

The Neurobiological Consequences of Trauma: A Trauma Informed Approach

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Two Focuses

- Neurobiology of harm
- Neurobiology of connection (our connection to one another)

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Seeking Justice

" The core experiences of psychological trauma are disempowerment and disconnection.

Recovery, therefore, is based upon the empowerment of the survivor and the creation of new connections.."

-Judith Herman, Trauma & Recovery

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Objectives

- Examine research on victim behavior and the neurobiology of trauma
- Examine how police interpretation of victim behavior impacts sexual assault/domestic violence investigations.
- Outline some of the more complicated responses that victims of ongoing abuse and violence may exhibit
- Discuss how these findings can change practice
- Discuss vicarious trauma reactions

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Components of Presentation

Part I – Trauma & Its Psychological Impacts

Part II –Neurobiology of Trauma

Part III –Relevance of Neurobiological responses to Police Practice

Part IV- A Trauma-Informed Approach

Part V – Simple and Complex Trauma

Part VI– Vicarious Trauma

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Trauma-Informed System

- Enduring and meaningful change occurs when the people who make up the system share a philosophy about trauma, services, the helping relationship, and trauma clients.
- How we understand trauma will determine to how we envision the overall approach to the work we do.

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TRAUMA INFORMED CROWNS

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Why Crowns Need to Understand Trauma Responses in Victims

- To make victim responses comprehensible to legal fact finders
- To effectively lead evidence to explain complexities of trauma responses
- To assess credibility in light of scientific knowledge

Why Crowns Need to Understand ..

- To challenge myths and stereotypes about typical responses
- To explain what may seem like counterintuitive behaviour
- Need to support vulnerable victims throughout the process

Can you explain

- Delayed report
- Inconsistent statements
- Lack of resistance / freezing
- Behaviors during assault
- Self blame/minimization
- Recanting
- Demeanor
- Continued contact with offender post assault

women who Experience Sexual Violence May

- Not be able to make self-protective decisions
- Experience "frozen fright" during the assault
- Struggle with decision making
- Deny or minimize the assault
- Delay reporting to the police

- Exhibiting no physical evidence of injury from the assault
- Being unable to identify the perpetrator to police
- Exhibiting no apparent emotional expression following the assault
- Providing apparently inconsistent statements at different points in time
- Having a relationship with the perpetrator after the assault
- Blaming oneself for the assault
- Recant

Common areas that can be explained by trauma

- Freeze / tonic immobility
- Dissociation
- Inconsistent / incomplete memory
- Time distortion
- Sequencing of events
- Unexpected emotional response (e.g., flat affect on the witness stand)

Trauma Informed Crowns

- Develop skill to present trauma-informed evidence
- Communicate the victim's experience of the crime to the jury
- Re-create the reality of the crime of sexual assault/rape, for judge or jury
- Present evidence of the victim's experience through physical, psychological and physiological evidence

Trauma Informed Crowns

- Crowns who understand the impact of trauma on victims' behavior are able to view cases through a new lens
- This allows them to prosecute cases previously thought of as hard to believe or lacking in evidence.
- Offering more support to victims and responding to them patiently increases their ability to re-tell what happened to them

Trauma Informed Crowns Need Knowledge of

The elements of expert testimony on the neurobiology of trauma responses and memory

Questions and answers that may be utilized in direct examination.

The role of expert testimony in explaining the impact of trauma on victim behavior and memory to a jury.

Appropriate professionals who may serve as expert witnesses.

- The effective use of an expert witness on the neurobiology of trauma and its impact on victim behavior and memory is often necessary to help a jury understand why the victim is credible and why the case makes sense.

Jurors Also Believe Rape Myths

- Unfortunately, members of the public who ultimately serve as jurors in these challenging cases have typically not received the same training as trauma informed crowns, judges or police
- The learning curve required to educate them may require an expert witness

Victims Often Can't Explain.....

- their own psychological responses and coping.
- They may not recognize the role of abuse-related trauma in the development of some of their own severe responses or ways of managing.
- The onus is on the crown to recognize trauma responses to make them understandable ("victim all over the place" victim sounds crazy

Vulnerability & Needs

- Individuals who are reporting may be tormented by memories and reminders, emotionally 'shut down' and 'numbed out', or cycling between these extremes.
- Be mindful not to judge the individual's credibility by their emotional affect.

- Most traumatized people develop extreme coping strategies to manage the effects of overwhelming traumatic stress

Adaptations & Coping

- Many symptoms and problems are attempts to cope.
- These include substance abuse – which may be a way to escape from terrible memories or anxiety – and even compulsive or risky sexual behaviors, which may involve attempts to gain a sense of mastery and control over one's sexual experiences.

