

THE NEUROBIOLOGY OF SEXUAL ASSAULT

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The National Center for Victims of Crime is pleased to provide the slides used in our April 23, 2013 Webinar, "Sexual Assault Cold Case Survivors and the Neurobiology of Trauma."

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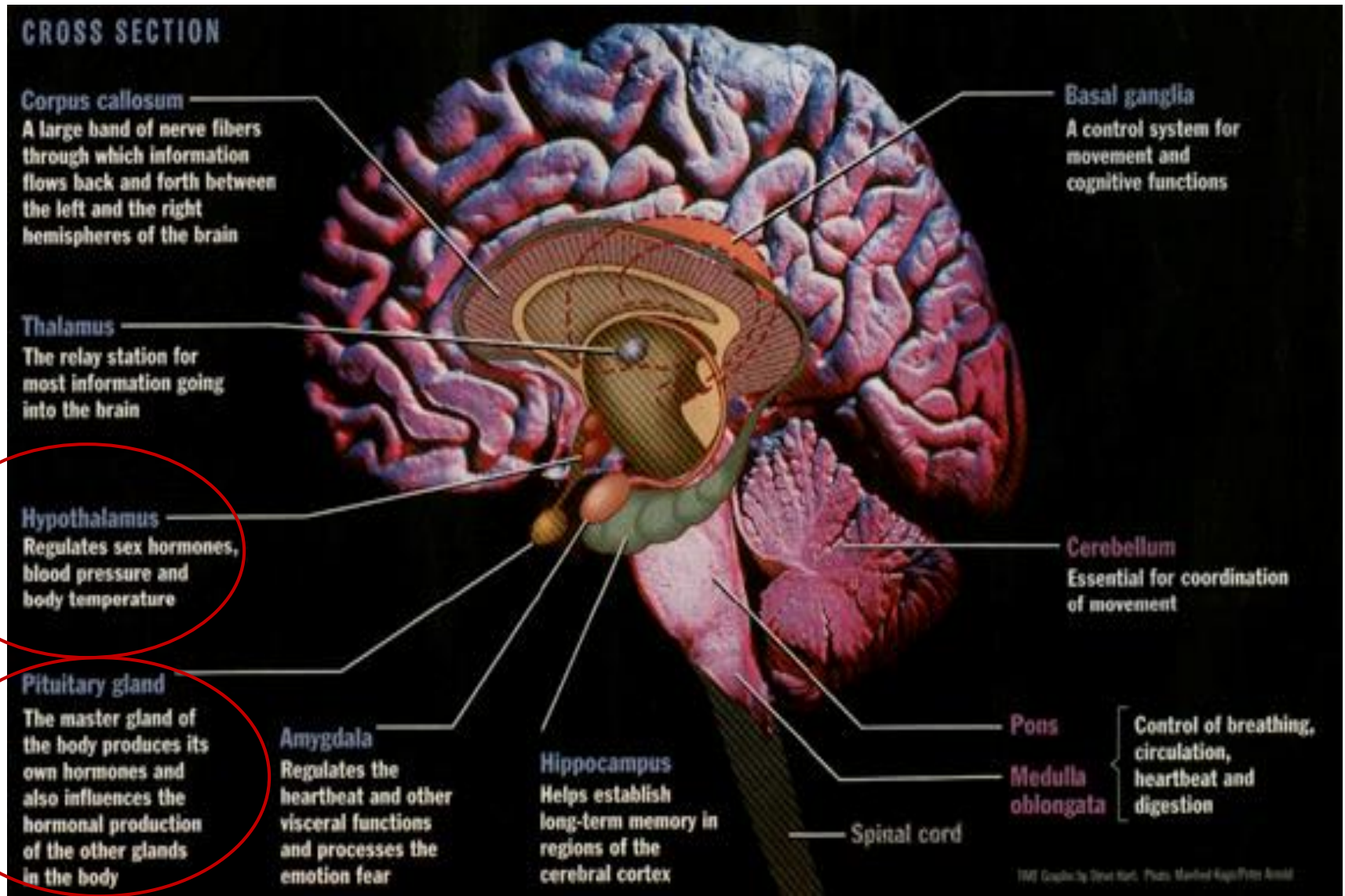
Today's Presentation

- The neurobiology of sexual assault
 - Introduction to neurobiology
 - During the assault: What are victims' experiencing?
- Take home lessons for first responders
 - For current cases
 - For cold cases (i.e., victim notification)
- Q&A (as best we can!)

A Brief Intro to Neurobiology

“This Is Your Brain”

