years? 3 Years? ... 10 Years?
Sexual Assault
Immediate Aftermath of the Assault
Cold Case Investigation & Notification

Webinar: Part 1

- How the brain & body react to major traumas, including sexual assault

- Emphasis on understanding *victim behavior* during assault & in immediate aftermath

Webinar: Part 2

- How the brain & body react to major traumas, including sexual assault

- Emphasis on understanding *memory formation & recall* during assault & in immediate aftermath

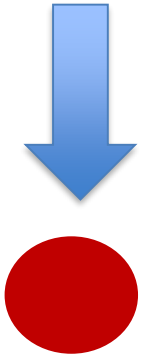
Webinar: Part 3

- How the brain & body react to major traumas, including sexual assault

- Emphasis on understanding *implications* for cold case investigations and victim notifications

The Neurobiology of Trauma

LET'S BEGIN HERE



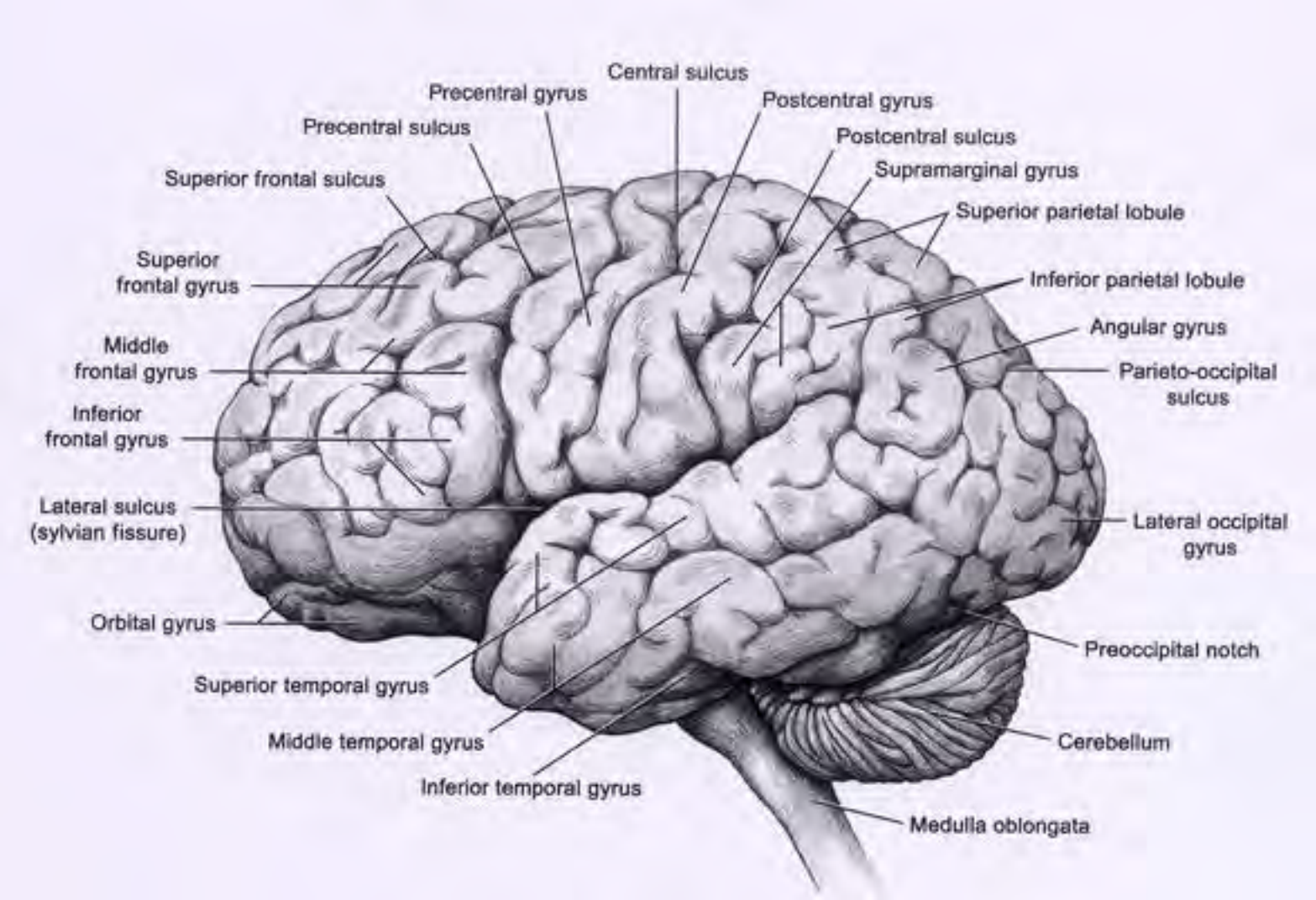
Sexual
Assault

“In the midst of assault, the brain’s fear circuitry takes over while other key parts are impaired or even effectively shut-down.

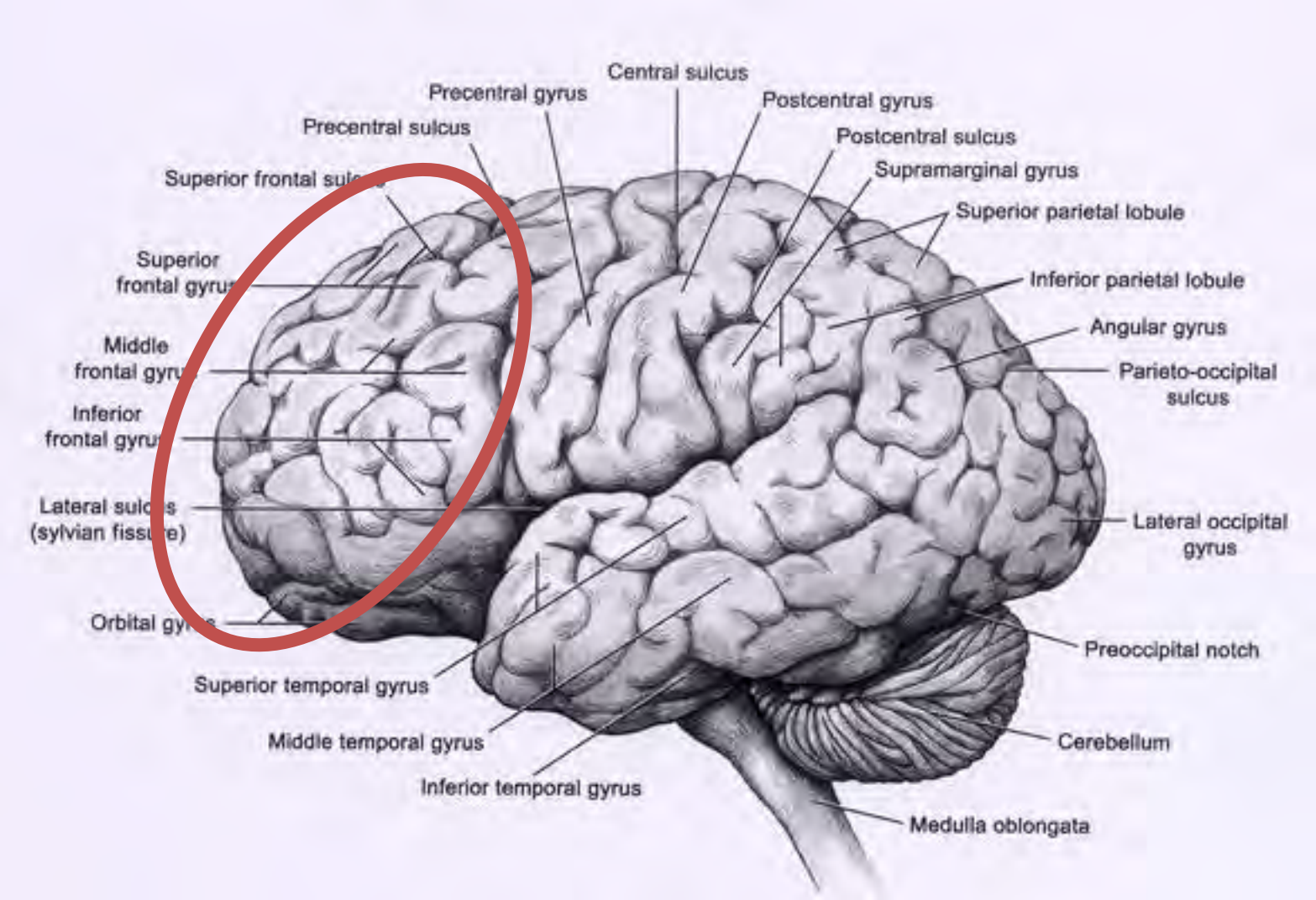
This is the brain reacting to a life-threatening situation just the way it is supposed to.”