Women have critically important requirements of crown attorneys

- Crowns need to listen well, not be judgmental or blaming, nor respond from their own anxiety or frustration.
- Receiving support, empathy, understanding and caring are critical in the context of answering questions about sexual violence truthfully

(Botaglin et al., 2003).

- The harmful effects of negative social reactions on post assault adjustment appear to be more robust than the supportive effects of positive social reactions (Campbell, 2001).

Negativity Bias

- Negative events affect us more than positive ones
- We remember them more vividly
- We process negative data faster and more thoroughly than positive data, and they affect us longer
- two-thirds of neurons in the amygdala are geared toward bad news, immediately responding and storing it in our long-term memory.

Hanson, (2009).

- Negative social reactions are associated with higher levels of anxiety, depression, PTSD, and problem drinking.
- Women who receive negative social reaction are less likely to disclose the experience to other in the future.

(Ahrens, 2007)

Attrition in sexual assault cases

- Research has established that only a small proportion of sexual assaults enter the criminal justice system,
- and those that do
- face a range of barriers and filtering mechanisms, which means that few result in a charge, prosecution, or conviction.

- Surveys about why women don't make reports, most victims said they worried that no one would believe them.

- Case attrition is highest at the police stage, but prosecutors regularly exercise their discretion to discontinue cases;

- In the aftermath of trauma, victims often make statements that are inconsistent or incomplete.
- They may also seek to hide or minimize unflattering behavior out of fear that they will not be believed or that they will be blamed for their assault.

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- According National Center for the Prosecution of Violence Against Women.
- Only an estimated 2 to 8 percent of rape accusations are false

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- A number of recent studies on neurobiology and trauma have led to a fundamental shift in the way a growing number of experts view rape investigations
- These studies show that the ways in which the brain process harrowing events helps explain why victim behaviour is often difficult to understand

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- These findings have led to the development of improved & trauma informed methods for interviewing victims

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Current Field of Neuroscience

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Why neurobiological Research on Traumatic Responses Matters to the Work We Do

In science the important thing is to modify and change one's ideas as science advances.

(Herbert Spencer)

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- Advances in cognitive neuroscience and neuroimaging have facilitated a greater understanding of the neuroanatomy and neurophysiology of trauma

- We now know that memories associated with a traumatic experience are encoded in the brain differently than a "normal" memory

- Neuroscience has identified the brain structures that are primarily responsible for this difference.

- We understand the fear circuitry that is triggered when we are threatened or in danger and the typical behavioural and physiological responses that are manifested

"The imprint of the trauma is in the limbic system and in the brainstem: in our animal brains, not our thinking brains"

van der Kolk, 2004

Implicit Memory

- Left hemisphere does not develop (nor does Hippocampus) until the third year of life

No explicit memories of these early years

Implicit memory is stored in the amygdala

- Bypasses language
- Has no narrative
- Is unconscious

Neuroimaging studies-Using script driven imagery

Subjects exposed to traumatic reminders,

- had cerebral blood flow increases in the right medial orbitofrontal cortex, insula, amygdala, and anterior temporal pole
- deactivation in the left anterior prefrontal cortex, specifically in Broca's area, the expressive speech center in the brain, the area necessary to communicate what one is thinking and feeling.

This, and subsequent research supporting those findings demonstrated that

- when people are reminded of a personal trauma they activate brain regions that support intense emotions,
- while decreasing activity of brain structures involved in the inhibition of emotions and the translation of experience into language.
- Van der Kolk, 2006

Trauma & Memories

- trauma is stored in the part of the brain called the limbic system, which processes emotions and sensations, but not language or speech.
- For this reason, people who have been traumatized may live with implicit memories of terror, anger, and sadness generated by the trauma, but with few or no explicit memories to explain the feelings.

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Early experience has a disproportionate impact on the development of neural systems

- The first few years of life are a period of exuberant brain development
- 80% of brain is developed by the age of 4

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- Trauma doesn't just terrify or horrify us—it also forces us to make profound biological adaptations in how our brain operates.

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Two Types of Trauma

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Simple and Complex Traumatic Stress:

- Most of the literature addresses Simple PTSD.
- *Simple PTSD* is based on a single traumatic event.
- Simple PTSD diagnosis often does not capture the severe psychological harm that occurs with prolonged, repeated trauma

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Complex Trauma is significantly different than simple PTSD

- trauma is viewed not as a single discrete event but rather as a defining and organizing experience that forms the core of an individual's identity.

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Complex Trauma occurs...

- In the context of early, prolonged, and inescapable trauma.
- Complex—because it extensive effects on all areas of physiology, development and functioning (Herman, 1992).
- The personality traits and coping strategies tend to decrease positive adaptation and increase vulnerability for to future trauma.

Highest rates of PTSD

- Rape survivors are the largest group of persons with PTSD.
(Foa & Rothbaum, 1998).