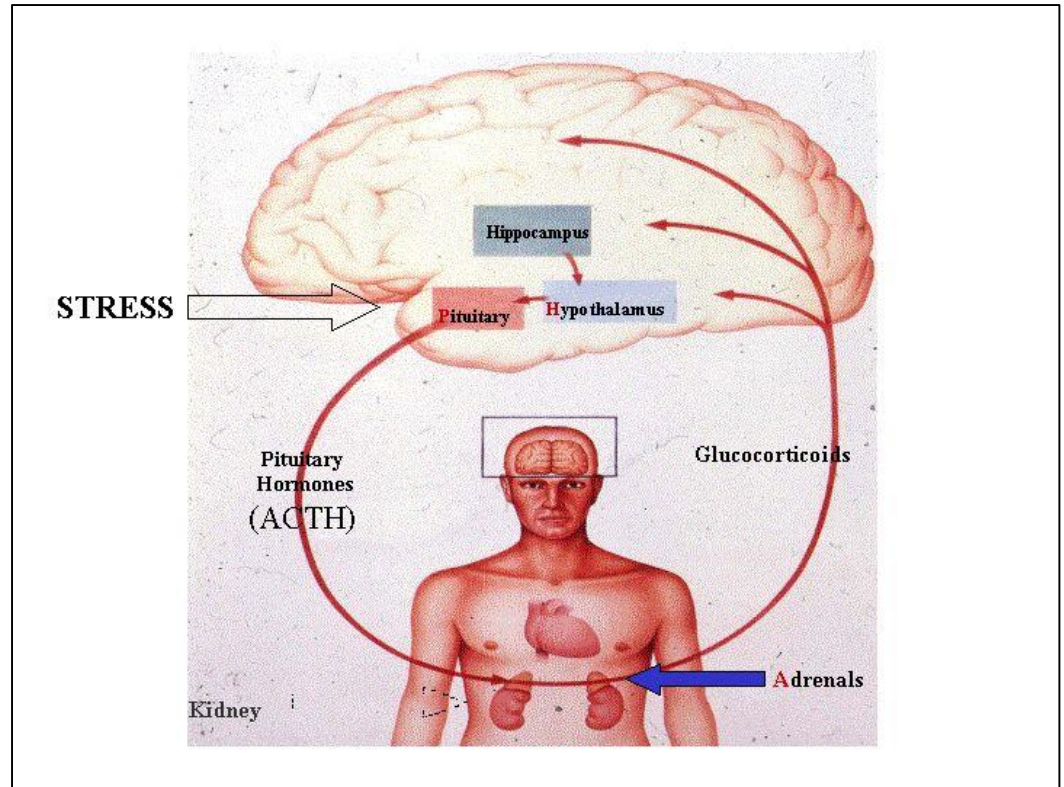
Brain Regions Impacted by Trauma



Brain-Body Regions Impacted by Trauma

HPA Axis

Balances body following stress by releasing of various hormones/chemicals



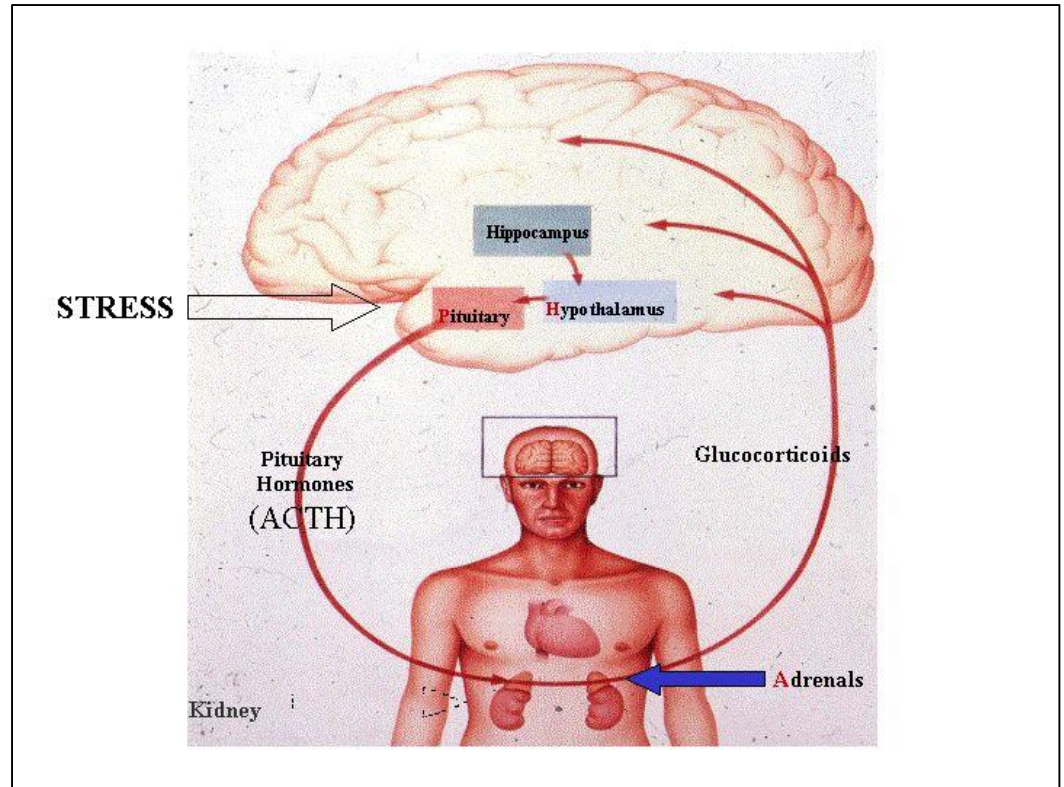
Brain-Body Regions Impacted by Trauma

Catecholamines: Fight or flight response

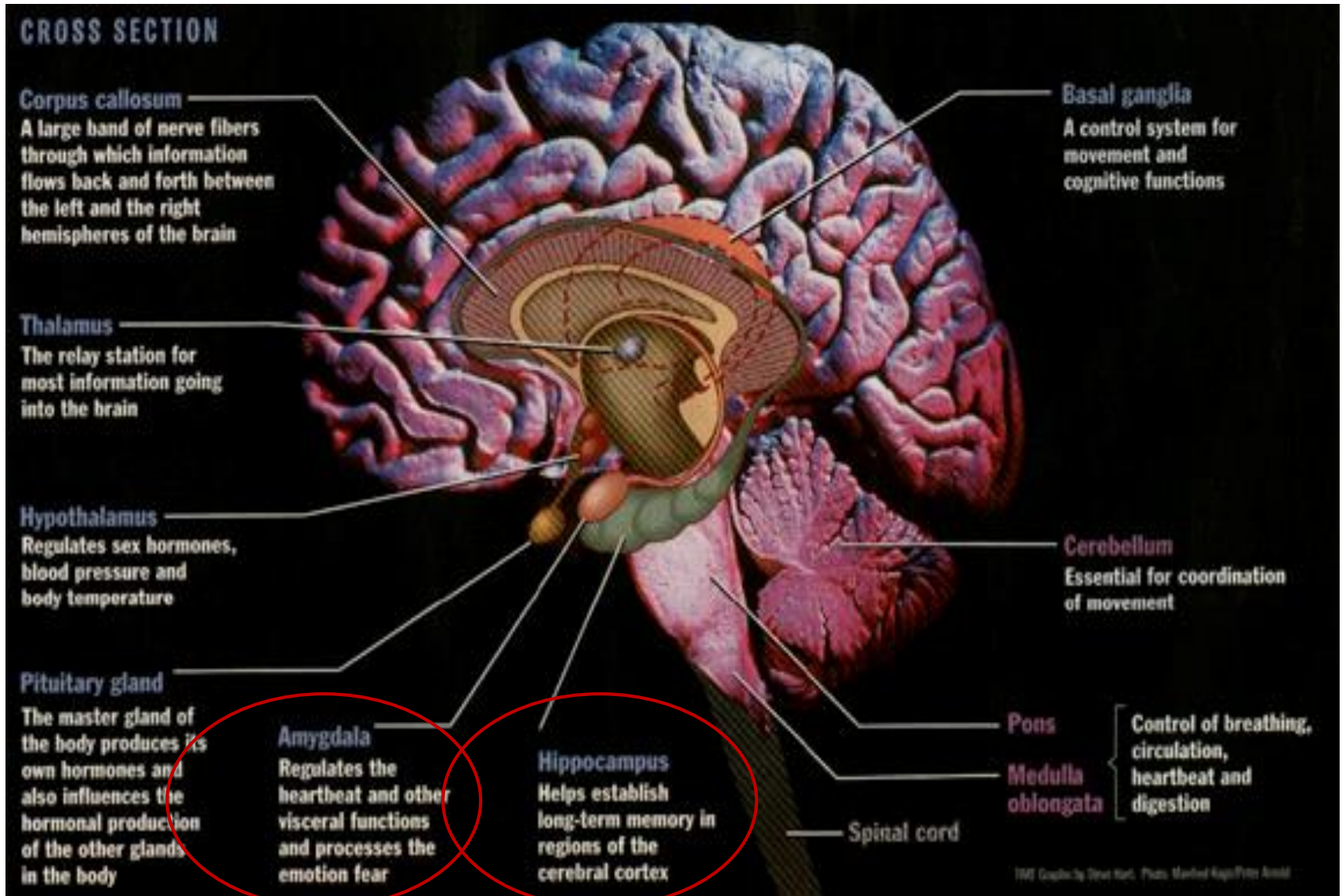
Cortisol: Energy available

Opioids: Prevent pain

Oxytocin: Promotes good feelings



Brain Regions Impacted by Trauma



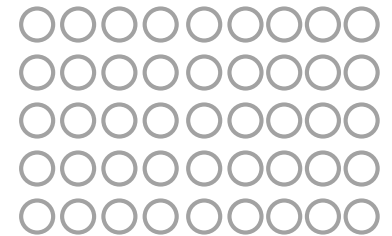
Memory Processes Impacted by Trauma



Hippocampus processes information into memories

Memory Processes Impacted by Trauma

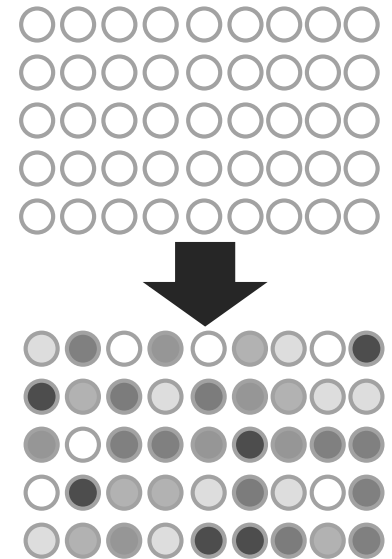
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Memory Processes Impacted by Trauma

