



End Violence Against Women International
(EVAWI)

Becoming Trauma- Informed: Learning and Appropriately Applying the Neurobiology of Trauma to Victim Interviews

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Please Note

An earlier version of this document was released by EVAWI in September 2019 entitled: [Statement on Trauma-Informed Responses to Sexual Assault](#). It was written in response to a position statement issued in August 2019 by the Association of Title IX Investigators (ATIXA) titled, *Trauma-Informed Training and the Neurobiology of Trauma*.

This Training Bulletin is the first of a series addressing a variety of topics related to trauma-informed interviewing, including: an examination of their evidentiary value, a description of specific interviewing strategies such as the Forensic Experiential Interview (FETI), and an exploration of research on how to effectively elicit information during an investigative interview, whether it is conducted with a victim, witness or suspect in a criminal investigation, as well as recommendations for best practice.

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Introduction

The detailed interview with a sexual assault victim may be the most critical component in an effective sexual assault investigation. It directs the investigator where to collect evidence, identifies possible witnesses and suspects to interview, and it can generate corroborative information. The interview also communicates to victims whether law enforcement will take their report seriously and treat them with respect, ultimately affecting whether they decide to participate and stay involved in the process.

Unfortunately, traditional law enforcement interviews with sexual assault victims have often been ineffective at best – and inappropriate or abusive at worst.¹ Why? There are numerous causes, but one is the bias that sexual assault victims have historically faced, not only from law enforcement and other responding professionals, but also from friends and family members. This bias is often based on misconceptions that lead people to blame victims and believe that they are lying about the sexual assault. Yet we now have a body of well-established neuroscience that explains how humans respond to stress and trauma, and this can be used by law enforcement investigators to inform and improve their interviews with sexual assault victims.

With this reality in mind, it is critical that law enforcement agencies assess how successful their current sexual assault victim interviewing practices are:

- Do these interviewing practices maximize the potential completeness and accuracy of victims' recall of incidents?
- Are these practices thoroughly documented in investigative case files?
- Do they successfully guide thorough, professional, and fair investigations?
- Do they yield sufficient evidence to make proper case determinations?
- If not, what improvements can be made to increase their effectiveness?

This training bulletin is the first in a series designed to help agencies make improvements in their interviewing practices with victims of sexual assault, as well as victims and witnesses of other types of violence. Many of these same principles also

¹See, for example: Amnesty International (2007). *Maze of Injustice: The Failure to Protect Indigenous Women from Sexual Violence in the USA*. New York, NY; Dissell, R. (2009, November 16). [Cleveland woman says she fought, fled Anthony Sowell in 2008 attack but authorities didn't believe her](#). *The Plain Dealer*, Cleveland, OH; Human Rights Watch (2009). *Testing Justice: The Rape Kit Backlog in Los Angeles City and County*. New York, NY; Human Rights Watch (2010). *"I Used to Think the Law Would Protect Me:" Illinois' Failure to Test Rape Kits*. New York, NY; Human Rights Watch (2013). *Capitol Offense: Police Mishandling of Sexual Assault Cases in the District of Columbia*. New York, NY; Krakauer, J.R. (2015). *Missoula: Rape and the Justice System in a College Town*. New York, NY: Doubleday; Stevick, E. & Hefley, D. (2011, November 4). Rape wasn't a lie Lynwood Police now say. *The Herald*, Everett, WA; US Department of Justice (2015). [Identifying and Preventing Gender Bias in Law Enforcement Response to Sexual Assault and Domestic Violence](#).



apply to other types of investigative interviews, such as those conducted by prosecutors, civil attorneys, campus Title IX investigators, and others.

Traditional Strategies Don't Work with Trauma Victims

One fundamental problem with many sexual assault interviews is that victims are asked to recount their memories of the crime in ways that are often inconsistent with how those memories were encoded and stored, as well as the reality that stress experienced during the interview can impair memory retrieval.² To illustrate:

- Victims are typically asked to provide their narrative in chronological order;
- Interviews rely heavily on “who, what, when, where, and why” questions; and
- Investigators assume that victims will remember particular details of the assault, including the suspect’s appearance and behavior throughout the event.

As a result, questions asked by investigators often don’t “make sense” to sexual assault victims, given what they can actually remember, and the statements victims make in traditional interviews often don’t “make sense” to investigators. Instead, victims’ honest answers and statements in response to this type of questioning often raise unwarranted suspicion in the minds of investigators – as well as prosecutors, judges, jurors, other professionals like health care providers and victim advocates, and even loved ones.

People also frequently misinterpret victim behaviors during the interview. For example, investigators mistakenly interpret the victim’s body language, emotional expression, or lack of eye contact as signs of dishonesty.³ Or they view the victim’s lack of engagement as a sign that they are uncooperative, rather than a result of being emotionally overwhelmed and/or shut down. In other words, victims don’t act the way investigators *assume they themselves would act* in a similar situation, and this only fuels the existing misconceptions and bias against sexual assault victims.