- Even without a weapon, almost half of all victims state that they feared serious injury or death during the assault

■ (Koss, 1993; Tjaden & Thoennes, 2006).

When a person is held down, trapped, or in some way prevented from taking effective action

- be it in a war zone, domestic violence or a rape --
- the brain keeps secreting stress chemicals
- the the brain's electrical circuits continue to fire in vain.

Inescapable Shock

- Being able to move, do something to protect oneself is a critical factor in determining whether or not a horrible experience will leave long lasting effects.

PTSD is what happens ...

..when the brain's alarm system doesn't automatically or rapidly re-set itself.

- When the brain's alarm continues to signal danger even though safety has been restored, the brain's overall functioning remains in an altered state that is the chronic stress response.

Neurobiological understanding of a Traumatic Experience (The Brain During a Sexual or Physical Assault)

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Fear Circuitry

- Most studied circuitry in neuroscience
- Plays a huge role in trauma and PTSD.
- Located in multiple brain areas.

■

- Our nervous system is evaluating risk and safety in the environment.
- It's automatically doing this all the time. It's like a radar system, constantly sensing whether we're safe or not.

■

Sexual assault – violations of one's body

- It is threatening. It is horrifying.
- It is one of the most psychologically damaging forms of crime that anybody could experience.
- The amygdala recognizes this as a threat to the sustainability of the organism,

■

Amygdala

- The amygdala the major region in the brain that contributes to the perception of fear
- It is specialized to predict dangerous stimuli and to trigger the appropriate physiological responses to danger and threat

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How does threat activate the brain's stress-response neurobiology.

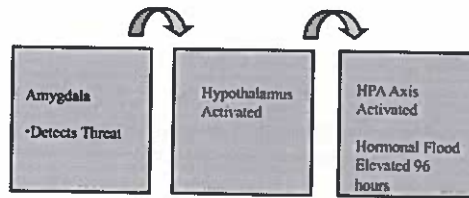
- Our five senses pick up the signs of imminent danger and transmit that information to the amygdala.
- In a fraction of a second it shifts the brain by activating the HPA axis in order to set in motion the stress response that is necessary to deal with the threat

■

- The brain's prefrontal cortex—which is key to decision-making and memory—often becomes temporarily impaired.
- The amygdala, known to encode emotional experiences, begins to dominate, triggering the release of stress hormones resulting in the fragmentation of sensory information.

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Complex set of chemical and neurological events known collectively as the "stress response" is triggered



Fear Circuitry in Control

- Loss of prefrontal regulation
- Bottom-up attention
- Survival reflexes
- Self-protection habits
- Altered memory encoding & consolidation

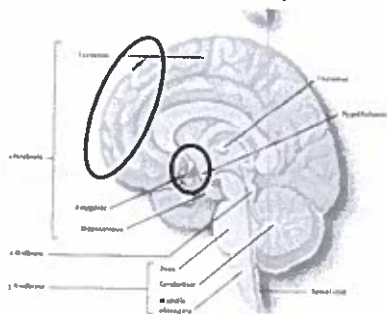
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When the alarm system is activated...

... literally hijacks the rest of the brain's operations in order to put all systems in emergency mode until the threat is escaped or overcome.

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The Stress Response



Survival Reflexes (Biophysiological) Changes in Body

- A cascade of neurochemicals from the adrenal glands initiates the adrenaline stress response:
- we prepare to fight or flee,
- heart rate and respiration increase;
- Pupils dilate
- Blood pressure increases
- oxygen flow to muscle tissue increases; other non-essential organ systems are turned off,
- including the frontal cortex.

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Consequences of Impaired left prefrontal cortex.

- Loss of executive functioning- impairs planning and decision making
- has a direct impact on the capacity to organize experience into logical sequences
- and the ability to translate feelings & perceptions into words.

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Results of Elevated Hormonal Flood lasts 96 hours

- Impaired Rational thought
- Hyperarousal
- Flat affect/ no Emotion
- Laughing/Joking
- Irritable, difficulty concentrating
- Headaches, body pain, GI
- Increase alcohol and drug use

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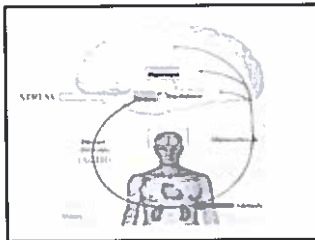
Four main chemicals secreted by the adrenals during a traumatic event.

Catecholamines: Fight or flight response

Cortisol: Energy available

Opioids: Prevent pain

Oxytocin: Promotes good feelings



SOURCE: Southwick et al., 2005

Catecholamines (Adrenaline)

- Released at very high levels during an assault.
- Adrenaline helps with the "fight" response
- Deactivates the circuits in our brain that control rational thought (PFC)

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High Stress & Fear= Impaired Prefrontal Cortex

Example
911

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Cortisol

Thrusts the body into

- hyper-alertness
- hyper-activity
- increased physiological responses

(increased heart rate to maximize the distribution of the stress chemical throughout the body).