Hippocampus processes information into memories

Encoding = Organizing sensory information

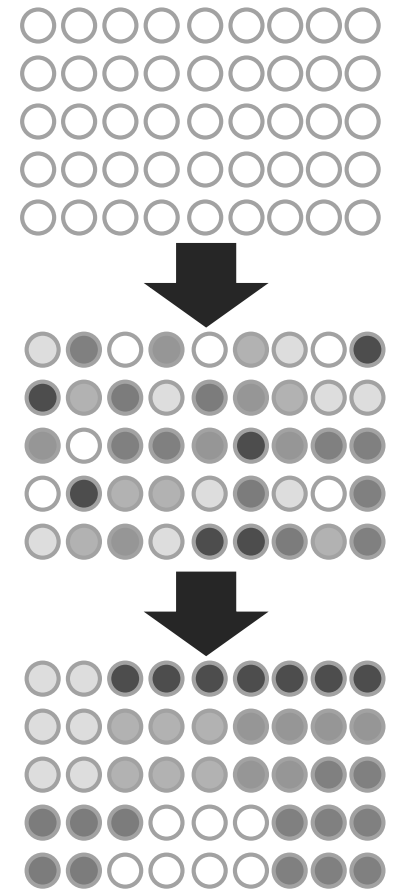


Memory Processes Impacted by Trauma

Hippocampus processes information into memories

Encoding = Organizing sensory information

Consolidation = Grouping information into memories and storing them



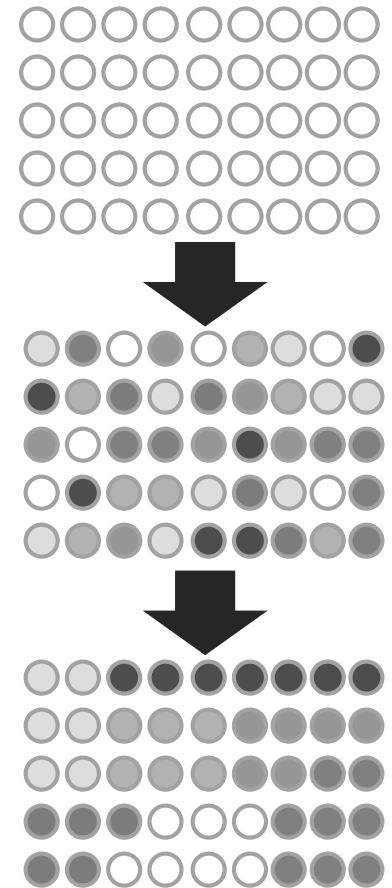
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Amygdala specializes in the processing of emotional memories (works with the hippocampus)



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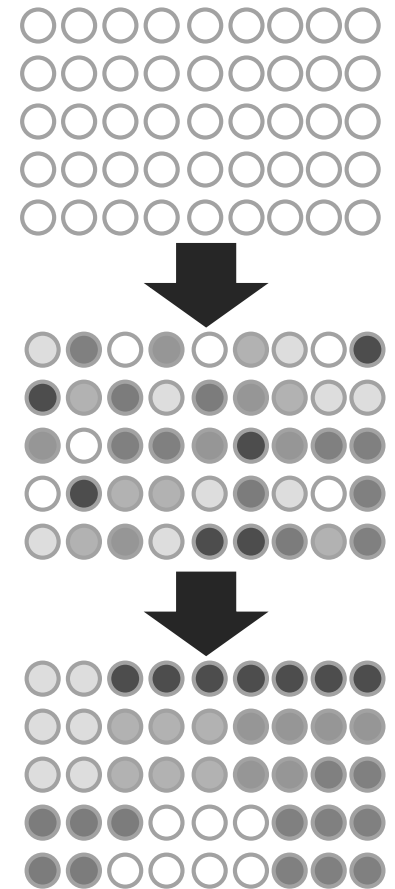
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Both structures are VERY sensitive to hormonal fluctuations