Indeed, these practices can *create* the very inaccuracies and inconsistencies that are held against victims and cause investigators to question their credibility or conclude that the report is unfounded. This is especially likely when investigators ask leading questions or ask questions repeatedly, because eventually most victims will submit to the pressure and provide some type of answer, just to get the investigator to move on.

² For authoritative reviews of the relevant research, please see: Gagnon, S. & Wagner, A. (2016). [Acute stress and episodic memory retrieval: Neurobiological mechanisms and behavioral consequences](#). *Annals of the New York Academy of Sciences*, 1369 (1), 55-75; Wolf, O. (2017). Stress and memory retrieval: Mechanisms and consequences. *Current Opinion in Behavioral Sciences*, 14, 40-46.

³ Research documents that nonverbal behaviors such as these are not reliable indicators of deception. As Vrij et al. (2017) concluded: “Meta-analyses summarizing the findings of over more than 100 separate research studies conclude that nonverbal cues to deceit, particularly those promoted in interrogation training manuals (e.g., gaze aversion, shifting position, and fidgeting) are faint and unreliable” (p. 928). See: Vrij, A., Meissner, C.A., Fisher, R.P., Kassin, S.M., Morgan, C.A., & Kleinman, S.M. (2017). Psychological perspectives on interrogation. *Perspectives on Psychological Science*, 12 (6), 927-955.



Coercive interviewing practices such as these are powerfully depicted in the Netflix series, [Unbelievable](#). The first episode offers a hard-hitting portrayal of what can go wrong when professionals and loved ones disbelieve sexual assault victims and pressure them to recant. The series is based on a real case that was described in a [Pulitzer Prize-winning article](#), and developed into a full-length book by T. Christian Miller and Ken Armstrong. For more detailed information on this topic, see EVAWI's training bulletin, [Raped, Then Jailed: The Risks of Prosecution for Falsely Reporting Sexual Assault](#).

“Trauma-Informed” Approaches to Interviewing

When interviewing techniques are based on an accurate understanding of trauma, and informed by the relevant research on memory and neurobiology, interviewers can listen more perceptively to a victim's memories, especially descriptions of how the trauma impacted their attention, cognition, and behavior (e.g., narrowed attention, impaired reasoning capacities, freezing, habit behaviors, dissociation, and tonic immobility). Interviewers can also ask questions in ways that are more consistent with how traumatic memories are often encoded, stored, and retrieved. This can elicit more complete and accurate information, which in turn can lead to more thorough evidence-based investigations. For example, a trauma-informed interview of a sexual assault victim will likely include:

- Sincere efforts to establish trust, rapport and comfort for the victim.
- Acknowledgment of the victim's trauma and/or pain.
- Creating an environment that feels physically and emotionally safe for victims.
- Communicating in language the victim will understand and be comfortable with.
- Use of non-leading questions and other open-ended prompts (e.g., “Tell me more about that,” or “What were you thinking/feeling at that point?”).
- Encouragement of narrative responses with pauses, and without interruptions.
- Focus on what the victim can recall thinking and feeling throughout the experience.
- Particular emphasis on emotional and sensory experiences (five externally focused senses plus internal body sensations).
- Expressions of patience, empathy, and understanding throughout the interview.
- No necessity for information to be provided in a sequential or “logical” order.
- Instruction not to guess at any answers, and to say “I don't know” when needed.
- Not asking victims “why” they did or did not do something during the assault, but rather inquiring in ways that convey a non-judgmental desire to understand their



experiences, reactions, and (often automatic) decisions (e.g., “Tell me what you were thinking/feeling/experiencing when you got in the suspect’s car?”).

Most of these techniques are not new, or particularly innovative. For example, many come from the field of child forensic interviewing and are incorporated in science-based investigative interviews.⁴ What is new is that we now understand *why* they work, in part based on the relevant neuroscientific research.

Science can also help investigators better understand victim statements and responses, including in the context of how the brain shifts toward reflexive and habitual behaviors during a traumatic event. Again, this information can help to “make sense” of behaviors that might otherwise be confusing to those listening to a victim’s narrative.

Also, by expanding the range of behaviors that might be viewed as “normal” among sexual assault victims, investigators can avoid wrongly misinterpreting them as signs of deception. In other words, the information may not necessarily add to the credibility of any victim statement, but it might help to avoid unjustifiably discrediting it. Finally, this knowledge can help to inform professional and investigative practices, as we will describe later. However, it is worth noting at the outset that many of these practices were discovered and recommended long before we had science to back them up.

“Trauma-Informed” Before There Was Such a Term

Long before the term was coined, many good investigators were following practices that are now described as “trauma-informed.” For example, they were patient and compassionate with victims, they provided flexibility in the way victims were asked to recall and relay events, they included victim advocates in investigative interviews, and they recognized that their interactions with victims, regardless of the legal outcome, could help them begin a healing journey by affording them simple dignity.

For most of these investigators – and other professionals at the time – the psychological effects of stress and trauma were not as well understood as they are today. Still, many good investigators used these methods anyway, believing from experience and insight that they were good for victims, and good for interviews; they were simply the right thing to do. Fast-forward to today, and it’s clear we’ve benefitted enormously from more sophisticated theory and practice, based on the relevant neuroscience.