Hopper & Lisak, 2014

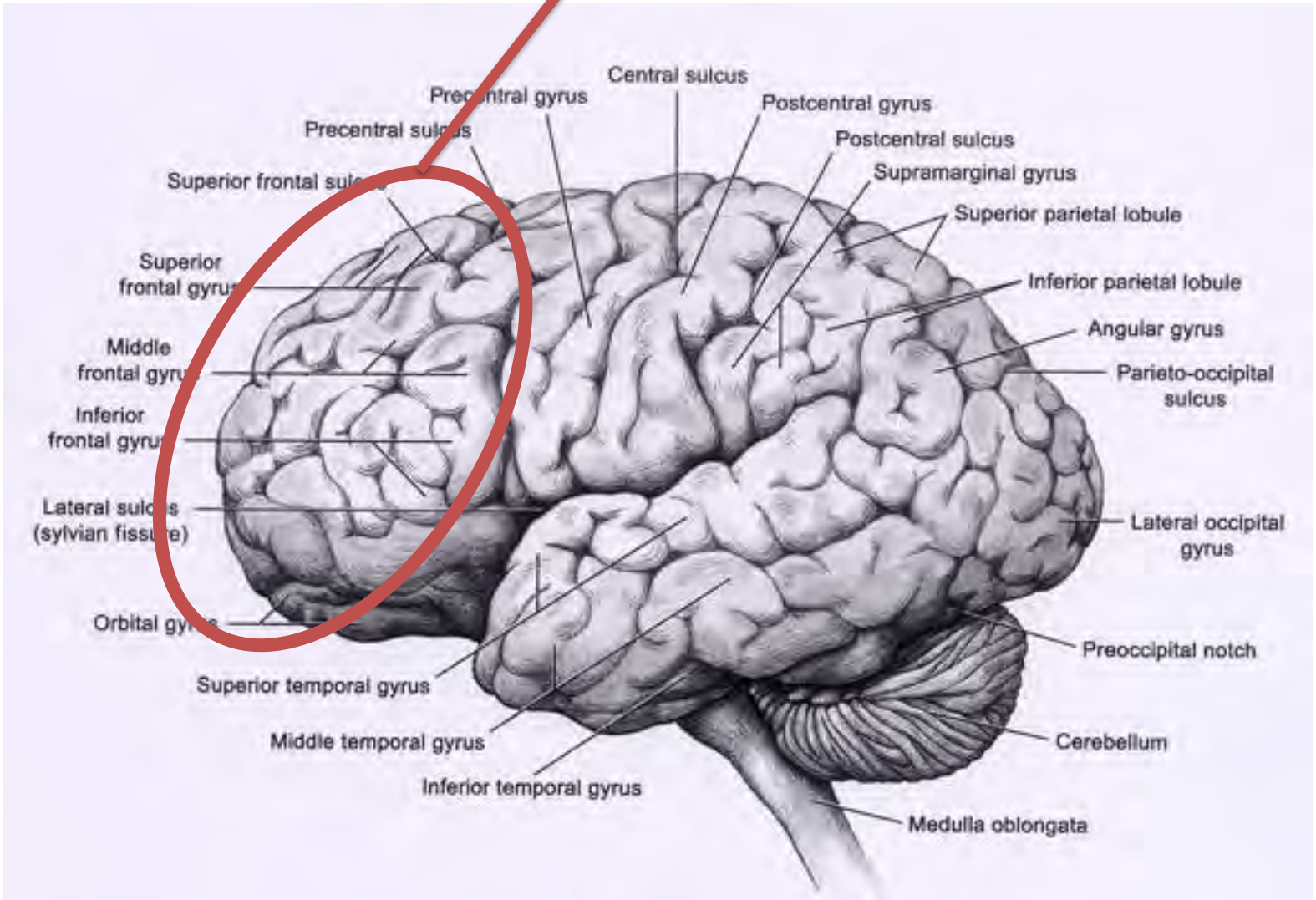
Cerebrum

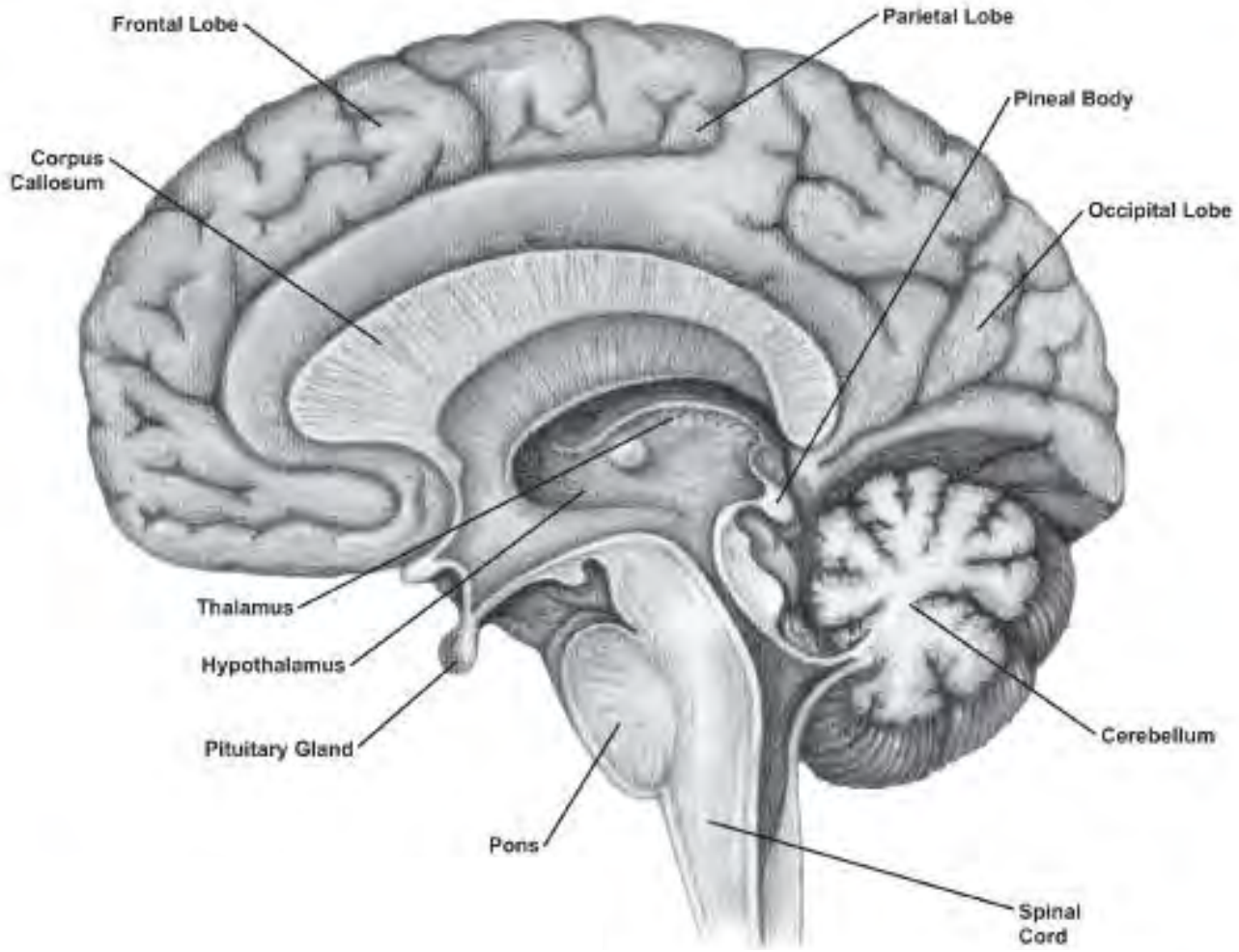

Central sulcus
Precentral gyrus
Postcentral gyrus
Precentral sulcus
Postcentral sulcus
Supramarginal gyrus
Superior frontal sulcus
Superior parietal lobule
Superior frontal gyrus
Inferior parietal lobule
Angular gyrus
Middle frontal gyrus
Parieto-occipital sulcus
Inferior frontal gyrus
Lateral sulcus (sylvian fissure)
Lateral occipital gyrus
Orbital gyrus
Preoccipital notch
Superior temporal gyrus
Middle temporal gyrus
Cerebellum
Inferior temporal gyrus
Medulla oblongata