- cortisol will be released for several hours after encountering the stressor.

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Opiates

- adrenals release opiates — natural morphine in the body.
- opiates released in high levels to block both physical & emotional pain of the traumatic event

Opiates

Blunt not only pain but blunt affect as well

- very flat
- incredibly monotone
- expressing no emotional reaction
- This can seem counterintuitive to both the victim and others
- "This was a horrible traumatic event. Why are you not showing these kinds of emotions?"

Oxytocin

- oxytocin is released in an attempt to increase positive feelings
- This is the bodies attempt to balance the blunting of the pain from the opiates.
- Victims can laugh or smile (inappropriately) because of oxytocin

Fear Circuitry in Control

- Loss of prefrontal regulation (we don't think well)
- Bottom up attention (focus only on what threatens us)
- Survival reflexes & self protective habits
- Altered memory encoding & consolidation
Amygdala encodes memory as sensory fragments, implicit and unconscious

Altered memory encoding

Helps explain

- why sexual assault victims often can't give a linear account of an attack immediately preceding the event
- the focus on visceral sensory details like the, smell of cologne or the sound of voices in the hallway.
- why recall is often slow and difficult.

When the

fear

kicks in



- When the fear kicked in is a key moment.
- Listen for this moment when you interview a victim.
- The responses victims describe do not happen in consensual sexual encounters

In Traumatic (and High-Stress) Situations...

- Emotional reflexes: Reflexes are automatic and include freeze, flight, or fight responses.

Freezing ..

- Occurs when the amygdala – part of the brain's fear circuitry – detects a threat and signals the brainstem to inhibit movement (less than a second)
- It happens in a flash, automatically and beyond conscious control.
- This shifts a person into a state of vigilance for incoming attacks and possible ways to escape.

Anatomy of a Freeze or Dorsal Vagal Shutdown

- the body has 2 complementary nervous systems:
 - a Sympathetic (arousing)
 - Parasympathetic (calming).
- Both are needed not only for psychological balance, but for survival.
- Without a Parasympathetic modification, the heart would beat too quickly to sustain life.

Psychophysiology of freeze

With a freeze responses the person is ready to suddenly burst into action

Sympathetic Nervous System –accelerator
Parasympathetic – is brake

Vagus nerve-Sheaf of myelin helps signal go faster. ¼ of a second brake is on or off

- This can be momentary, very brief – 20 seconds or more
- – such as a possum freezing and becoming reanimated after the predator leaves,

“Fight or Flight” is Misleading

- Our brains are not wired this way.
- We evolved to freeze first, then flee.
- And fighting is only in the service of fleeing, unless there is no other option.
- It's important that assault victims understand this because many will be ashamed they did not fight back.

Neurobiological responses

- In order to overcome intense fear & subsequent freeze we need effective habit learning to rely on.
- Combat training is intense and repetitive to encode habits of effective action.

Lacking habitual response to resist

- The problem is that most women do not have an effective habitual learning to resist.
- Most women rely on avoidance or passive habit responses , “ I have to go home now.”
- When a functional prefrontal cortex is off line & the fear circuitry takes over - **habits and reflexes are all we have left.**

Self Protective Habits

Girls & women socialized to use

- polite responses to dominant or aggressive people (attempt to diffuse not escalate)
- Women learn to be deferential in order to prevent being harmed
- Make other person's needs/feelings a priority
- Difficulty naming what is normal/what crosses a line
- Don't acknowledge it as a problem until it is over.

- This lack of training to fight or physically resist *leads to one of the most common rape myths*, that is that if a woman being sexually attacked was truly afraid she would take action and fight or scream.

- Most victims will freeze, if only briefly.
- Some will fight back, effectively.
- Some will resist in habitual, passive ways.
- Some will suddenly give in and cry.
- Others will become paralyzed, become faint, pass out or dissociate.

Escape When There's No (Perceived) Escape

- Drastic survival reflexes...

Drastic Survival Reflexes

- Dissociation
- Tonic Immobility
- Collapsed Immobility

Dissociation

- The brain protects itself from overwhelming stimulus by splitting some aspect of experience away from consciousness
- Perceptual field narrows and all awareness is focused on survival
- These types of withdrawal result from extreme fear yet it appear as if the victim did not resist the assault – which is true they often don't.
- Thankfully, we have affirmative consent law.

- Dissociated people are able to tune out to the point they cannot think, feel deeply, remember or make sense of what is going on.
- This is automatic for people who were traumatized earlier in life.