⁴ See research commissioned and compiled by the US government’s High-Value Detainee Interrogation Group (HIG), including Brandon, S.E., Wells, S., & Seale, C. (2018). Science-based interviewing: Information elicitation. *Journal of Investigative Psychology and Offender Profiling*, 15, 133–148; HIG Report (2016). *Interrogation: A review of the science. High-value detainee interrogation group*, Washington DC. Retrieved from <https://www.fbi.gov/file-repository/hig-report-august-2016.pdf/view>. Meissner, C.A., Surmon-Böhr, F., Oleszkiewicz, S., & Alison, L. J. (2017). Developing an evidence-based perspective on interrogation: A review of the US government’s high-value detainee interrogation group research program. *Psychology, Public Policy, and Law*, 23, 438; Wells, S. & Brandon, S.E. (2019). Interviewing in criminal and intelligence-gathering contexts: Applying science. *International Journal of Forensic Mental Health*, 18, 50-65.

Defining the Neurobiology of Trauma

For the purpose of this document, we will generally define the *neurobiology of trauma* as a science-based understanding of: (1) How brains and bodies respond to acutely stressful and traumatic events such as a sexual assault, *as they are happening*, and (2) How these experiences of extreme stress are encoded, stored, and potentially retrieved from memory. This is consistent with the way in which psychological trauma is defined by scientists in the field of traumatic stress,⁵ and also how it is defined in the *Diagnostic and Statistical Manual of Mental Disorders (DSM 5)*.⁶ Based on that definition, we provide the following brief tutorial on some of the fundamental processes involved.

Neurobiology of Trauma: A Basic Tutorial

*In a 1-page handout for investigators, advocates, and other professionals, Dr. Jim Hopper (2019) has summarized how the brain is commonly affected during a sexual assault. The brief tutorial that follows is adapted from that handout and other materials written by Dr. Hopper.*⁷

Defense Circuitry

At some point during a sexual assault, as in other traumatic situations, the brain's defense circuitry⁸ (also sometimes referred to as the fear circuitry) will detect the attack, and it will likely immediately take over the dominant role in brain functioning. This is true as long as the person is conscious – even if they are intoxicated.

Prefrontal Cortex Impairment

Within seconds of the defense circuitry kicking in, the prefrontal cortex of the brain will likely become impaired in fundamental ways. This impairment results in:

- **“Bottom-up attention,”** in which the defense circuitry dominates where a person's attention goes. This is based on automatic, moment-by-moment appraisals of what's essential to cope and survive, not rational “top-down” goals and plans of the prefrontal cortex. For example, attention is likely to be involuntarily captured by the physical sensations of being restrained, sexually

⁵ For example, the International Society for Traumatic Stress Studies (ISTSS) [defines](#) traumatic events in this way: “Traumatic events are shocking and emotionally overwhelming situations that may involve actual or threatened death, serious injury, or threat to physical integrity.”

⁶ According to the American Psychiatric Association (APA), the [definition](#) of trauma in the *DSM-5* requires “exposure to actual or threatened death, serious injury or sexual violence.”

⁷ The scientific research supporting points summarized in this brief tutorial can be found in Dr. Hopper's writings, for example on his blog, [Sexual Assault and the Brain](#), and in later footnotes (e.g., page 14).

⁸ While the brain is not a computer, the metaphor of the brain being composed of a variety of “circuitries” has proven useful and become dominant in neuroscience. The term “circuitry” refers to a collection of brain areas that work together to perform certain functions.

penetrated, and having difficulty breathing, rather than deliberately focused on gathering information that could later be useful to an investigator.

- **Impaired prefrontal cortex capacities**, specifically related to rational thinking, planning effective responses, and remembering important information (for example, that there are people nearby who would hear a scream); and
- A shift to **reflex responses** that are hard-wired into our brains, partly because human beings evolved as prey, not just predators, and **habit responses** that, like reflex responses, can be rapidly and automatically selected and executed by the brain (which is why evolution selected for prefrontal cortex impairment, because its deliberative processes can be too slow in dangerous situations). These reflex- and habit-based responses (including freezing and habits of politely responding to aggressive and dominant people) are outlined below.

Reflex Responses

Reflex responses may include a **brief freeze response** when the threat is detected, during which movement ceases and the brain rapidly and automatically assesses the attack and possible escape options.

Following this initial “freeze,” other automatic reflex responses can include:

- **Dissociation**, where awareness is disconnected from emotions and body sensations, and one may operate on “autopilot” or with extreme passivity – even potentially engaging in sex acts without consciously choosing to do so.
- **Tonic immobility**, where the person cannot move or speak, and muscles are rigid (this is different from the initial freeze response).
- **Collapsed immobility**, involving sudden loss of oxygen to the brain, leading to dizziness or passing out, and muscles may become limp.

These reflex responses are so common among humans that some professionals – such as law enforcement – must train *continuously for years*, in the hopes of avoiding and overcoming them during a traumatic situation such as an officer-involved shooting.⁹

Habit Responses

In addition to reflexes, during severe stress and trauma, humans can revert to habit responses that are rooted in:

⁹ The word “freeze” is often colloquially used to describe any lack of movement by people during a traumatic situation. However, in terms of the scientific research, this word is only used for the initial inhibition of movement that often arises at the point when an attack or other source of danger is detected.