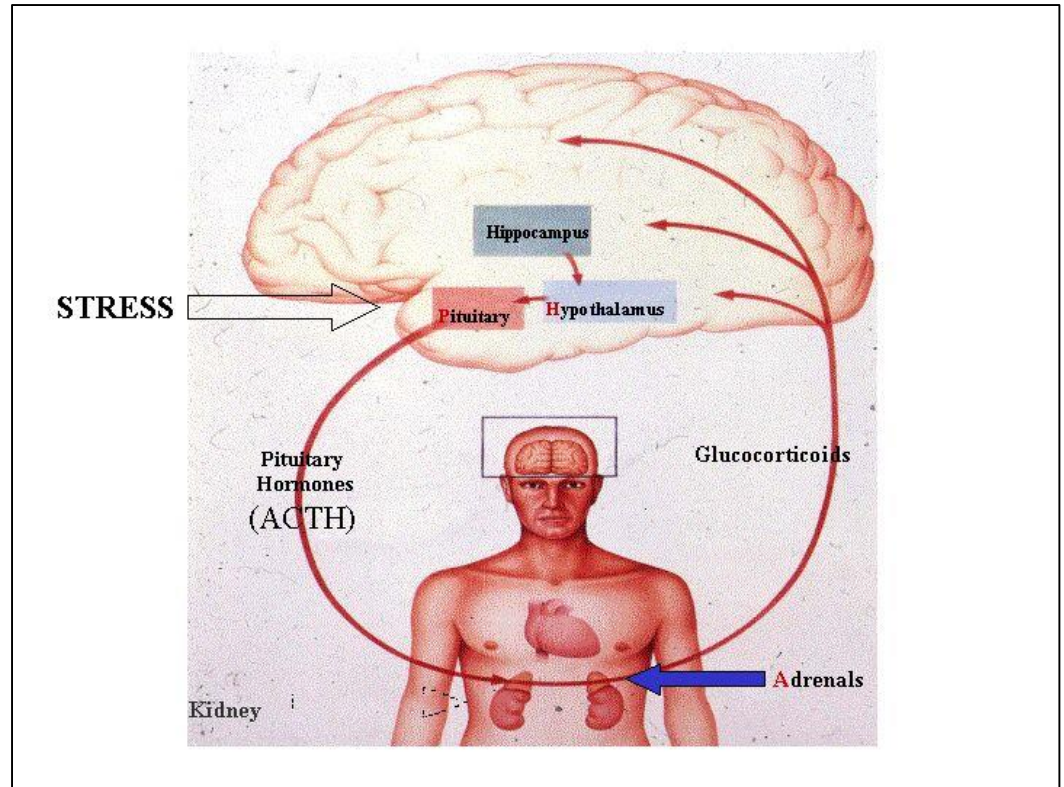
Like These . . .

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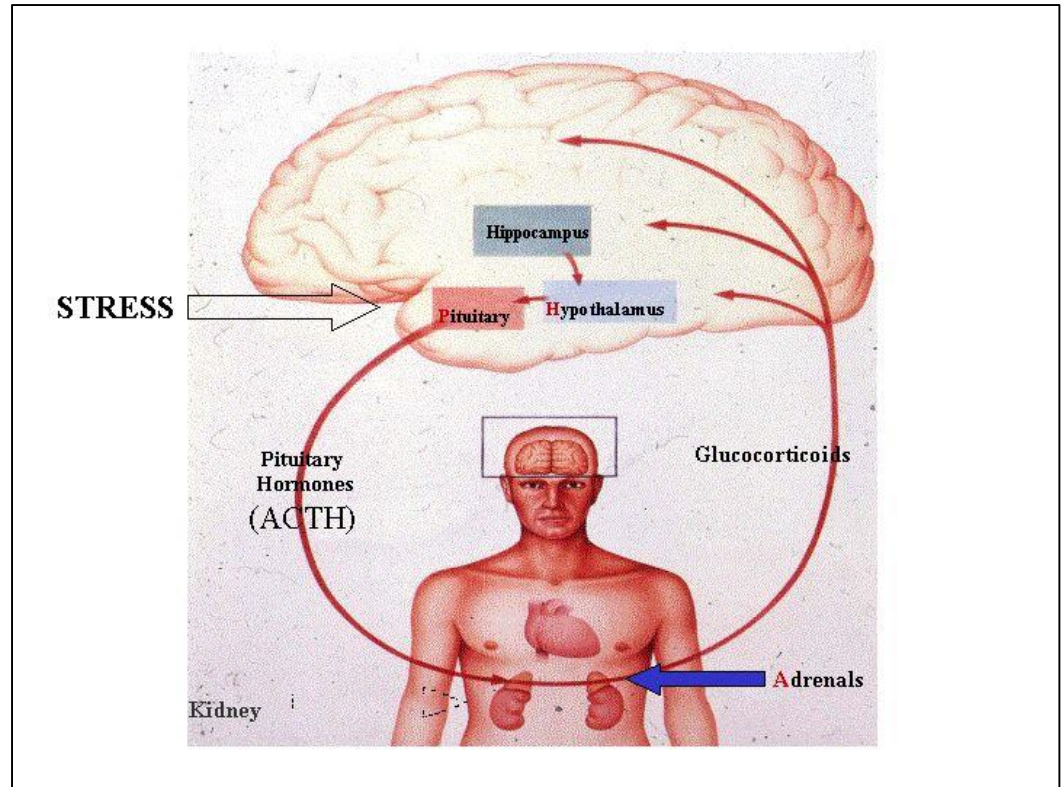
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THESE HORMONES IMPAIR MEMORY CONSOLIDATION