Dissociation

- Blanked/Spaced Out
- Disconnected from Body
- People report feeling in a fog, in a dream, don't feel their bodies
- When they speak it is like reading a grocery list, it is void of emotion

It doesn't feel real for them



- Autopilot- victims go through the motions
- Defense may suggest victim cooperative
- Need to listen for what a woman did. This will assist with her credibility.
- What did they feel in their bodies? How did their experience shift? Was there a visual? Example - Ceiling tile
- What was the victim's brain focused on?
- Gather subjective experience from victim

Dissociation

- Victims that dissociate may not be able to tell you what they felt, they are disconnected from their bodies but may remember vividly the colour of the carpet
- If you ask Q's like what happened next, and after that, and after that...this information is not encoded. This will lead to inconsistent statements.
- More compelling evidence if instead you ask what did they focused on (could hear people talking in hallway)

Neuroscience of Dissociation

- When someone dissociates while in a brain scanner, there is less activation in the embodiment circuitry (the insula).
- This circuitry of the brain helps us recognize body sensations (if we are itchy or cold)

- **Dissociative states associated with childhood trauma can impair women's ability to attend danger signals as an adult**

Tonic Immobility

- Tonic immobility is often referred to as "rape-induced paralysis."
- a person enters into a temporary state of paralysis.
- Tonic immobility can last from seconds to hours
- Does not impair alertness or memory encoding

Rabbit tonic Immobility



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Tonic Immobility

- HR drops swiftly
- Physical immobility- can't move mouth or limbs
- Suppressed vocal behaviour
- Analgesia
- TI symptoms identified in more than 1/3 of adult rape victims
- TI symptoms found in more than 1/2 of CSA victims
- Perception of entrapment shaped by prior experience
- Not a blackout- fully conscious

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Tonic Immobility – Drastic Survival Reflex

- Can overlap with dissociation and may include:
 - Trembling or shaking.
 - Rigid muscles.
 - Feeling of cold.
 - Numbness to pain
 - Unfocused staring or intermittent eye closure.

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Collapsed Immobility

- Heart gets massive parasympathetic input, resulting in...
- Extreme decreases in heart rate and blood pressure.
- Faintness, "sleepiness" or loss of consciousness.
- Loss of muscle tone.

Kozlowski et al. in press 2015; Baldwin 2013

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Collapsed Immobility –

- Often accompanies mental defeat.
- Can be triggered by seeing blood, a skin puncture, a knife.
- More likely in women.
- Can be a source of shame in victims.
- These are normal, brain-based responses.

■ Kozlowski et al. in press 2015; Baldwin 2013

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Tonic immobility /Freezing

- can be extremely frightening and confusing to rape and sexual assault victims.
- Why did I freeze?
- Why couldn't I move?
- Why couldn't I scream?
- Why didn't I fight back?
- Why was I just stuck there?

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There is still a social expectation

- that sexual assault victims should demonstrate *resistance* to prove their lack of consent, to prove that they are "real" victims

Brain-Based "Counter-Intuitive Behaviors"

- Did not resist.
No attempt to escape.
- Did not scream.
- "Active participant."

Survival reflexes – Indicators of non-consent:

Freezing
Dissociation
Tonic immobility
Collapsed immobility

Perpetrator

- Not stressed
- Prefrontal cortex in control
- Thinking and behavior:
 - Planned
 - Practiced
 - Habitual

Victim

- Terrified, overwhelmed
- Fear circuitry in control
- Attention and thoughts driven by perpetrator actions
- Behavior controlled by emotional reflexes and habits from childhood (incl. abuse)

PART III

THE RELEVANCE OF NEUROBIOLOGICAL INFORMATION FOR POLICE

Neurobiological Understandings of Traumatic Responses

- provides first responders scientific information data that helps them understand and contextualize victim behavior in a different way

Relevance of Neurobiological Information for police?

- Will this information on the neurobiology of trauma help break the cycle of case attrition.
- Case attrition, starts with belief "Victims don't make sense. What they say to me doesn't make sense."
- But from there it can lead to a very unsafe place for victims, especially if they are not believed.
- They ay experience a secondary victimization.

- Some police recognize the victim's muted response might be the result of trauma, but also realize it would be a weakness in court.
- Crows often question detectives on a victim's presentation:
 - "How could she have been raped if she didn't react when you asked her about the assault?"
- It's a simple way to destroy a victim's credibility—unless a cop can explain why a victim's lack of affect is a normal response following a traumatic experience.

- The emotional reactions to sexual assault, are often not understood by victims themselves
- The severity of damage to the victim and severity of crime are not always consistent. Victims with previous victimization may have more severe responses. (even suicidal)
- it can be helpful to normalize these responses.