- **Social conditioning**, such as how girls and women are socialized to respond to males' unwanted sexual advances in "nice," polite, face-saving ways;
- **Habitual ways of dealing with aggressive and dominant people**, which we all have learned in the course of our lives; and
- **Habits learned to cope with past abuses** (including abuse in childhood).

For example, statements of protest or resistance may be simple, habitual, passive, and ineffective ("It's late," "Someone will hear us," "You have a girlfriend").

Memory Processes

When the defense circuitry dominates the brain, it has rapid and ongoing impacts on memory processes, including how different aspects of the experience are encoded and stored – or not.

Central Details

The human brain is always filtering and extracting sensory information, encoding some of it into short term memory, and storing some of that into long-term memory. Parts of experiences that receive attention and have emotional significance are **central details**; these are well encoded and likely to be retained in memory, and this is particularly true for stressful and traumatic experiences.

- Because the defense circuitry focused attention on these details and engaged neurobiological processes to strengthen their encoding and storage, such central details are generally accurate, consistent, and often able to be corroborated.¹⁰
- These central details may not initially seem important to the investigation, from a traditional law enforcement perspective (because they might not establish elements of the offense, identify a suspect, etc.).
- However, they can be important if they help to corroborate the victim's state of fear, stress, and trauma, or if they corroborate information about events or the victim being in a certain location, etc. (For example, a victim may offer a detailed description of a specific table or plant in a room.)

¹⁰ Even central details can be distorted by external interference (such as repeated leading questions by an interviewer) and strong internal (but not necessarily conscious) motivations. However, they are much less susceptible to distortion than peripheral details (aspects of the experience that received little or no attention during the traumatic event, and had little or no significance attached to them at the time). See Van Damme, I. & Smets, K. (2014). The power of emotion versus the power of suggestion: Memory for emotional events in the misinformation paradigm. *Emotion*, 14, 310-320.

Peripheral Details

In contrast, **peripheral details** are those that the defense circuitry gave little or no attention or significance to during the attack, because they were not assessed as relevant to survival or coping at the time. As a result, peripheral details are likely to be remembered poorly, if at all, and/or inconsistently over time.

- Unfortunately, these peripheral details are often the focus of a traditional law enforcement interview. For example, investigators will typically ask a sexual assault victim about specific aspects of the suspect's appearance and actions that have direct relevance to the investigation (e.g., whether the suspect penetrated the victim, how many times, and whether he ejaculated). While many people (including investigators) will assume such details had central importance to the victim at the time and therefore will be remembered, the defense circuitry may have automatically directed the victim's attention elsewhere, in which case these seemingly key details would in fact be peripheral.
- Such a focus on details that were peripheral for the victim at the time, especially when combined with leading questions, is a major cause of inaccuracies and inconsistencies in victims' memories.

In addition, **contextual information** (such as the layout of a room) and **time-sequence information** (like the order in which sex acts were perpetrated) are often poorly encoded or stored. Even in non-stressful and non-traumatic situations, the brain doesn't always encode or store time sequencing information very well, and this deficit can be even greater for stressful and traumatic experiences.¹¹

Victim Credibility

Because of these scientifically well-established memory processes, Dr. Hopper (2018) counsels not to assume that victims who "fail" to recall such peripheral details, or recall them inaccurately or inconsistently, lack credibility.

- Not recalling such details may simply indicate that those details were not encoded into memory in the first place or were not retained, which should be *expected* of a brain for *any* experience, especially a traumatic one. For example, law enforcement professionals recognize that colleagues involved in officer-involved shootings often don't remember drawing their weapon or how many shots were fired, let alone whether the suspect was holding a gun or other weapon, in their right or left hand. Without an understanding of trauma and memory, supervisors might doubt an officer's credibility and wonder if they are covering something up or not telling the truth.

¹¹ For an introduction to the scientific research on the encoding and storage of central vs. peripheral details for stressful experiences, see Dr. Hopper's blog post, "[Why Incomplete Sexual Assault Memories Can Be Very Reliable.](#)"

- Remembering such details inaccurately or inconsistently may indicate, as can sometimes be verified by recordings or transcripts of investigative interviews, that those inaccuracies and inconsistencies were created, at least in part, by inappropriate interviewing practices. Family members, friends, and others can also inadvertently contribute to such inaccuracies and inconsistencies.

Super-Encoding vs. Minimal-Encoding

Finally, it is worth noting that experiences are often well encoded around the time the threat was first detected (“when the fear kicked in”). At that point the hippocampus, a particular brain structure involved in memory formation, can temporarily go into a **super-encoding mode**. This is why victims often remember many more details from the beginning of a sexual assault (just as police officers often remember what happened just before they fired their gun). Also, memories of the attack’s onset may include substantial information about context and time-sequence.