Prefrontal Cortex

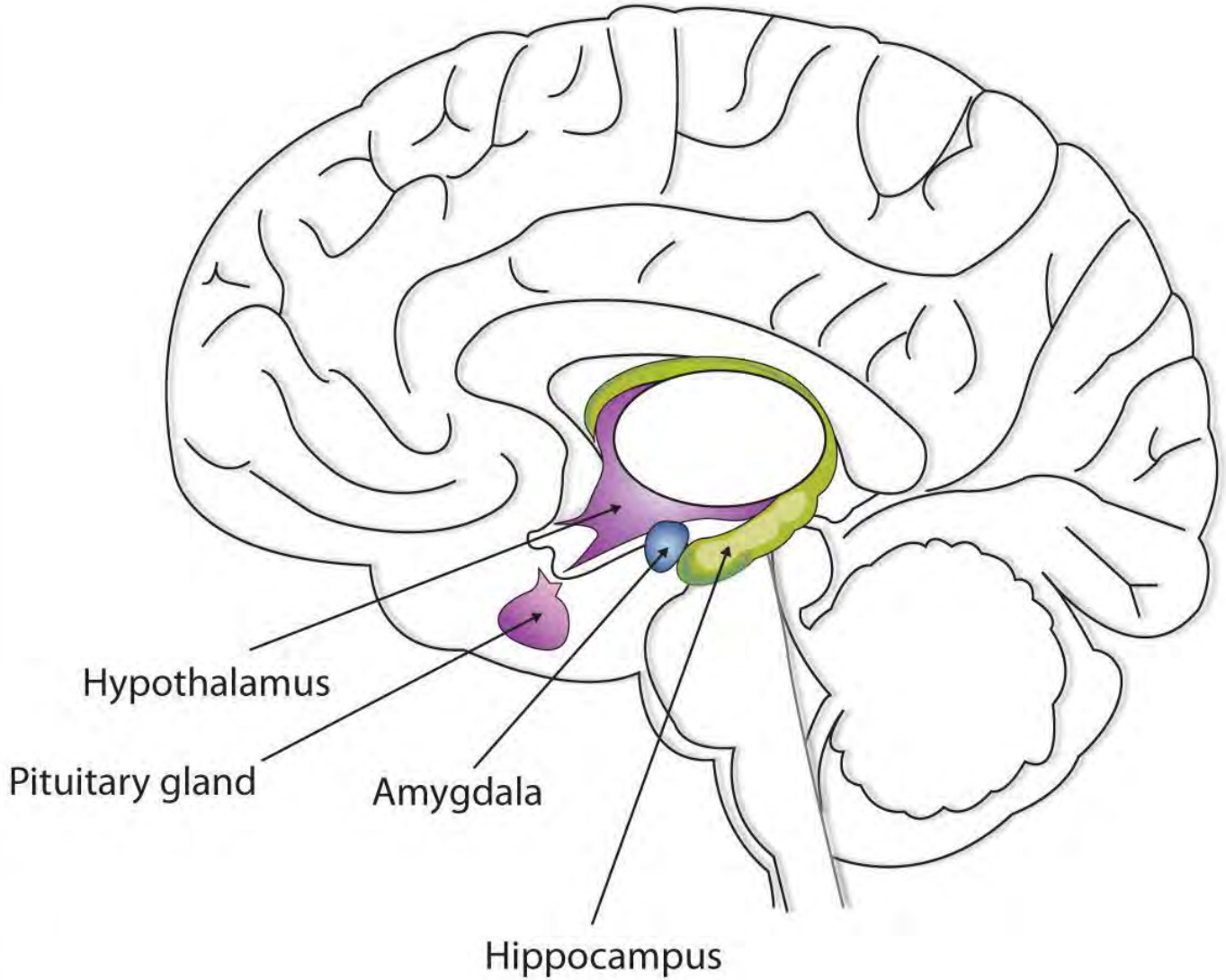


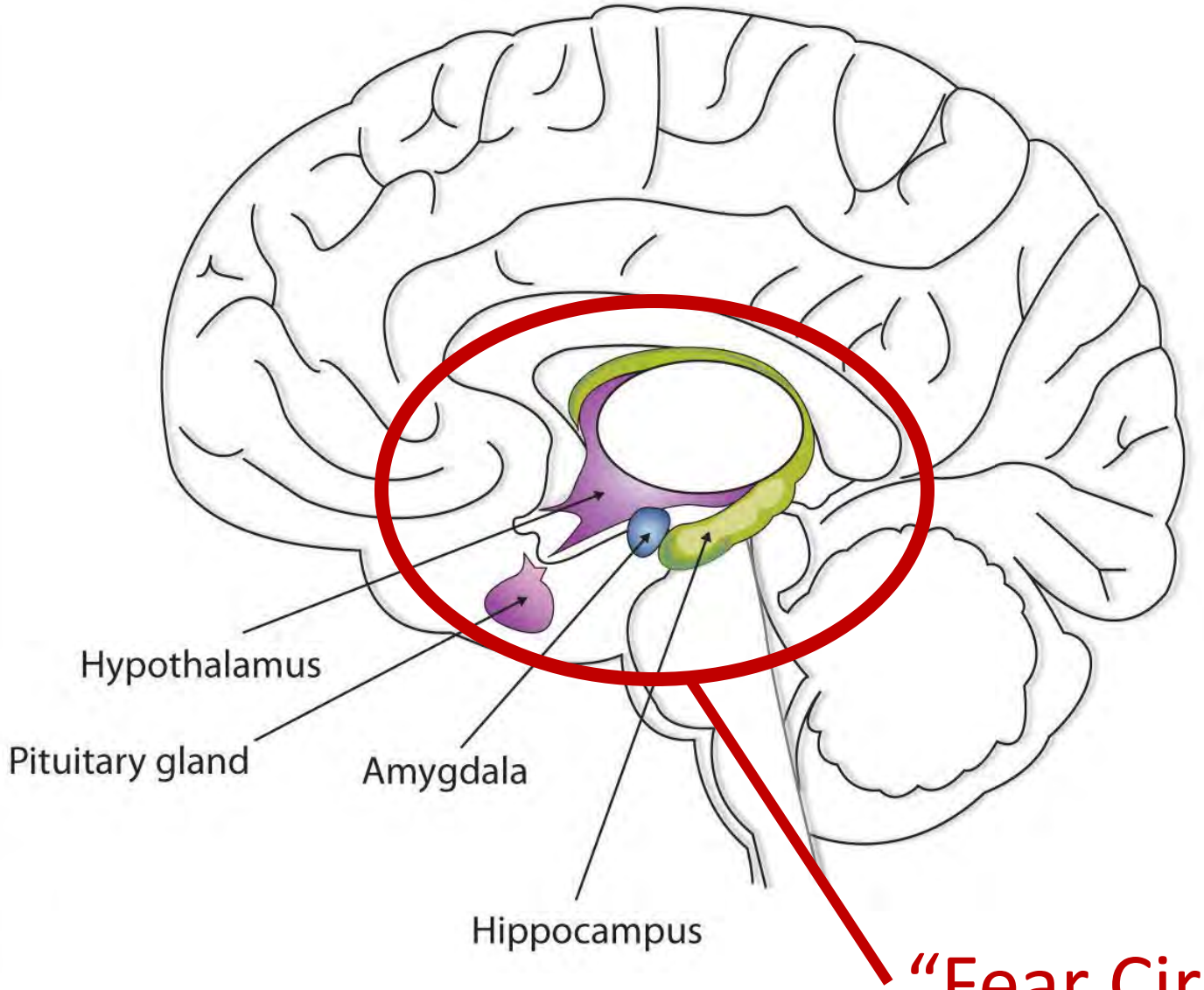
“Executive Functions”