Women who Experience Domestic & Sexual Violence May

- Not be able to make self-protective decisions
- Experience "frozen fright" during the assault
- Struggle with decision making
- Deny or minimize the assault
- Delay reporting to the police

Freeze Responses

- They can be reluctant to seek help because they are afraid of how their freeze response is going to be perceived by others
- And when they seek help, it's always there in the back of their mind.
- They dread the question "What did you do?"

Trauma presentations can result in police not believing rape victims

- Victims had trouble recalling an attack
- They couldn't give a chronological account of what happened
- Some expressed no emotion
- Others smiled or laughed as they described being assaulted
(Tom Tremblay, investigator in a sex crimes unit in Vermont.

- "Unlike any other crime I responded to in my career there was always this thought that a rape report was a false report"

- "I was always bothered by the fact there was this shroud of doubt."

What might appear to be an "inconsistency" in the way a victim reacts, or tells her story. .

- Is actually a *typical, predictable and normal way of responding to life threatening events and coping with traumatic effects*
- Understanding this is one of the fundamental challenges for the criminal justice system

Sexual Assault Trauma & Memory

- Traumatic memories are encoded into the brain differently, due to the high levels of adrenaline and other stress hormones that are circulating through the body during the traumatic event.

Traumatic Memory

- The hippocampus and the amygdala are very sensitive to hormonal fluctuations.
- depending upon what hormones are in the body at the time of encoding and consolidation, it's going to be easier or harder for the brain to encode and consolidate information.

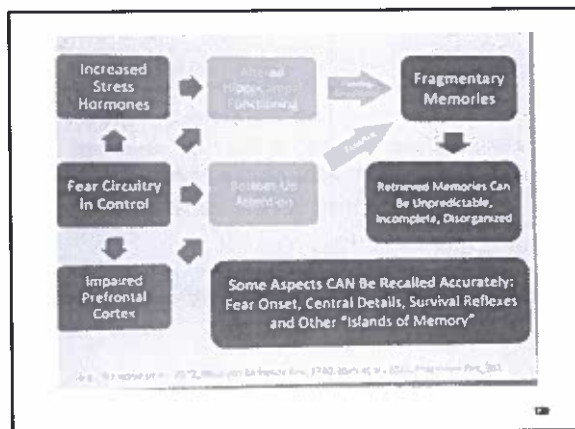
Trauma & Memory

Two memory structures important for memory encoding

- The hippocampus
- The amygdala

- the hippocampus is responsible for putting the experience into —chronological order and perspective
- -transfer to verbal memory areas in the cortex during sleep.
- The amygdala catalogues past sensory experiences (threats, anger) to apply them to future situations.
- This is a critical survival factor, enabling instant response to danger

- ### Important Distinction-Sensations and Context have distinct pathways
- Sensations are linked together, song playing on the radio when the guy pinned her arm. (these links burned into the brain)
 - Pathway for contextual information, the layout of the room or the temporal context is encoded into a different sub circuitry.



- ### Implications for investigations into sexual assault
- Victims do not typically have much context or time sequence memory (things hazy or a blur)
 - Sequential narrative not possible
 - By going after contextual details (what, where, when) you can create inconsistencies

Memory transfer to Cortex Happens During Sleep

Victims Need A Couple of Nights of Sleep to allow memories to be consolidated and transferred.

This requires a delay in taking victim statements, police, hospital etc.

Police need to determine what is needed now—what can wait

- Two full sleep cycles may be necessary for the episodic memory circuitry to consolidate (that is, store into a retrievable state) information that was encoded at the time of a sexual assault (or other trauma).
- Researchers have found that processes occurring during both rapid eye movement (REM) and non-rapid eye movement (NREM) sleep play critical roles in the consolidation of memories.

- The initial interview should simply address the information necessary to get the investigation started,
- and then the victim should be allowed at least one or two sleep cycles
- before conducting a detailed, follow-up interview.

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What is appropriate initially

- Demonstrating genuine empathy
- asking what the person is able to remember
- and then using "tell me more" prompts will help the investigator understand some of the most important aspects of the incident, such as:
 - location
 - elements of the crime
 - and the identity of any other person(s) involved.

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- don't push for information
- beyond what the victim is able to provide at the moment. After you have what you need, or
- whatever the victim is able to share at the time, you can set up an appointment for a later time
- (perhaps 24 to 48 hours later) for a follow-up and more in-depth interview.

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Neurobiological changes can make memory consolidation and recall difficult.

- The story may come out as fragmented or sketchy.
- How are law enforcement trained to handle something that looks fragmented and sketchy?
 - They're trained to believe that that is something that is not truthful,
 - their job is to hone in on it and look at it from multiple points of views and keep cycling back on it to try to ferret out what is true and what is false.