However, at a later point (from 3 to 20 minutes later, depending on a variety of factors) the hippocampus can switch to a **minimal-encoding mode**. This shift is understood by neuroscientists as protecting the hippocampus from negative consequences that could result from staying too long in the super-encoding mode. This also involves the hippocampus dedicating resources to storing information captured in the initial super-encoding phase.¹²

Fragmented Memories

The factors described above – differential encoding of central vs. peripheral details, and impaired ability to encode and store more complex information, especially during the minimal-encoding phase – contribute to the “fragmented memories” that are so often seen among sexual assault victims,¹³ and are too often misinterpreted as evidence that they are lying or otherwise not credible. Interviewers who don’t push for information that was not encoded or stored, because they understand how stress and trauma effect memory formation, and who use effective interviewing practices, are: (a) much more likely to collect potentially important central details, and (b) much less likely to contribute to inaccuracies and inconsistencies in peripheral details or time-sequencing information.

¹² For an introduction to the research on these time-dependent effects of stress on the functioning of the hippocampus and memory formation, see Dr. Hopper’s blog post, [“Why Christine Blasey-Ford Can’t Remember How She Got Home.”](#)

¹³ “Fragmented memories” are also seen among others who have experienced traumatic events, such as victims of physical violence, police officers involved in shootings and other traumatic on-duty experiences, and soldiers who are recalling traumatic combat experiences.



For more information about the neurobiology of stress and trauma, please see EVAWI's training bulletin, [Understanding the Neurobiology of Trauma and Implications for Victim Interviewing](#) (Wilson, Lonsway & Archambault, 2016). In addition, you can find resources on the [neurobiology of trauma on EVAWI's website](#). Also see materials posted on Dr. Jim Hopper's website on [Sexual Assault & The Brain](#).

Not Only Is the Science Strong – It Keeps Getting Stronger

It is important to recognize that the scientific findings described above are robust and reliable, as evidenced by decades of work published in prestigious peer-reviewed journals.¹⁴ To illustrate, in 2015 the *Harvard Review of Psychiatry* published a thorough review of the neuroscientific and behavioral research on various “survival reflexes” (or “animal defense responses”) exhibited by humans and animals in traumatic situations.¹⁵ The lead author of that article, Dr. Kasia Kozłowska, is an international expert in the field, and she referenced over 200 other scientific publications in that review.

Yale neuroscientist Dr. Amy Arnsten is a leading expert on stress-induced impairment of the prefrontal cortex. In 2009¹⁶ and 2015¹⁷ she published comprehensive reviews of the extensive research on how stressful experiences can impair functioning of the rational prefrontal cortex and lead people to rely on more automatic responses such as habits and reflexes. Other reviews, written by Dr. David Diamond and colleagues in 2007¹⁸ and Dr. Lars Schwabe in 2017,¹⁹ have summarized and synthesized numerous studies showing that the onset of stress can first enhance encoding and storage of information in memory, and then switch to impairing encoding as the stressful condition continues.

¹⁴ Hopper, J. (January 22, 2018). [Sexual assault and neuroscience: Alarmist claims vs. facts](#). *Psychology Today* (online).

¹⁵ Kozłowska, K., Walker, P., McLean, L., & Carrive, P. (2015). [Fear and the defense cascade](#). *Harvard Review of Psychiatry*, 23 (4), 263-287.

¹⁶ Arnsten A. (2009). [Stress signaling pathways that impair prefrontal cortex structure and function](#). *Nature Reviews Neuroscience*, 10 (6), 410-422.

¹⁷ Arnsten, A. (2015). [Stress weakens prefrontal networks: Molecular insults to higher cognition](#). *Nature Neuroscience*, 18 (10), 1376-1385.

¹⁸ Diamond, D., Campbell, A., Park, C., Halonen, J., & Zoladz, P. (2007). [The temporal dynamics model of emotional memory processing: A synthesis on the neurobiological basis of stress-induced amnesia, flashbulb and traumatic memories, and the Yerkes-Dodson law](#). *Neural Plasticity*, 60803, 1-33.

¹⁹ Schwabe, L. (2017). [Memory under stress: From single systems to network changes](#). *European Journal of Neuroscience*, 45 (4), 478-489.



Hundreds of other studies demonstrate that the “central details” of any event, including traumatic ones, can be strongly encoded and stored, because they had the most attention and/or emotional significance at the time.²⁰ On the other hand, “peripheral details” may be poorly encoded and stored, or not at all, by someone experiencing any event, especially a traumatic one. Peripheral details are more likely to quickly fade in memory, rendering them unavailable for later recall or vulnerable to being recalled inconsistently. Indeed, the differential encoding and storage of central vs. peripheral details is *even greater* for stressful and traumatic events, and this is just as true for soldiers’ memories of combat and police officers’ memories of shootings as it is for anyone’s memories of a sexual assault. As scientists who study this know, that’s simply how evolution has shaped our brains to encode and store information, especially for stressful and traumatic experiences.