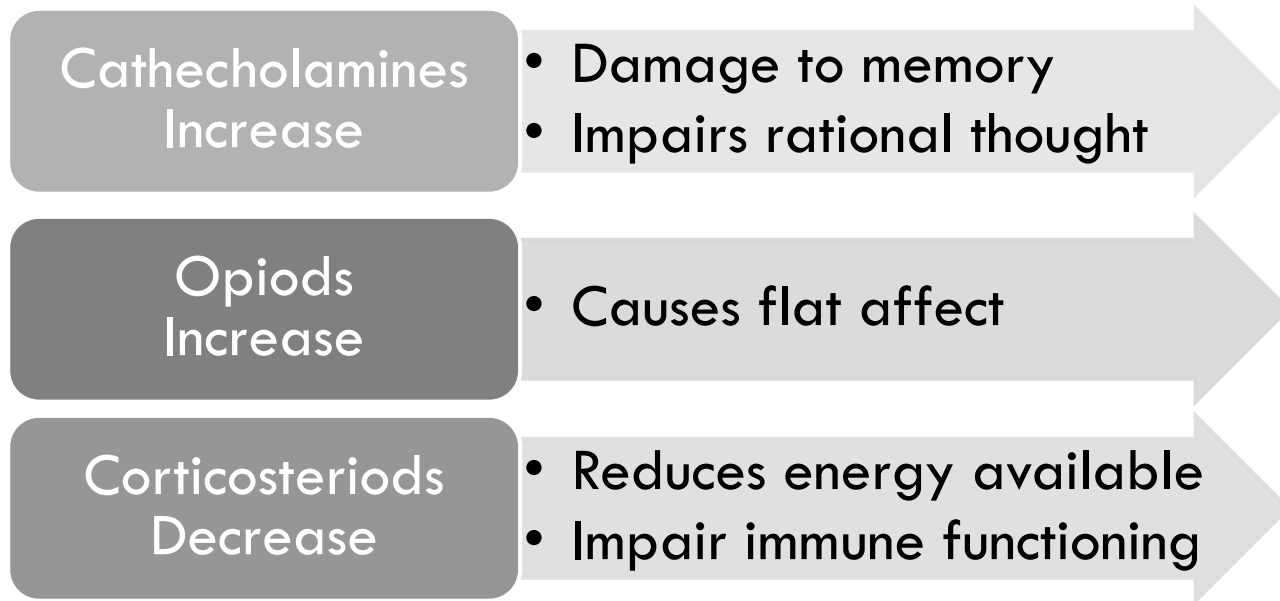
During the Assault

“This Is Your Brain On Trauma”

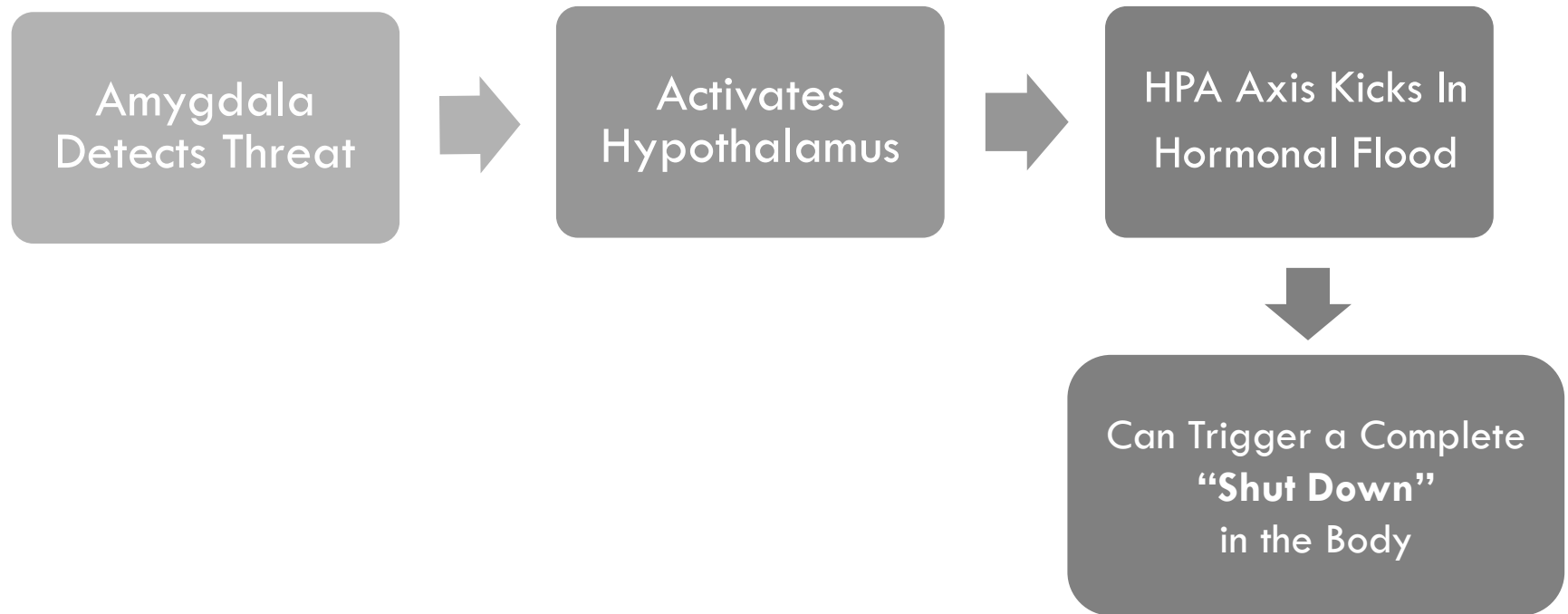
What Happens During A Sexual Assault



What Happens During A Sexual Assault



What Happens During A Sexual Assault



Tonic Immobility (TI)

- AKA: “Rape-induced paralysis”
- Autonomic (uncontrollable) mammalian response in extremely fearful situations
- Increased breathing, eye closure, paralysis
- 12-50% rape victims experience TI during assault
- TI is ~more common in victims who have been assaulted before (childhood, adolescence, or adult)