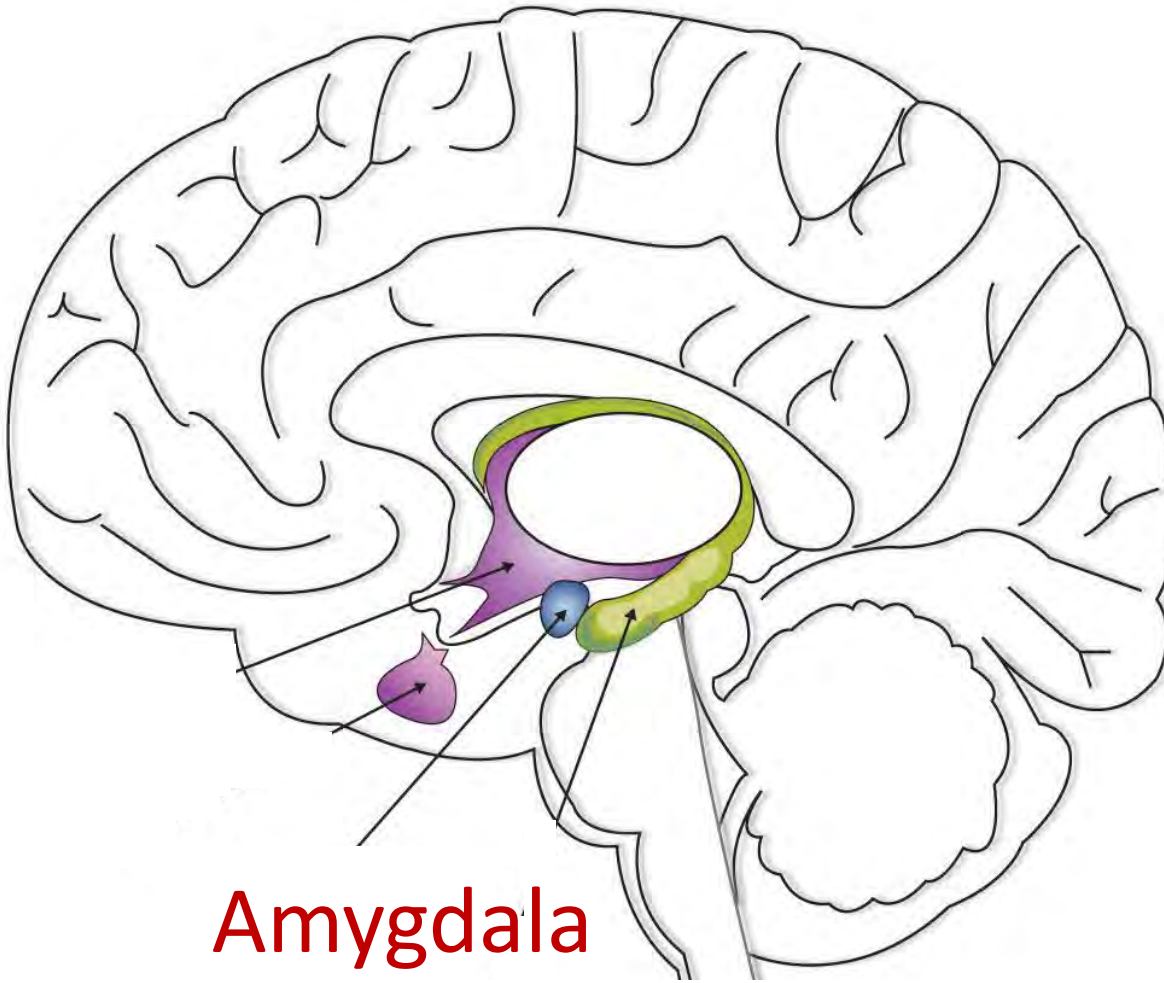



Frontal Lobe
Parietal Lobe
Pineal Body
Corpus Callosum
Occipital Lobe
Thalamus
Hypothalamus
Pituitary Gland
Cerebellum
Pons
Spinal Cord

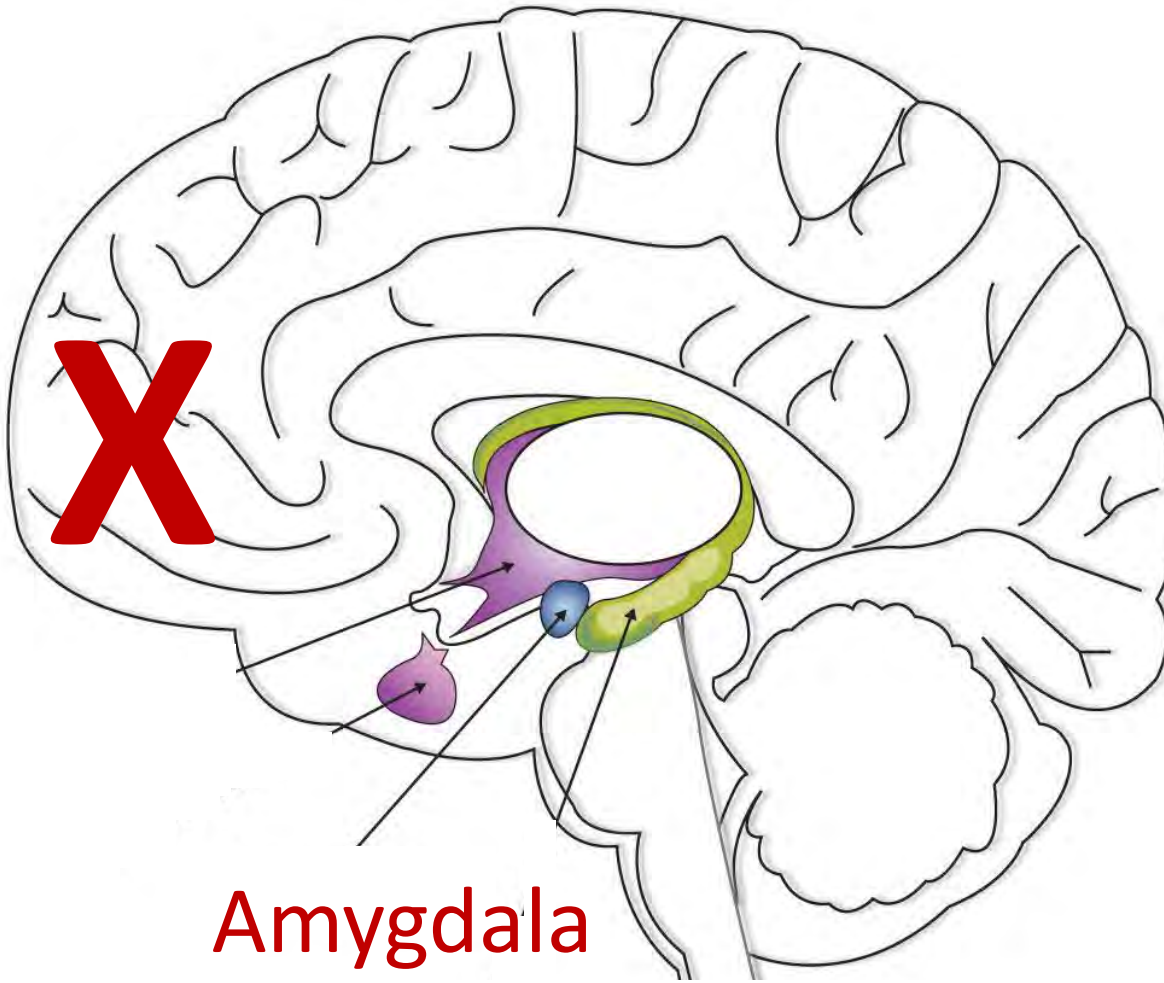
Limbic System




Hypothalamus
Pituitary gland
Amygdala
Hippocampus
"Fear Circuitry"



