The National Center for Victims of Crime is pleased to provide the slides used in our August 4, 2015 Webinar, “The Neurobiology of Sexual Assault.”

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Today’s Presentation

- RECAP: Describe brain & body reaction to trauma
- RECAP: Describe brain & body reaction to sexual assault
- DISCUSS IN DEPTH:
  - Counter-intuitive victim behavior
  - Memory gaps & inconsistent statements
  - False reports
- Q&A and discussion
Introduction to the Neurobiology of Trauma

A Brief, Painless, Non-Technical RECAP
Our Story Begins Here

One inch, almond-shaped

Amygdala
Two Key Functions

- Processes
  - Emotional Reactions
  - Memories

Threats to the survival of the organism
Two Key Functions

PROCESSES

EMOTIONAL

REACTIONS

Hypothalamus
Pituitary gland
Amygdala
Emotional Processing of Traumatic Events

HPA Axis

Balances body following stress by releasing of various hormones/chemicals

SOURCE: Southwick et al., 2005
Emotional Processing of Traumatic Events

Catecholamines: Fight or flight response

Cortisol: Energy available

Opioids: Prevent pain

Oxytocin: Promotes good feelings

SOURCE: Southwick et al., 2005
Two Key Functions

Processes

Memories

Amygdala

Hippocampus
How Memory Usually Works
How Memory Usually Works
BUT . . . Trauma Hormones Mess This Up
The Neurobiology of Sexual Assault
What Happens During A Sexual Assault

- Amygdala Detects Threat
- Activates Hypothalamus
- HPA Axis Kicks In Hormonal Flood
  - Impaired Rational Thought
  - Hyper/Jangled
  - Flat Affect/No Emotion
  - Laughing/Joking

SOURCE: Banks, 2002; Southwick et al., 2005
What Happens During A Sexual Assault

Amygdala Detects Threat → Activates Hypothalamus → HPA Axis Kicks In Hormonal Flood

Can Trigger a Complete "Shut Down" (Tonic Immobility)

SOURCE: Banks, 2002; Southwick et al., 2005
What Happens During A Sexual Assault

- Increased Stress Hormones
- Impaired Functioning in Hippocampus
- Memories Fragmented
  - Memory Recall Can Be Slow & Difficult
  - Events of the Assault CAN Be Recalled Accurately

SOURCE: Koss et al., 1995, 1996; Roozendaal et al., 2009; Rubin et al., 2008
What Happens During A Sexual Assault

- Increased Stress Hormones
- Impaired Functioning in Hippocampus
- Memories Fragmented

Memory Recall Can Be Slow & Difficult

Events of the Assault CAN Be Recalled Accurately

Accurate, If It Gets Encoded
What Happens During A Sexual Assault

- Increased Stress Hormones
- Impaired Functioning in Hippocampus
- Memories Fragmented

Memory Recall Can Be Slow & Difficult

Alcohol Interferes with Encoding

Events of the Assault CAN Be Recalled Accurately

SOURCE: Bisby et al., 2009; Bisby et al., 2010
Alcohol & Memory Processing

Encoding = Organizing sensory information

SOURCE: Bisby et al., 2009; Bisby et al., 2010
Alcohol & Memory Processing

Encoding = Organizing sensory information

Alcohol impairs encoding of **CONTEXT** details

- Time, Place, Physical Scene
- Events in Sequence

SOURCE: Bisby et al., 2009; Bisby et al., 2010
Alcohol & Memory Processing

Encoding = Organizing sensory information

But encoding of **SENSORY** details still working

**Five Senses Still Gathering Information**

**SMELL in Particular**

SOURCE: Bisby et al., 2009; Bisby et al., 2010
Smell? Yes, Smell

THE LIMBIC SYSTEM
Smell? Yes, Smell

Guess What’s Below the Limbic System?

Hypothalamus
Pituitary gland
Amygdala
Hippocampus

THE LIMBIC SYSTEM
Smell? Yes, Smell

Guess What’s Below the Limbic System?

OLFACTORY BULB

THE LIMBIC SYSTEM
Bottom Line on Alcohol & Memory

**CONTEXT** details may *not* be encoded → and what is encoded, will be fragmented

**SENSORY** details might still be encoded → probably also fragmented, but more details to uncover
Implications & Take Home Lessons
#1: Counter-Intuitive Victim Behavior
She was laughing about it with her friends.

She's acting like it's no big deal.

She went out with him again—had consensual sex with him.

She called him afterwards.

She doesn't seem upset about it at all.
HPA Axis Activation

- HPA Axis activation elevated for **96** hours post-assault (AND whenever memory is re-activated)
  - Flat affect, “strange” emotions, emotional swings
  - Irritable, argumentative, and difficulty concentrating
  - Headaches, body pain, stomach/GI distress
  - Increased alcohol & drug use (self medicating behaviors)
  - Compromised decision making (esp. relationships & sexuality)
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OH!!! So that’s why we see “Counter-Intuitive” Victim Behavior!!
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THESE ARE NEUROBIOLOGICAL SIGNS 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.