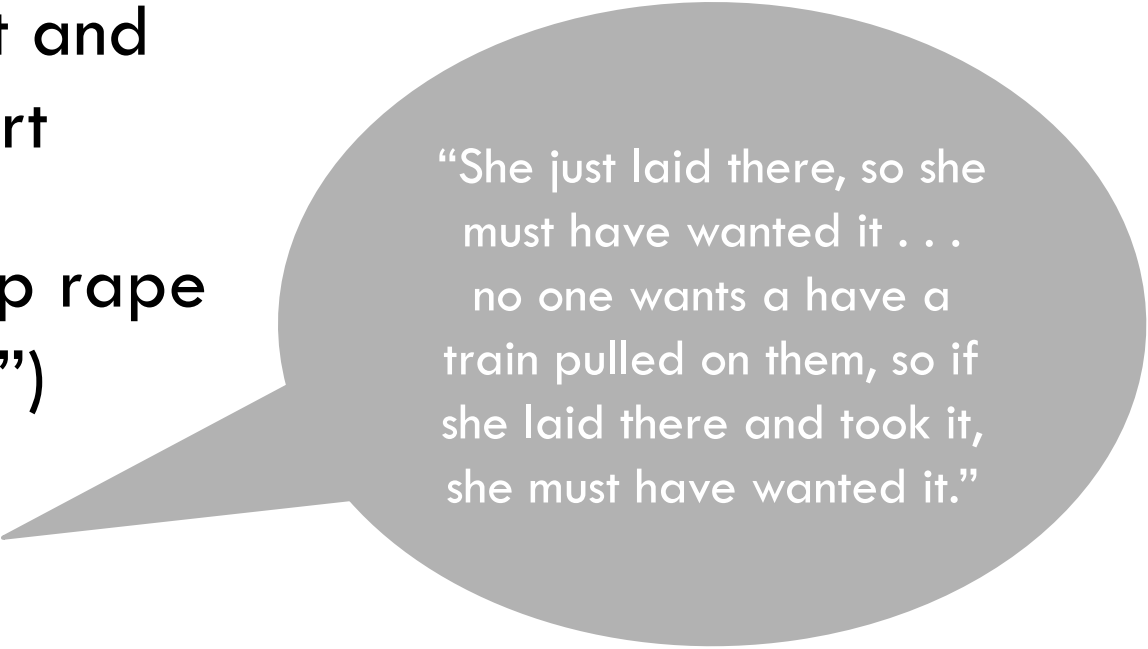
Case Study: Tonic Immobility

- College house party
- 20 year-old woman
- Agreed to go back to one of the bedrooms
- Told man to stop
- He didn't and she froze
- Lay immobile afterwards
- Men lined up on the porch to take turns raping her



Case Study: Tonic Immobility

- Victim had rape kit and filed a police report
- Police didn't pick up rape kit ("a sloppy mess")
- Police closed case



"She just laid there, so she must have wanted it . . . no one wants a have a train pulled on them, so if she laid there and took it, she must have wanted it."

Case Study: Tonic Immobility

- Victim had rape kit and filed a police report
- Police didn't pick up rape kit ("a sloppy mess")
- Police closed case
- The real reason

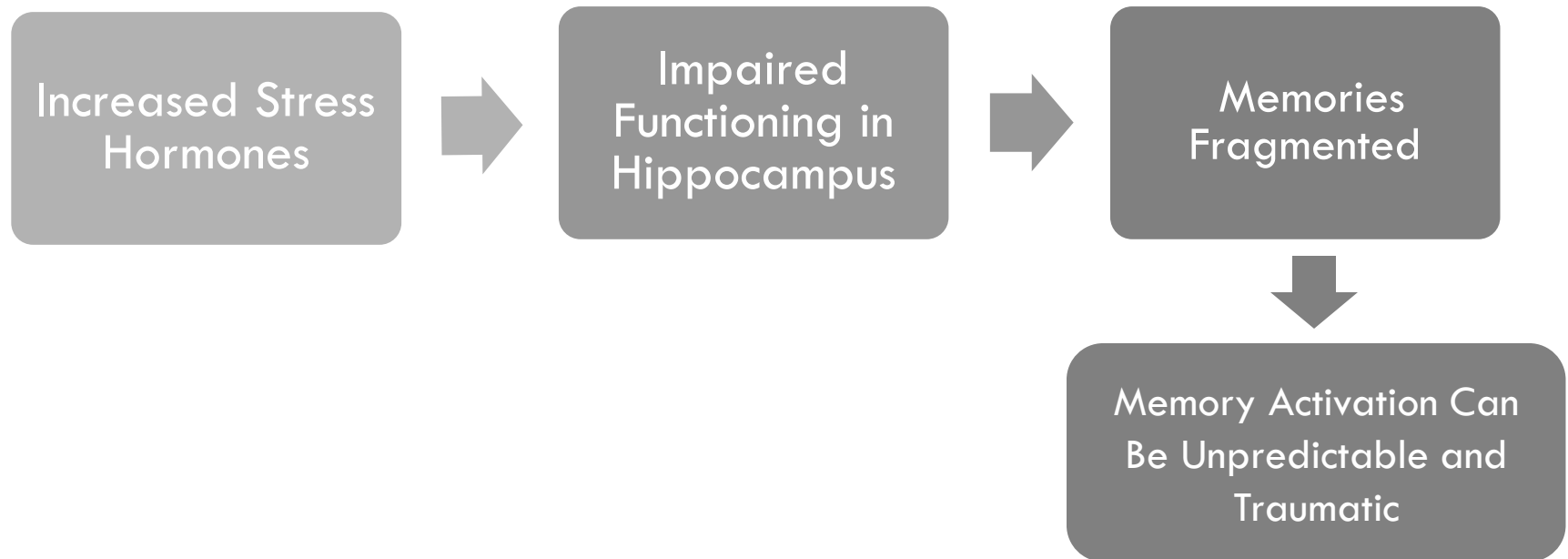


TONIC IMMOBILITY

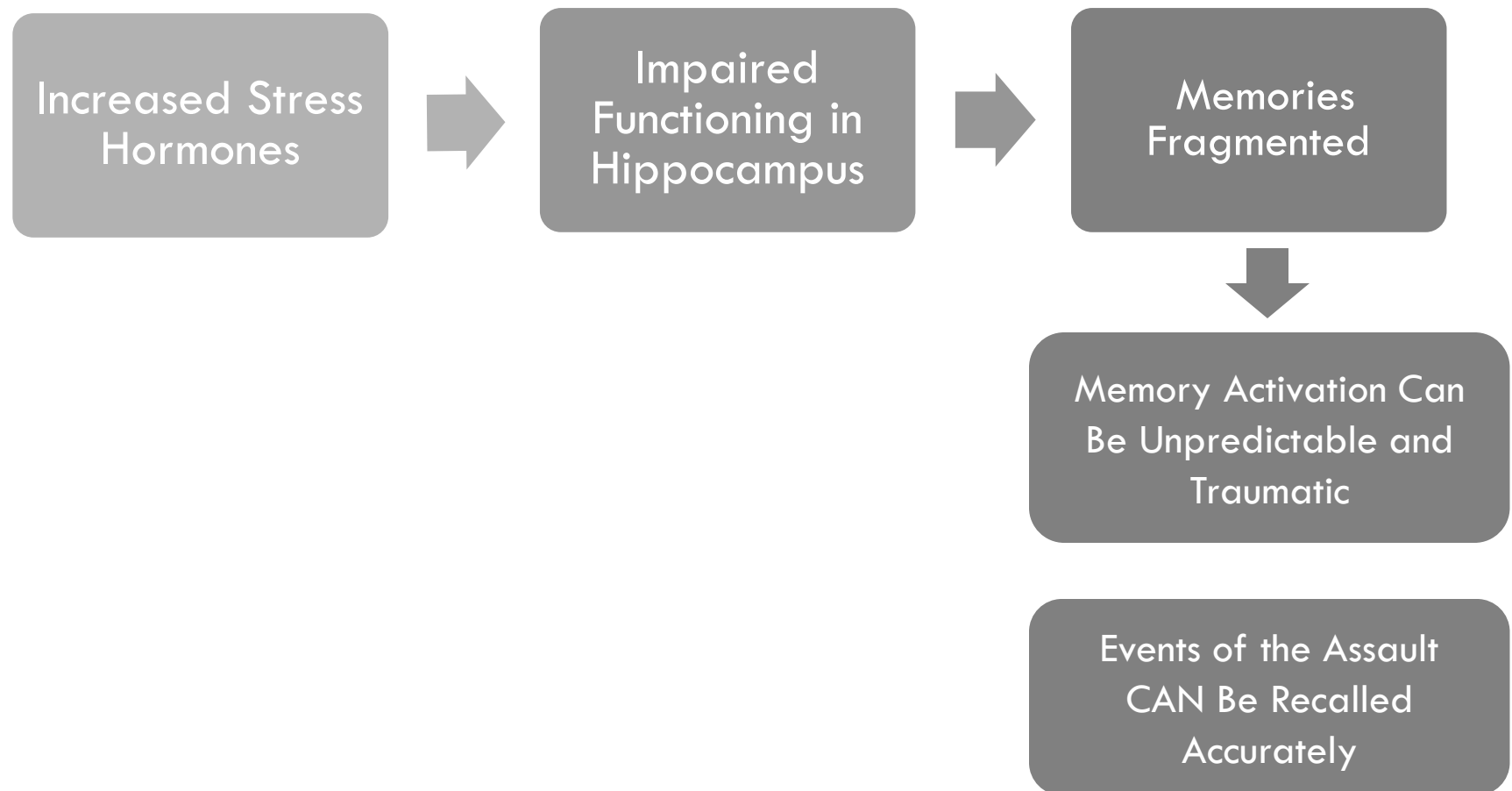
**A DOCUMENTED
NEUROBIOLOGICAL
CONDITION**