In sum, there is no question that the existing science on the neurobiology of stress and trauma is solid, especially for responses during the event and how memories are typically encoded and stored. The research is robust and reliable. As Dr. Hopper has concluded, “Not only is the science strong – it keeps getting stronger.”²¹



Subjective Appraisal of Traumatic Experiences

While the science is strong in terms of how people respond to traumatically stressful events, the appraisal of experiences as traumatically stressful (or not) is subjective to a large degree. In other words, the same event might be experienced as traumatic to one person but not another. This will be influenced by variables operating at a variety of different levels: individual, interpersonal, community, societal, and cultural – even the period of time in history.²² A few such variables include:

- The severity and frequency of the traumatic event(s)
- Whether the traumatic event was repeated/ongoing (for example, in the context of intimate partner violence, human trafficking, or stalking)
- Characteristics of the victim (age, socioeconomic status, racial/cultural group)
- Personal history (including prior victimization, responses to past disclosures, and training to respond in situations such as combat or critical incidents)
- Beliefs, values, and coping skills (including maladaptive coping skills)

²⁰ Levine, L. & Edelstein, R. (2009). [Emotion and memory narrowing: A review and goal-relevance approach](#). *Cognition and Emotion*, 23, 833-875; Mather, M. & Sutherland, M. (2011). [Arousal-biased competition in perception and memory](#). *Perspectives in Psychological Science*, 6 (2), 114-133.

²¹ Hopper, J. (January 22, 2018). [Sexual assault and neuroscience: Alarmist claims vs. facts](#). *Psychology Today* (online).

²² For a detailed description, please see *Trauma-Informed Care in Behavioral Health Services: Treatment Improvement Protocol (TIP), Series 57*, published by the Substance Abuse and Mental Health Services Administration (2014). HHS Publication No. (SMA) 13-4801 (especially Exhibit 1.1-3, p. 16).



- Mental health, presence and severity of any mental illness
- Level of support from friends, family members, and professionals²³

While factors such as these will influence *whether an individual subjectively experiences an event as traumatically stressful*, the brain-based processes that unfold after an event has been appraised as traumatically stressful *are not subjective at all*. Those are detailed in the scientific findings summarized earlier.

Science Helps to Understand Sexual Assault Victims

Equally important, these scientific findings have been tremendously helpful for increasing our understanding of the behaviors sexual assault victims commonly exhibit just before and during an attack. To illustrate, if responding professionals do not know anything about common brain-based responses to sexual assault (such as impaired prefrontal cortex function, freezing, passive habit behaviors, dissociation, tonic immobility, or collapsed immobility), they might wonder why a victim did not resist the assault – and question whether this means the sexual contact was consensual.

Similarly, if they don't understand basic information about the functioning of the brain's hippocampus and the distinction between central vs. peripheral details, they might question why the victim can't remember what seem (to the investigator during an interview, but not to the victim's brain at the time) like basic or crucial details about the assault, but *can* recall what might seem to be insignificant information in great detail.

If investigators don't understand that the hippocampus can go into a minimal-encoding mode after an initial super-encoding mode, it won't make sense when a victim is able to recall a great deal about the initial moments of the sexual assault, but very little about later aspects. Too often, such memories lead investigators to believe that a victim is being "selective" and untruthful about the information they relay during an interview.



Every Victim's Reaction is Unique

Although there are many deeply-held societal expectations about how victims "should" respond to a sexual assault, the countless factors affecting individual experience mean that victims will exhibit practically every imaginable response. Clearly, each victim is unique, and every situation or event is unique, so it stands to reason that an individual victim's response will be unique in important ways.

²³ Drawn in part from the Santa Barbara Graduate Institute, Center for Clinical Studies and Research & Los Angeles County Early Intervention and Identification Group (n.d.). Emotional and Psychological Trauma: Causes and Effects, Symptoms and Treatment. Reprinted from Helpguide.org (2005). Also see Yuan, N.M., Koss, M.P., & Stone, M. (2006, March). [The Psychological Consequences of Sexual Trauma](#). Harrisburg, PA: VAWnet, a project of the National Resource Center on Domestic Violence..

Detectives: “I Wish I Knew This Years Ago”

Time and time again, we hear law enforcement professionals describe how this information on the neurobiology of trauma has helped them to better understand victim responses, behaviors, and memories, and to view their interactions in a radically different way. Many say they wish they had this information years ago, as they reflect back on past interviews.

For example, when EVAWI first published our training bulletin, [Understanding the Neurobiology of Trauma and Implications for Interviewing Victims](#), one police academy administrator at a Peace Officer Standards and Training (POST) agency said:

I spent about 10 years of my law enforcement career as a criminal investigator, and I want to tell you that I wish your article was available then, as I find it a most valuable tool containing knowledge that every law enforcement officer should be trained in.

Since this training bulletin was first posted on our website in November 2016, it has been downloaded more than 25,000 times, and it is consistently the single most downloaded document from our Resource Library (which includes about 1,000 resources). In the first 9 months of 2019, for instance, this one document was downloaded more than 4,000 times, an average of 17 times *every single day*. Clearly, many professionals find this information valuable for guiding practices in the field.