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Fragmented Memories

- As if this entire presentation is on post it notes scattered on a messy desk
- Imagine someone saying "start at the beginning and tell me what I said"
- Untrained helpers ask questions about details the brain is not able yet to retrieve

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- Many victims who are able to remember their traumatic experiences, either in pieces and parts
 - it is encoded accurately
 - it is recalled accurately
- but it remembered in a process that is slow, steady, fragmented and disorganized.

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- Police may treat victims with suspicion and interrogate them when confronted with gaps in their story, thus sabotaging the investigation.

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Bottom-Up Attention and Memory

Fear circuitry focus: what seems most important to survival and coping

Attended = Central Details = Encoded



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Vulnerability to Distortion?

Central Details = Very Low Vulnerability

Peripheral details = High Vulnerability

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Memory starts with attention

- What we don't pay attention to, we don't remember
- Peripheral details are also more likely to be influenced (or even created) as a result of leading questions,
- If victims do not know the answer, or if they provide an answer that is later called into question,
- this can damage their perceived credibility.

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What Gets Encoded and Consolidated

Is your case focused on central details?
"I'll never forget.....!"

Fragments 'burned into' memory

- Islands of memory
- Few peripheral details
- Little or no context or time-sequence info
- Little or no words or narrative

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Time-Dependent Hippocampus Effects

Brain super encodes at beginning of attack

- Intense early moments encoded then there may be minimal encoding as the hippocampus becomes impaired
- Not global effect on Hippocampus some information still taken in

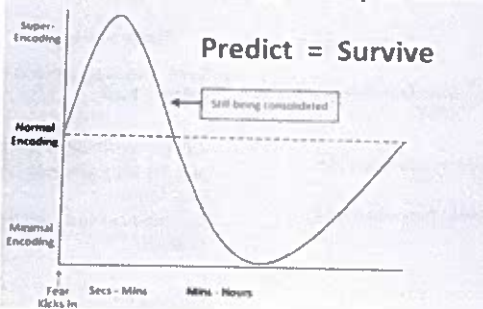
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hippocampus goes from flashbulb to fragmentary mode

- hippocampus goes in fragmented or refractory mode, fragments encoded without contextual details (like the layout of the room where the rape happened.)
- As well time sequencing information not encoded

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Time-Dependent Hippocampus Effects



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No one thing = memory

- Memory is not stored away and then pulled out. Memory encoded in pieces-representations
 - (Image) (sound) (feeling) (thought)
- Encoded in different parts of the brain

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Time Sequence affected

- Fear impairs the ability of the hippocampus to encode and store "contextual information," like the layout of the room where the rape happened.
- Fear also impairs its ability to encode time sequencing information

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Perceptual and Memory Distortions Of Police Involved in Shootings

- 85% diminished sound
- 47% Memory loss for some of the subject's actions
- 51% Memory loss for parts of the event
- 80% Tunnel vision
- 40% Dissociation
- 4% Automatic pilot "scared speechless"
- Study by Artwohl/Christensen

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Top-Down vs. Bottom-Up

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Memory Retrieval:

Top Down

- Using the Prefrontal Cortex

Asking questions like

"What happened next...."

Bottom Up

- Take a sensory piece & reflect it back
- Tell me more about when you felt the squeezing on your throat
- The moment you couldn't scream
- Help victim make associations. Fill out memory

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Think of Memory as Islands of information..

- Micro islands- sensations that are intensely remembered.

Larger Islands-key periods of assault.

- When fear circuitry activated.
- Victim's habit based response (appeasement, excuse, flattery)
- Survival responses-freeze, dissociation,
- Tonic or collapsed immobility
- Moment of defeat

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Alcohol and Fear

Low and moderate intoxication...

- ↓ Vigilance = Missing danger signs
- Eventually, danger/ assault detected...
- Realize impairment = ↑ Fear

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Alcohol and Memory

Low-moderate dose/intoxication

- Impairs context encoding (hippocampus)
- Does not impair encoding of sensations (hands on throat)
- Effect of fear/trauma encoded

• High dose/intoxication:

- Impairs hippocampus-mediated encoding and consolidation of both context and sensations
- Does not necessarily impair implicit memories

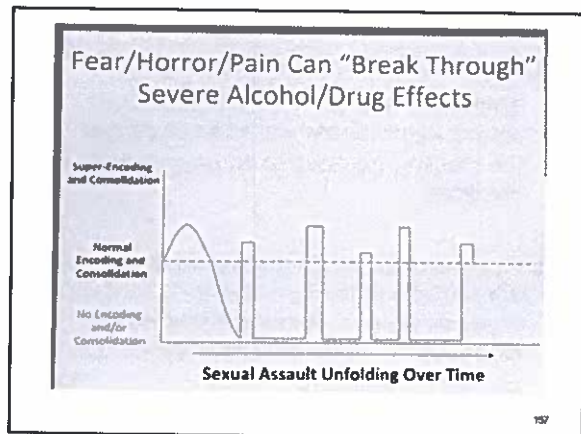
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Alcohol can disrupt the encoding or organizing process of memory.