What Happens During A Sexual Assault

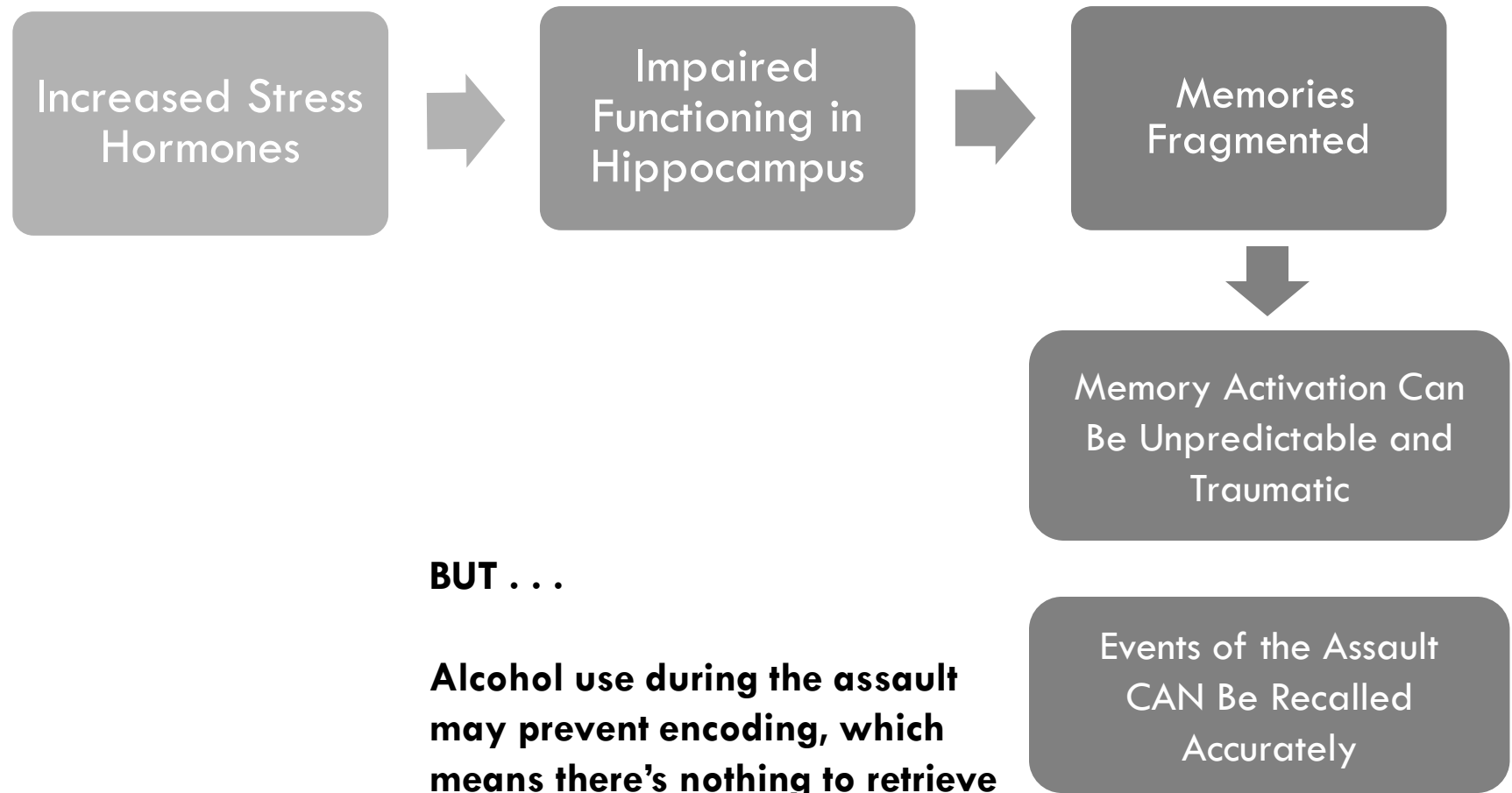
What Happens During A Sexual Assault



What Happens During A Sexual Assault



What Happens During A Sexual Assault



Case Study: Memory Fragmentation

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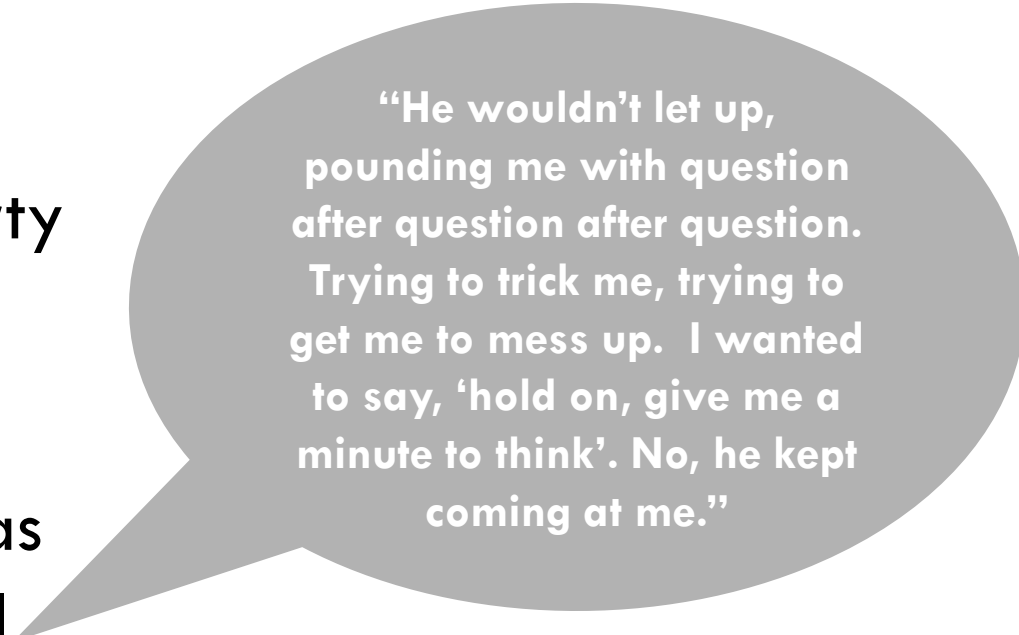
“My life was saved by a cup of coffee.

I think about that a lot.

That’s what saved me from going over the edge.”

Case Study: Memory Fragmentation

- 25 year-old woman
- Raped by a friend's brother at 4th July party
- Filed police report
- Detective interview was when it all went to hell



“He wouldn’t let up, pounding me with question after question after question. Trying to trick me, trying to get me to mess up. I wanted to say, ‘hold on, give me a minute to think’. No, he kept coming at me.”

Case Study: Memory Fragmentation

“Then I guess it was classic good-cop / bad-cop.
He stormed off and another detective sat down
next to me. He offered me a cup of coffee.

It's 90 f'ing degrees outside and I'm a wreck.
Coffee? OK fine. How do I take it? WHAT? Why
does he care how I take my coffee?

Well, he did.

He made me coffee. He gave me a long time to
just sit, collect my thoughts.

Case Study: Memory Fragmentation

“We talked it through. And I didn’t feel rattled and freaked out. I’m sure I was incoherent and he just let it roll. He was patient.

I felt like I was piecing it together, like a puzzle, we were putting together a puzzle together.

And drinking coffee.

Case Study: Memory Fragmentation

I: So, why did you do that? (give her the coffee)

R: It helps. Not the coffee so much, just the moment to let it all come together in their heads.

I: What do you mean?

R: I don't know why it's like that, I've just noticed that over the years. If you give them a few minutes to breathe it starts to make more sense. I don't know why, it just does.

Case Study: Memory Fragmentation

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**MEMORY
CONSOLIDATION**

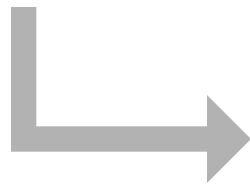
**A DOCUMENTED
NEUROBIOLOGICAL CONDITION**

Case Study: Memory Fragmentation

- I: Were you worried that if you gave her some time, she'd just make something up?
- R: Nah, not really. I mean, some victims lie, but most don't. Besides, if they're lying, we'll catch 'em at it eventually. I think it's just hard for victims to talk about and we just need to have a little patience.

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**MEMORY
FRAGMENTATION**

**A DOCUMENTED
NEUROBIOLOGICAL CONDITION**

Take Home Lessons

Implications for Current & Cold Cases

CURRENT CASES



Assaults that occurred recently & are reported
~ 24-96 hours

COLD CASES