And I wasn’t doing it right.”
Implications: Victims’ Emotions & Behaviors

- When victims don’t “behave right” → law enforcement are less likely to believe victims . . .
  - Accuse victims of lying/making false reports
  - Do not follow-up on case/investigation
  - Do not submit rape kit for testing
  - Do not refer the case to prosecutors

SOURCE: Campbell et al., 2014; Shaw, 2014
Take Home: Victims’ Emotions & Behaviors

- Provide *caring emotional* support → bring HPA down

- Provide *informational* support → give options & give victims time to make decisions

- Connect victims to advocacy services → “by name”

- For providers/practitioners → TRAINING
#2: Memory Gaps & Inconsistent Statements
#2: Memory Gaps & Inconsistent Statements

The interviews don’t completely line up

Details are different

There’s chunks that are just missing
Memory Fragmentation

- Storage of sensory pieces & cognitive interpretation of events is fragmented
- Each “telling” will be (slightly) different depending on which pieces are recalled
- HPA activation makes retrieval harder

SOURCE: Koss et al., 1995, 1996; Roozendaal et al., 2009; Rubin et al., 2009
Memory Fragmentation

- Storage of sensory pieces & cognitive interpretation of events is fragmented.
- Each “telling” will be (slightly) different depending on which pieces are recalled.
- HPA activation makes retrieval harder.

OH!!! So that’s why there’s gaps & variations!!!
Implications: Victims’ Memory

- Neurobiological response to trauma makes memory consolidation difficult
  - Story may come out fragmented or “sketchy”
  - Expect variations & “inconsistencies” across interviews
  - 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: Victims’ Memory

- Sleep helps memory consolidation → let them sleep!

- Interview in a way that is consistent with the underlying architecture of the memory!
Victims’ Memory: What WON’T Work

- The WHO-WHAT-WHERE-WHEN-WHY questions
  - Too narrowly-framed
  - Too closed-ended

- Seek specific details that are harder for victims to access (esp! if alcohol-facilitated sexual assault)
WHO, WHAT, WHERE WHEN, WHY
Victims’ Memory: What WON’T Work

- REID interviewing methods
  - Also too narrowly-focused
  - Also too closed-ended
  - Was developed for suspect interrogation
  - Does not promote trust & disclosure
Tends to capture peripheral details & goes over & over those details (missing huge chunks of the memory)
Victims’ Memory: What WON’T Work

- SCAN (scientific content analysis) & any other polygraph / “truth telling device” methods
  - No scientific evidence it promotes recall
  - Increases HPA axis activation → recall MORE difficult
  - Does not promote trust & disclosure
Increases HPA axis activation $\rightarrow$ fragmented, piecemeal recall without much context
Victims’ Memory: What WILL Work

- *Trauma-informed* interviewing methods
  - Child Forensic Interviewing
  - Cognitive Interviewing
  - Forensic Experiential Trauma Interviewing

Go back in time to that day.
Set the stage.
Use the senses.

SOURCE: Fisher & Geiselman, 2010; Strand, 2012
“Can You Help Me Understand What You’re Able to Remember About Your Experience?”
#3: False Reports
No one would act like that if it's true. I see them hedge, making it up as they go along.

They lie all the time, I can tell. They can’t get their story straight.

#3: False Reports

The stuff they say makes no sense. No one would act like that if it’s true.
“The stuff they say makes no sense. So no, I don’t always believe them, and yeah, I let them know that. Then they say, ‘never mind, I don’t want to do this.’ Ok, fine. Complainant Refused to Prosecute. Case closed.”

Sex Crimes Unit Detective, 15 Years Experience
False Reports

- Law enforcement personnel say that that 50% + of reported sexual assault are false

- RESEARCH: 2-8% of reported assaults are false
  - Well-designed research studies
  - Data from multiple sources (victims, witnesses, suspects)
  - Following up investigative leads

SOURCE: Lonsway, Archambault, & Lisak, 2009
False Reports

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- RESEARCH: 2-8% of reported assaults are false
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  - Following up investigative leads

WOW!!
Why are % so different?

SOURCE: Lonsway, Archambault, & Lisak, 2009
Focus Group Research With Police
Focus Group Research With Police

The stuff they say makes no sense.

I see them hedge, making it up as they go along.

They lie all the time, I can tell.

No one would act like that if it’s true.

They can’t get their story straight.

No one would act like that if it’s true.
Misinterpreting Signs of Trauma

The stuff they say makes no sense.

I see them hedge, making it up as they go along.

They lie all the time, I can tell.

No one would act like that if it’s true.

They can’t get their story straight.
“So wait a minute. You mean what we’re seeing isn’t bullsh*t?

I’ve always believed it was bullsh*t . . .
Well, how ‘bout that. Real trauma looks like bullsh*t.
Focus Group Research With Police

- Misinterpreting Signs of Trauma
- Negative Attitudes & Beliefs
- Resource Depletion & Burnout
- Vicarious Trauma
Focus Group Research With Police

✓ Misinterpreting Signs of Trauma
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✓ Misinterpreting Signs of Trauma

? Negative Attitudes & Beliefs

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✓ Vicarious Trauma
Take Home Lessons: False Reports

- Sufficient resources for sex crimes units/staff
- Caring for practitioners → “Heal the Healers”
  - Transforming trauma workshops
  - In-office wellness sessions
  - Workplace healing
Conclusions
Concluding Thoughts

- Neurobiological reasons for victims’ behavior

- New research findings can help improve investigations and victims’ health outcomes
Concluding Thoughts

- Neurobiological reasons for victims’ behavior
- New research findings can help improve investigations and victims’ health outcomes
- We can USE these findings to create a VICTIM-CENTERED, TRAUMA-INFORMED, OFFENDER-FOCUSED Community Response to Sexual Assault
THANK YOU!!

Questions & Discussion
rmc@msu.edu

National Criminal Justice Reference Service
www.ncjrs.gov

YouTube Video of Training
http://youtu.be/gtWD1XJrhNo