- Encoding the context of a sexual assault is impaired
- details such as time, place, and sequence of events may be further fragmented or not encoded at all.
- sensory details still encoded (smells, sounds).

- Bisby, J. A. et al, Psychopharmacology, 204(4), 655-666. 2009.

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DOMESTIC VIOLENCE & TRAUMA

The clinical picture

- for someone who has survived a car accident or mugging...
- is different from someone who has experienced ongoing abuse and/or violence within a close relationship.

Domestic violence is, by its nature, chronic

- Women who have prolonged contact with their batterers often live in a relationship of coercive control
- The purpose of the control is to instill fear and helplessness and to destroy the victim's sense of self in relation to others.

- Batterers may use violence infrequently, as a last resort (re: establishing dominance / securing control).
- It isn't necessary to use violence to keep victim in a constant state of fear
- The threat of serious harm is much more frequent than the actual use of violence.

Prolonged Abuse results in Complex Psychological Adaptations

- Women subjected to repeated abuse by their partners develop an insidious form of post-traumatic stress that can change and distort their personalities.
- The repetition of abuse amplifies all the hyperarousal symptoms.
- Chronically abused women are continually hypervigilant, anxious and agitated.

- Hypervigilance is constant heightened awareness of one's surroundings to protect against potential harm or danger (i.e., feeling the need to be on guard all the time).

- Hyper-arousal and hypervigilance are the after-effects of the brain being "turned on" to sense danger. These are predictable responses to being placed in dangerous and hurtful situations.

- Chronic arousal interferes with people's ability to use their emotions as information upon which to make decisions about how to act.
- In particular, fear is an emotion that alerts people to pay attention, so that they can act/respond to the situation.

- For women who have left abusive relationships but are still harassed, stalked or threatened, hyperarousal is a reasonable response to actual or threatened harm.
- Hyperarousal reactions are survival based fear responses.

Affect dysregulation

- Events that are even remotely associated with the abuse can elicit intense fear (a door slamming, certain facial expressions or raised voices).
- *Chronically traumatized people do not have any baseline state of physical calm.*

Ongoing Domestic Violence

- is a unique and challenging crime, unlike other kinds of crimes

There are major differences between most traumatic experiences and domestic violence.

- Most survivors will be interacting with their perpetrator on a regular basis
- The violation of trust and disruption to interpersonal connections is more severe due to trauma occurring in context of an intimate relationship.

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Changes in Relationships

- The ability to determine who is trustworthy is often distorted for battered women.
- The perceptions she has of others can change suddenly.
- She may trust someone one moment but as a result of some small lapse or disappointment she will suddenly withdraw.
- This has an indirect but powerful impact on those who attempt to help her.

Attachment to Offender

- Women split off the violent, abusive behaviour in order to maintain attachment to abusive partner. This is similar to how they maintained attachment in childhood.
- Women want to protect partner from prosecution or responsibility (because they feel so guilt ridden and badly they assume others feel what they do).

The after effects of abuse and violence. . .

- on people's "victim" behaviour and coping strategies can be difficult to understand.
- The defenses that many people develop after being repeatedly hurt in relationships, can make the task of connecting with them extremely difficult.

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- The shame and mistrust sometimes results in victim being withholding or secretive.
- Or on the other hand they can appear to be demanding or unreasonable in an attempt to have control.

Changes in Identity

- Often battered women are preoccupied with shame, self-loathing and a sense of failure.
- The profound alterations is one's sense of self, the internalized images of others, and the values and ideals that give a person a sense of coherence and purpose have been invaded and systematically broken down.

- These losses result in a state of protracted depression.
- Studies of battered women report high suicidality. In one group of a hundred battered women, 42 percent has attempted suicide (Herman, 1993).

- Chronically assaulted women also often develop a constriction in initiative and planning.
- This is often interpreted as learned helplessness, the idea that the victim is simply defeated or apathetic.
- Instead, the reality is, more often than not, that she has learned that every act of resistance will be punished.

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Domestic violence victims often experience prolonged feelings of anxiety and terror

- All actions have potentially serious consequences so survivors know that thorough plans must be made before taking action

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Why is it important to understand Domestic Violence and Trauma?

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Why Understanding Complex Trauma is Relevant

- There is a shared understanding that the psychological effects of violence can be overwhelming and debilitating in ways that outlast the actual violent experiences
- The effects linger and often create their own set of barriers and difficulties

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Recognizing post traumatic stress and the effects of trauma . . .

also assists in making sense of, and responding more effectively to victim demeanor