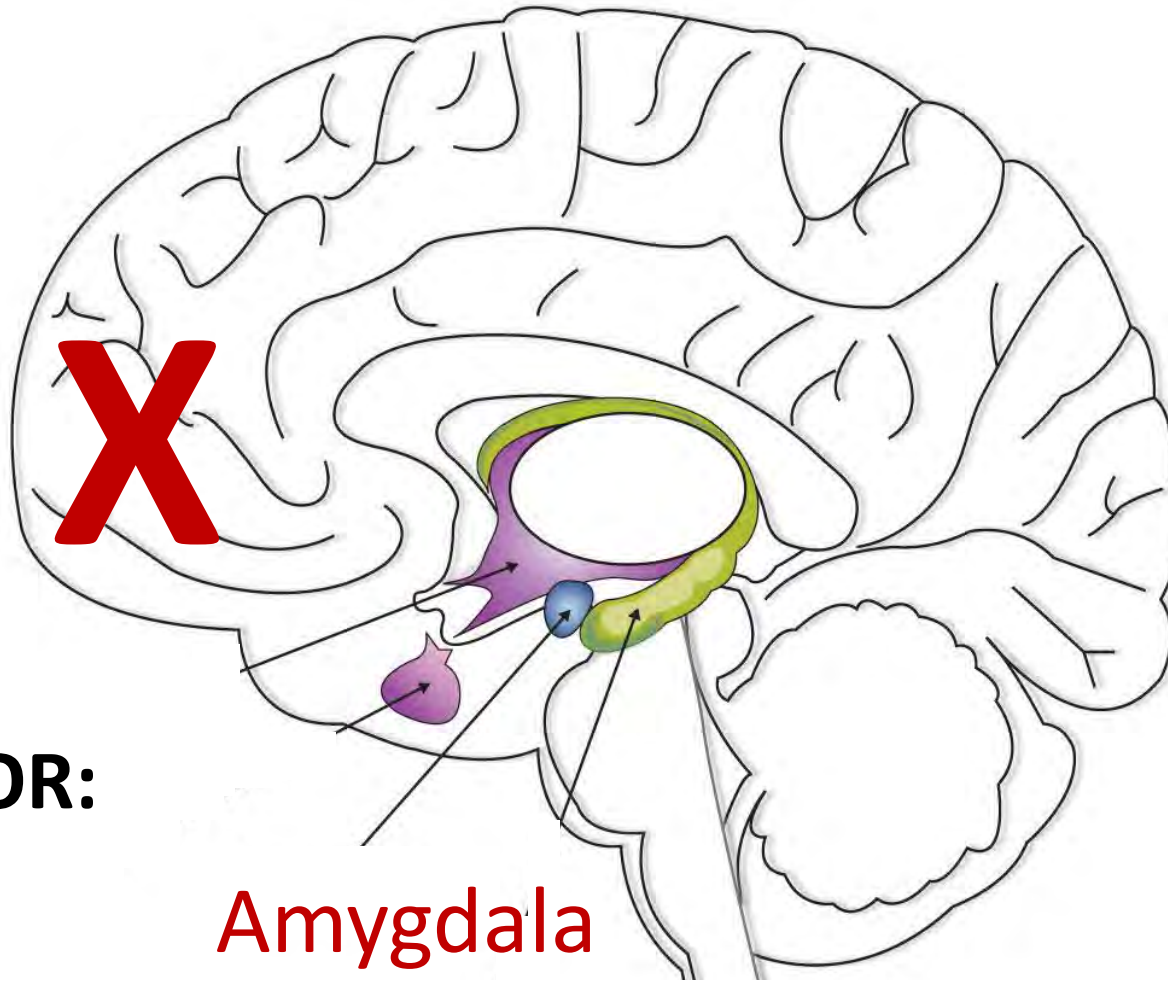
Amygdala


X
Amygdala

This is an autonomic process.

It is hard-wired into the brain.

The victim does not “choose” what happens next.



IMPLICATIONS FOR:

Behavior

Memory

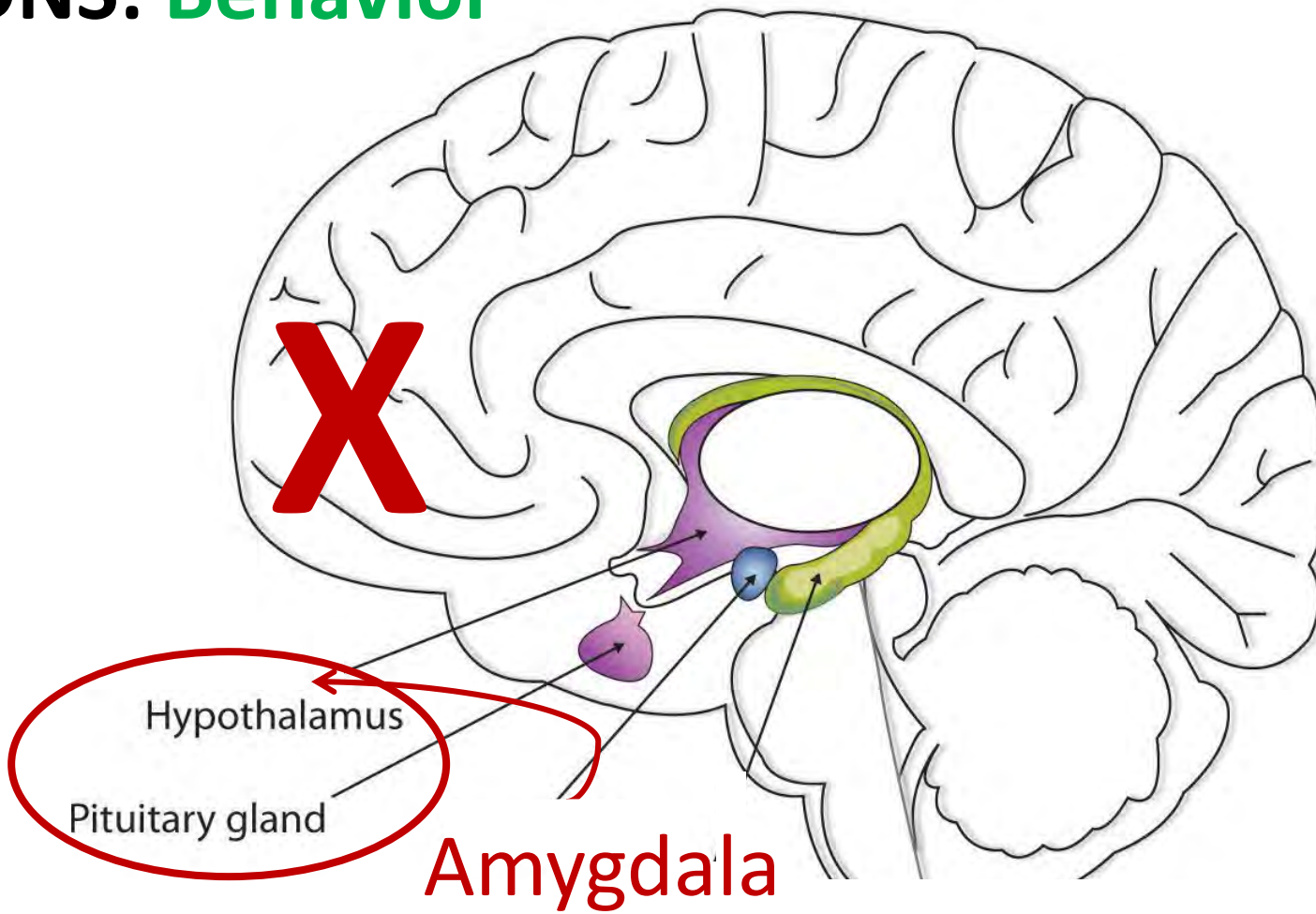
Understanding Victim Behavior

Sexual Assault

Immediate Aftermath of the Assault

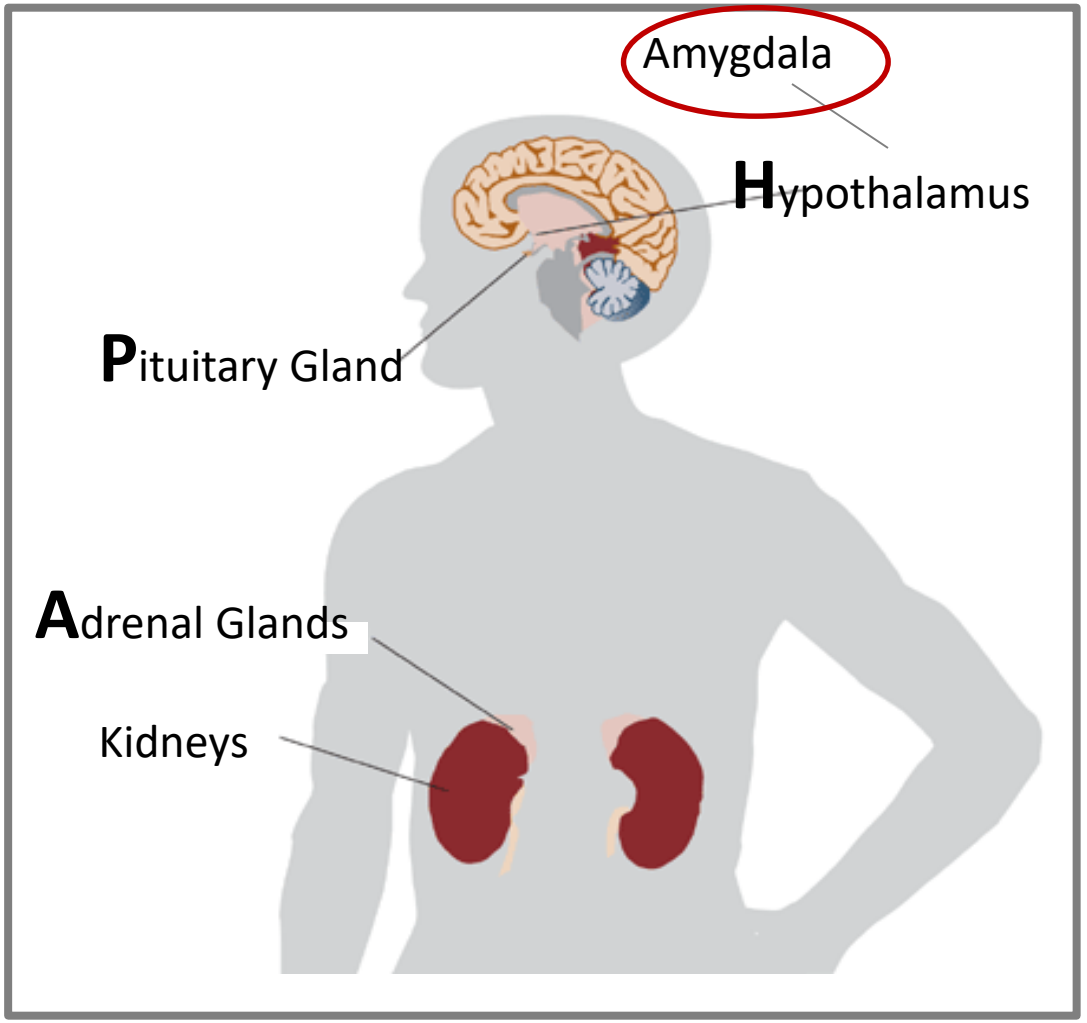
VICTIMS' BEHAVIOR

IMPLICATIONS: Behavior



Behavior: The HPA Axis

Balances body following stress by releasing of hormones

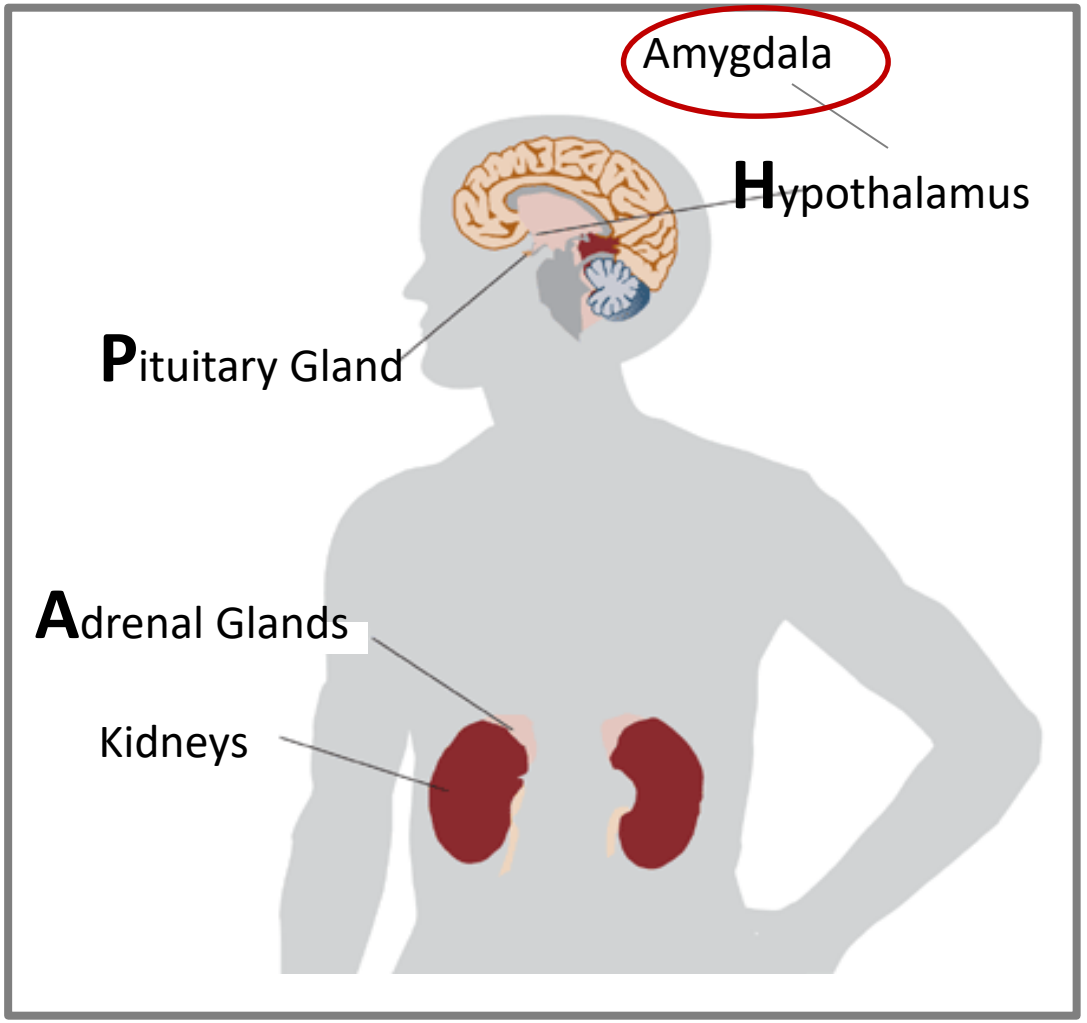


SOURCE: Baldwin, 2013; Southwick et al., 2005; Woods et al., 2005

Behavior: The HPA Axis

Opioids: Prevent pain

Oxytocin: Promote good feelings