The Importance of Properly Applying Science to Practice

Having said all this, there is a legitimate concern that the scientific literature is currently being misinterpreted and misapplied in some trainings (and court testimony), and this can yield inaccuracies and inappropriate conclusions during the course of a sexual assault investigation. The reality is that some people who are teaching, and potentially testifying on the neurobiology of trauma, do not have sufficient background or expertise in the area, and they have not carefully examined the existing research – or at least scientifically sound reviews of it – let alone analyzed appropriate versus inappropriate applications. This can result in inaccurate information being passed along, sometimes in ever-widening circles, as one professional shares their misinterpretations or misinformation with others during a training or more informally through word-of-mouth.

In addition, findings from the neuroscientific research are sometimes oversimplified and/or overgeneralized. For example, it is not accurate to simply state that stress and trauma “impair” the brain or memory in some general or overarching way; the processes involved are complex, and they have a range of intersecting impacts. Similarly, it is unwarranted to assume or act as if neurobiology can explain *everything* in terms of how victims respond during and after a sexual assault. We have already described the areas where neuroscientific research is extremely well-established, in explaining processes involved in how brains respond during stress and trauma, and how stress and trauma

can impact post-traumatic memory storage and retrieval. Not as advanced, however, is research on the neurobiological bases of *post*-traumatic behaviors.

The value of this scientific knowledge therefore depends on how it is being applied and in what context. It is imperative that anyone teaching or testifying about the neurobiology of trauma remain within well-established findings of scientific research.²⁴

Inappropriate to Label or “Diagnose” Victim Responses

It is particularly important for investigators and other non-clinicians not to use this science to “diagnose” victim responses such as freezing, tonic immobility, or collapsed immobility. Such use of the science is clearly unjustified and inappropriate. It is not even the investigator’s role to determine whether someone has experienced trauma. As taught in any report writing class for law enforcement, the investigator’s job is to document the statements and observable behaviors of victims (as well as suspects and witnesses). Explaining or interpreting responses should be left to experts.

To illustrate, investigators should not write in their report that the victim “went into tonic immobility” or “experienced fragmented memory,” unless this is exactly what the victim said (which is unlikely). Instead, investigators should focus on documenting how victims describe their own experience, with quotation marks to indicate their exact wording.

In addition, investigators should document the victim’s behavior with concrete and objective wording that is free of interpretation. For example, rather than saying that the victim “exhibited dissociation” during the interview, the investigator should simply document that the victim “did not make eye contact,” “stared at the wall throughout the interview,” “exhibited flat affect,” “spoke without any emotional expression,” etc.

Similarly, when victims say they “froze” during the sexual assault (which they often do), investigators should document this exact wording, but then go on to explore what this means for the victim. Using open-ended prompts, investigators can strive to elicit a detailed description of the physical, sensory, and emotional aspects of the victim’s experience. For example: “Tell me more about when you ‘froze.’” “What were you feeling at that point?” or “What was going through your head when you ‘froze?’” Then the investigator can document these thoughts, feelings, and experiences from the victim’s perspective, and not simply write down that the victim “froze” without indicating what the victim actually means by that.

²⁴ Some of the writings that professionals should read, understand (at least the gist), and apply appropriately are cited in previous footnotes, including scientific literature reviews authored by Gagnon & Wagner (2016), Wolf (2017), Arnsten (2009, 2015), Kozłowska (2015), Diamond et al. (2007), Schwabe (2017), Levine & Edelstein (2009), and Mather & Sutherland (2011). Also essential are the writings of Dr. Jim Hopper on [Sexual Assault & The Brain](#) and an EVAWI training bulletin entitled, [Understanding the Neurobiology of Trauma and Implications for Interviewing Victims](#).

Besides being the most appropriate way of documenting victim behaviors, this style of documentation also avoids the scenario where an investigator (or other non-clinician who uses such terminology in their report) is called into court to defend their “diagnosis” (on the basis of science they might not be able to explain). It also avoids mislabeling a behavior, or incorrectly explaining a behavior based on the neurobiology of stress or trauma when it is actually due to some other cause. For example, trauma can certainly cause gaps and inconsistencies in memory, but so can alcohol or drug use, inappropriate interviewing tactics, and many other factors. Investigators should not assume the role of scientists or clinicians; they are factfinders, and their critical value lies in their ability to accurately gather, investigate, and document information.



For more information, please see EVAWI’s OnLine Training Institute (OLTI) module entitled, [Effective Report Writing: Using the Language of Nonconsensual Sex](#).

Trauma Symptoms Do Not Prove or Disprove Sexual Assault

Another key point is that observable (potential) indicators of neurobiological processes should not be used as direct evidence of a sexual assault, for the purpose of criminal, civil, or campus investigation or adjudication. Neuroscientific knowledge can certainly help investigators and others understand why victims of sexual assault might behave and remember in the ways they do, and it can also inform the strategies and techniques used to conduct interviews and investigations. However, the responses and memories themselves do not prove that an assault was committed or took place as described.