Assaults that occurred a long time ago, but may be re-opened due to new evidence, SAK testing, CODIS hit, etc.

. . . BUT from the perspective of the victim . . .

COLD CASES



Assaults that occurred a long time ago, but may be re-opened due to new evidence, SAK testing, CODIS hit, etc.

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graph LR; CC[CURRENT CASES] --> CC_desc[Assaults that occurred recently & are reported ~ 24-96 hours]; CH[COLD CASES] --> CH_desc[Assaults that occurred a long time ago, but may be re-opened due to new evidence, SAK testing, CODIS hit, etc.]; CH -.->|FEEL LIKE| CC
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CURRENT CASES

Assaults that occurred recently & are reported
~ 24-96 hours

FEEL LIKE

COLD CASES

Assaults that occurred a long time ago, but may be re-opened due to new evidence, SAK testing, CODIS hit, etc.

What Is Victim Notification?

- Reactivation of the assault memories
 - ▣ HPA Axis re-activation will cause neurobiological distress
 - ▣ Could trigger flashbacks and other symptoms
 - ▣ Could exacerbate PTSD and/or other MH issues
 - ▣ Could increase substance use/abuse
 - ▣ Could trigger substance abuse relapse
- A “cold case” *feels like* a current case

Take Home Lessons

- Neurobiological changes can lead to flat affect or “strange” emotions or emotional swings
 - “Hormonal soup”
 - Misinterpreted as being cavalier about it or lying
 - Wide range of emotions are in fact normal and it can be helpful to normalize those reactions

Take Home Lessons

- Neurobiological changes can make memory consolidation difficult
 - ▣ Story may come out fragmented or “sketchy”
 - ▣ Misinterpreted as evasiveness or lying
 - ▣ The content of the memory is accurate, just may take some time and patience for it to come together

Take Home Lessons

- Tonic immobility is often frightening to victims
 - ▣ Associated with increased self-blame
 - ▣ Associated with decreased likelihood of seeking help
 - ▣ Friends, family, service providers reactions to a disclosure of TI are often hurtful
 - ▣ Helpful to explain what TI is and normalize it

Take Home Lessons

■ Services for victims

- ▣ Advocacy to buffer effects of continued contact with the legal system
- ▣ Mental health services to address long-term mental and physical health impact
- ▣ Substance abuse services (as needed)
- ▣ Services that are culturally appropriate
- ▣ Services that are developmentally appropriate

Conclusions

Linking Research to Practice

Concluding Thoughts

- There are neurobiological reasons for victims' behavior
- The criminal justice system is “a 180” from what victims need psychologically and neurologically
- Every contact is an opportunity to help . . . or hurt

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