SOURCE: Bracha, 2004; Southwick et al., 2005; Zoladz, 2014

Behavior: The HPA Axis

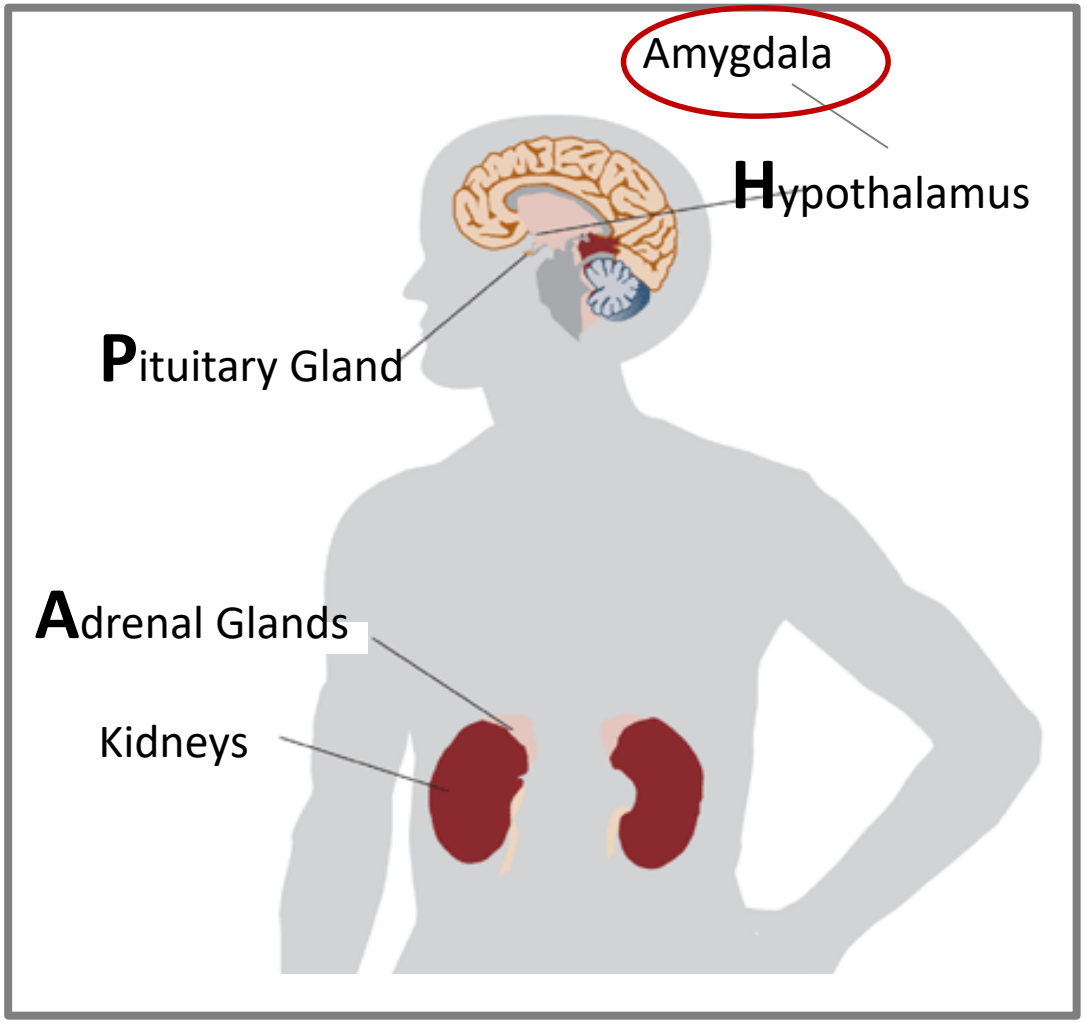
Opioids: Prevent pain

Oxytocin: Promote good feelings

↓

Flat Affect

"Inappropriate" Affect

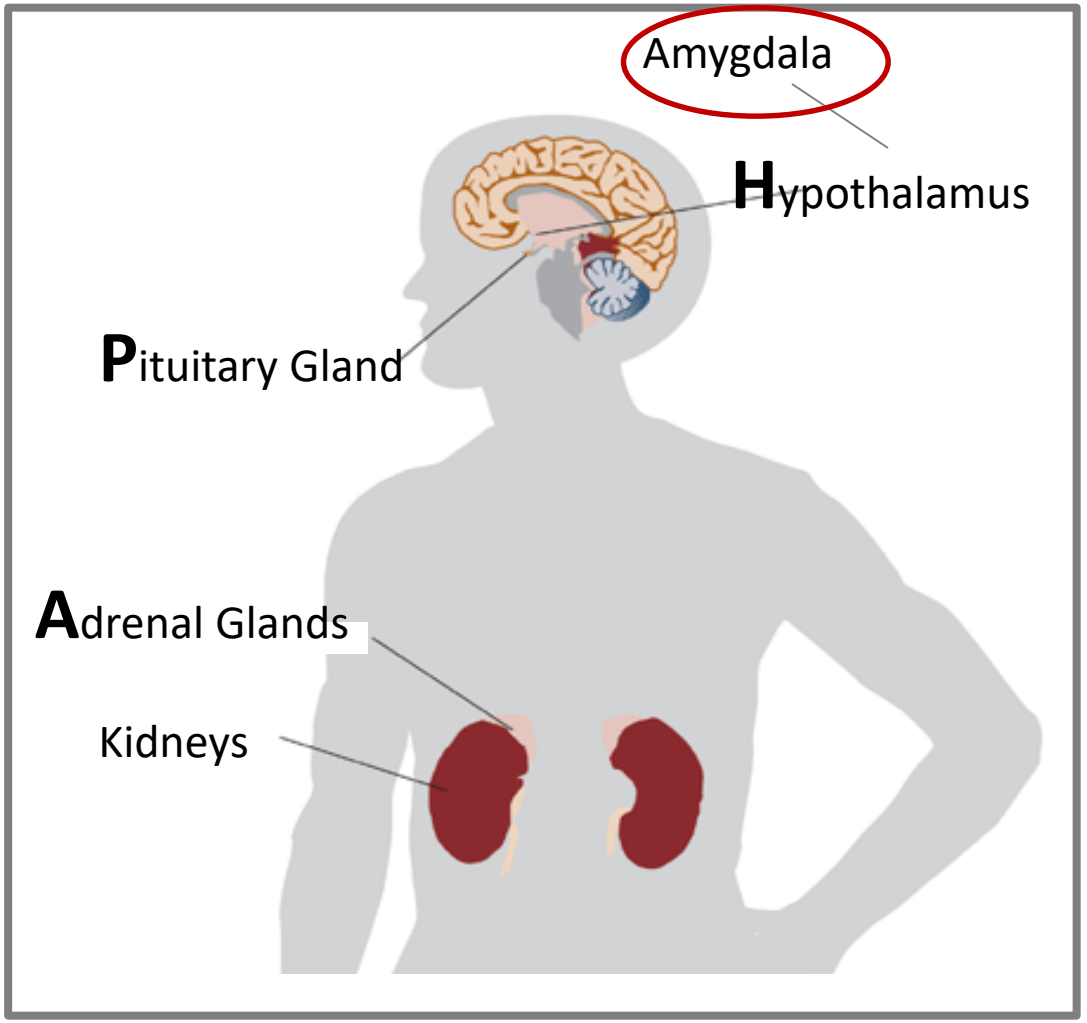


SOURCE: Bracha, 2004; Southwick et al., 2005; Zoladz, 2014

Behavior: The HPA Axis

Catecholamine: Adrenaline

Cortisol: Energy available to act



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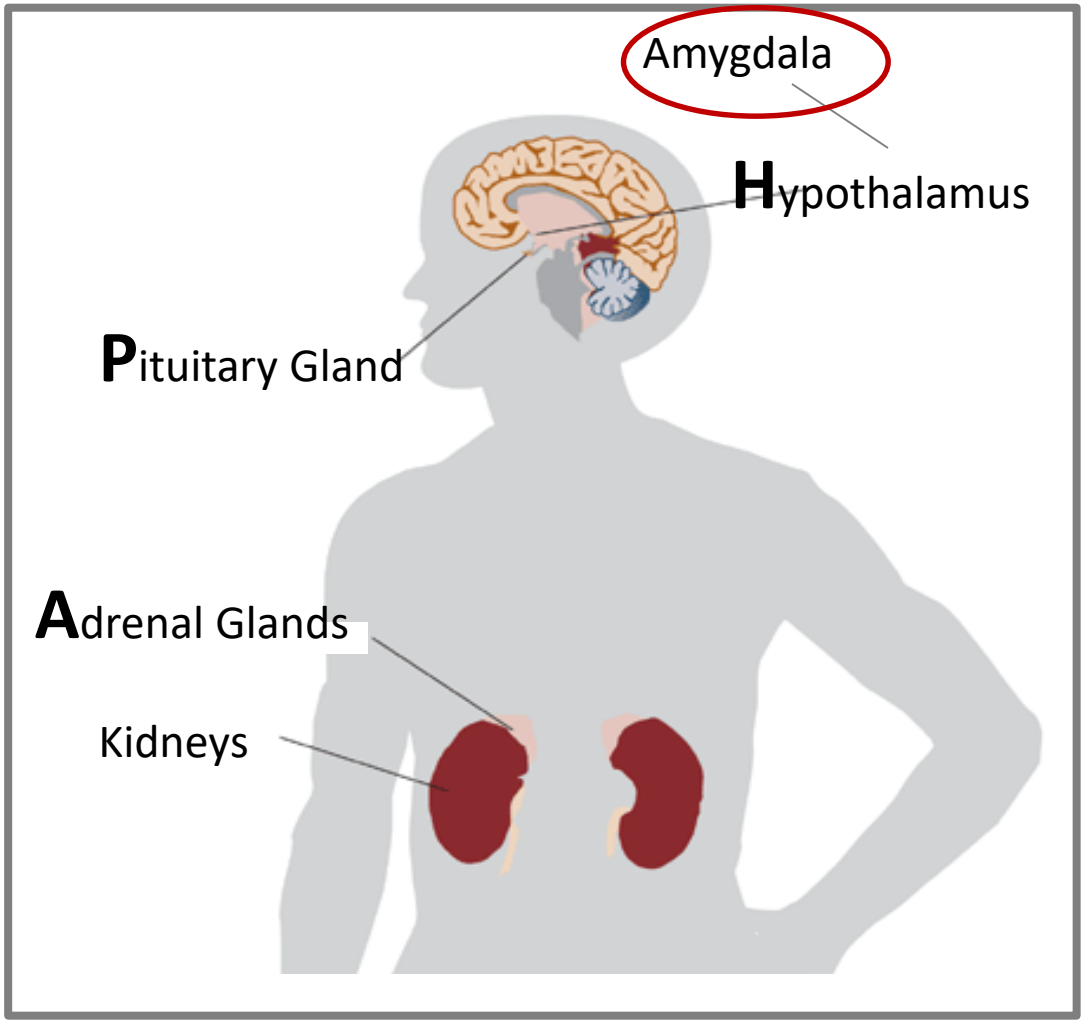
"Fight or Flight"