This point can be illustrated with one common response: Gaps or inconsistencies in a victim’s memory of sexual assault. In the past, this has often been viewed as evidence of deception, even though there is no scientific basis for this. Indeed, normal memory functioning, as well as the impacts of stress and trauma, can cause such gaps and inconsistencies (as a result of the differential encoding and storage of central vs. peripheral details, or the ways stress can impair recall). This is one of the primary gifts from the neurobiological research: It can validate people’s responses to sexual assault and their memories of the event – both in their own eyes and the eyes of others, such as investigators and other responding professionals – all with the credibility of science.

However, these gaps and inconsistencies are not direct evidence of a sexual assault, just as they are not, on their own, evidence of lying. Assuming this would put us in the untenable position of defending why an apparent *absence* of such gaps or inconsistencies for other victims wouldn’t call their credibility into question.²⁵ As Dr. Hopper has noted: “Such gaps and inconsistencies are never, on their own, proof

²⁵ Other examples can be used to illustrate the same point. For example, if we claim that lack of emotion exhibited by a victim in one case is clearly indicative of a sexual assault, because we know that lack of emotion is a possible response, then we can’t turn around and claim, with another victim, that hysteria or crying is just as indicative of the same experience.

of *anyone's* credibility, innocence, or guilt."²⁶ This is true regardless of whether it is for the purposes of criminal, civil, or campus investigation or adjudication.

Understanding Trauma to Improve Investigative Practices

Dr. Hopper's quote provides a good transition to our next point, because it raises the question of whether there is *other evidence* that can corroborate a report of sexual assault, beyond victim statements. This is another area where neuroscience can be helpful, by informing strategies for interviewing sexual assault victims *and following up on that information* to conduct thorough and unbiased sexual assault investigations.

In EVAWI's training materials, we seek to outline the most effective techniques for interviewing survivors in a way that maintains their dignity and increases their willingness to participate in the criminal justice process. This also helps to maximize the information and evidence gained, to reach appropriate case determinations.

But the victim interview is not the only step in a thorough sexual assault investigation; it is just the starting point. A thorough investigation should include numerous additional steps. For example, investigators will need to gather and review background information and evidence such as: criminal history checks, crime scene diagrams, and 911 calls, in addition to other phone calls, text messages, photographs, security tapes, reports from a medical forensic exam, etc. They will also need to interview the suspect(s) and any witnesses. An understanding of trauma, including the neurobiology of trauma, can inform the ways in which these other types of evidence are collected, documented, and – perhaps most important – interpreted within the context of a sexual assault case.

One example is how investigators might follow up on information the victim provides about how the experience of the sexual assault changed them. During a detailed interview, the victim can be asked to describe who they are now, and how this is different from who they were before the sexual assault. This information may then be corroborated in interviews with friends and family members, classmates and co-workers. If there is evidence that the victim has changed their personality or behavior in important ways, this may corroborate the victim's report of being sexually assaulted. This type of corroboration can be especially critical for victims who cannot verbally articulate these changes themselves, for example, as a result of their age, experience, incapacitation, or a disability affecting their cognitive ability or communication.

²⁶ Hopper, J. (January 22, 2018), [Sexual assault and neuroscience: Alarmist claims vs. facts](#). *Psychology Today* (online).

Conclusion

As professionals and the public have focused attention on the low rates of reporting, investigation, prosecution, and conviction for sexual assault, it has become increasingly clear that we need to improve how sexual assault victims are interviewed. Better interviews result in more thorough investigations that can effectively exclude suspects, gather evidence to establish probable cause when a viable suspect is identified, and support referrals for prosecution with a better chance of holding offenders accountable. Training in well-established neurobiology basics can help to support this effort.

The utility of this science is not for investigators to label or explain any particular victim behavior. It is not to prove that the sexual assault did, or did not, occur. Rather, the science can help investigators create a safe and nonjudgmental orientation toward interviewing, focused on *carefully listening to victims* and documenting what they say and do in the interview, without leaping to premature conclusions or judgments. It can also help investigators avoid poor interviewing practices such as constantly interrupting a victim or witness, asking leading questions, or pushing for peripheral details that may never have been encoded or retained by the victim's brain — all based on erroneous beliefs about how memory works, including how memory is impacted by stress. To that extent, the science can help us to counter common misconceptions and sources of bias in sexual assault interviews, and improve sexual assault investigations.

For More Information

EVAWI offers a training bulletin entitled, [Understanding the Neurobiology of Trauma and Implications for Victim Interviewing](#) by Dr. Chris Wilson, Dr. Kim Lonsway & Sgt. Joanne Archambault (Ret.), with contributions by Dr. Jim Hopper (2016).

EVAWI also offers a 2-part webinar series on *Neurobiology of Sexual Assault*, with training provided by Dr. Jim Hopper (2016): [Part 1: Experience and Behavior](#) and [Part 2: Experience and Memory](#).

Also see materials posted on Dr. Jim Hopper's website on [Sexual Assault & The Brain](#). Resources include articles, blog posts, and videos of training presentations, both brief and more detailed. Included among these resources is a [1-page handout \(2019\)](#) with key information and recommendations for investigators, advocates, and other professionals implementing trauma-informed interviewing practices with sexual assault victims, as well as a [Post-Training Handout for Interviewers: Preparing for Victim/Survivor/Complainant Interviews](#)