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It’s more complicated than that.

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“Fight” is possible, but the brain may initiate a more protective response instead.

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“Fight” is possible, but the brain may initiate a more protective response instead.

Fear circuitry in brain creates “defense cascade.”

Behavior: The Defense Cascade

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Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

SOURCE: Kozlowska et al., 2015

Behavior: The Defense Cascade

Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

Tonic Immobility→

SOURCE: Kozlowska et al., 2015

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Tonic Immobility→ Often triggered by physical restraint,

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Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

Tonic Immobility→ Often triggered by physical restraint, body is unable to move or talk,

SOURCE: Kozlowska et al., 2015

Behavior: The Defense Cascade

Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

Tonic Immobility→ Often triggered by physical restraint, body is unable to move or talk, but mind is aware of what's happening

SOURCE: Kozlowska et al., 2015

I was terrified.
I couldn’t do anything and
I didn’t know why.

I didn’t want to tell no one because what
would I be able to say . . .

No, I didn’t fight back.
No, I didn’t yell for help.
I just laid there.
Wondering if I was going to die.

Behavior: The Defense Cascade

Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

Tonic Immobility→ Often triggered by physical restraint, body is unable to move or talk, but mind is aware of what's happening

Collapsed Immobility→

SOURCE: Kozlowska et al., 2015

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SOURCE: Kozlowska et al., 2015

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Collapsed Immobility→ Also triggered by physical restraint, loss of muscle tone & control ("rag doll"),

SOURCE: Kozlowska et al., 2015

Behavior: The Defense Cascade

Freeze→ Body stops so brain can assess threat, often brief, then body might move to escape threat

Tonic Immobility→ Often triggered by physical restraint, body is unable to move or talk, but mind is aware of what's happening

Collapsed Immobility→ Also triggered by physical restraint, loss of muscle tone & control ("rag doll"), victim may faint or pass out

SOURCE: Kozlowska et al., 2015

It was like my body wasn't mine . . .
like a doll.

He was moving my body where he
wanted it, so he could . . .

Behavior: SUMMARY

Victims are in survival mode → brain shutting down conscious control & fear circuitry takes over

Fight, Flight, Freeze→ many possible responses

Victims may not act the way you expect them to act

So-called “counter-intuitive” behaviors→ re-evaluate through a neurobiological lens

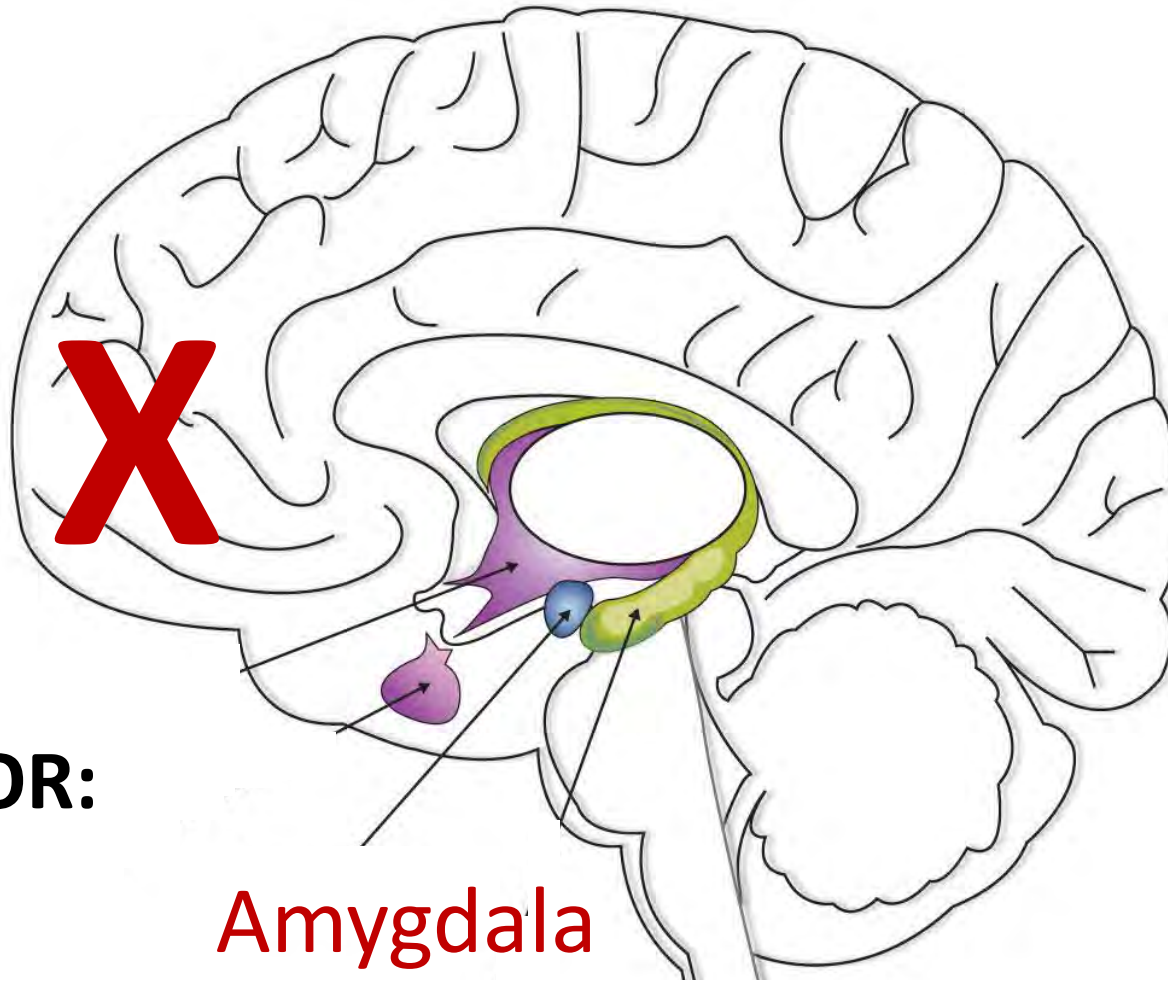
Why It's Important To Understand the Neurobiology of Trauma . . .

Why It's Important To Understand the Neurobiology of Trauma . . .

All I wanted to hear was, 'I'm so sorry this happened to you. It's gonna be ok and I'll help you, whatever you need.'

No one ever said that to me.

No, everyone said I wasn't acting right. Like there's a right way to do this, a right way to be a victim.



IMPLICATIONS FOR:

Behavior ✓

Memory **Part 2**

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Please Join Us For Part 2!