

# THE IMPACT OF TRAUMA ON BRAIN, EXPERIENCE, BEHAVIOR AND MEMORY

April 1, 2016

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## **Why Many Rape Victims Don't Fight or Yell** **2-4**

This article, originally published in *The Washington Post's* "Grade Point" Higher Education Blog, provides a basic introduction to automatic and brain-based responses to traumatic events, which are sometimes misinterpreted (by investigators, prosecutors, the general public and even survivors themselves) and then misused in attempts to assess consent and credibility. The article contains links to additional materials for those seeking more in-depth scientific information.

## **Why Rape and Trauma Survivors Have Fragmented and Incomplete Memories** **5-7**

This article, originally published by *Time.com*, provides an introduction to the impact of trauma on memory and recollection, including how traumatic events may affect an individual's ability to recall or give proper sequence to details, including information that an objective observer (and even the victim/survivor/complainant) would deem vital and seemingly "unforgettable."

## **Preparing for Victim/Survivor/Complainant Interviews** **8-14**

This document summarizes the information provided during the presentation. It is a useful training tool for inexperienced investigators and provides a good review for experienced investigators regarding complainant interviews.

## Why many rape victims don't fight or yell<sup>1</sup>

By James W. Hopper

*James W. Hopper, PhD, is an independent consultant and Teaching Associate in Psychology in the Department of Psychiatry of Harvard Medical School. He has conducted research on the neurobiology of trauma, and trains investigators, prosecutors, judges, and higher-education professionals on its implications. Here, he offers his explanation of why people don't always respond to an attack the way others might expect:*

In the midst of sexual assault, the brain's fear circuitry dominates. The prefrontal cortex can be severely impaired, and all that's left may be reflexes and habits.

In the Washington Post's recent [series on college sexual assault](#), many victims describe how they reacted – and did *not* react – while being assaulted. [Another article](#) also published this month, in the *Harvard Review of Psychiatry*, shows that some responses have been programmed into human brains by evolution.

Bringing together the accounts of those who have been assaulted with the neurobiology of trauma can play an essential role in supporting healing and the pursuits of accountability and justice.

For example, *freezing* is a brain-based response to detecting danger, especially a predator's attack. Think deer in the headlights.

As one woman told the Post, “I didn't say no, but I didn't really know what to do. I just kind of froze.”

Freezing occurs when the amygdala – a crucial structure in the brain's fear circuitry – detects an attack and signals the brainstem to inhibit movement. It happens in a flash, automatically and beyond conscious control.

It's a brain response that rapidly shifts the organism into a state of vigilance for incoming attacks and avenues of escape. Eyes widen, pupils dilate. Hearing becomes more acute. The body is primed for fight or flight. But as we shall see, neither fight nor flight necessarily follows.

Simultaneously with the freeze response, the fear circuitry unleashes a surge of “stress chemicals” into the prefrontal cortex, the brain region that allows us to think *rationally* – to recall the bedroom door is open, or that people are in the dorm room next door, for example, and to *make use* of that information. But the surge of chemicals [rapidly impairs the prefrontal cortex](#).

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<sup>1</sup> Originally published by The Washington Post in its “Grade Point” higher education blog, June 23, 2015.

That's because, despite our dominant role on the planet now, we evolved as *prey*, and when a lion or tiger is upon us, stopping to think is fatal.

Indeed, no one understands better than the military that intense fear impairs our prefrontal cortex and capacity for reason.

When bullets are flying and blood is flowing, you had better have some *really effective habit learning* to rely upon. That's why combat training is rigorous and *repetitive* – to burn in habits of effectively firing weapons, executing combat formations, etc.

But what if you're being sexually assaulted and there's no [effective habit learning](#) to fall back on?

What if you're a woman and the only habits your brain cues up are those you've always relied upon to ward off unwanted sexual advances – like saying, “I have to go home now” or “Your girlfriend will find out”? Those phrases, and passive behaviors that go with them, may be your only responses, until it's too late.

Countless victims of sexual assault describe just such responses. Too often police officers, college administrators, even friends and family think to themselves – and say out loud – “Why didn't you run out of the room?” “Why didn't you scream?”

For those who assume a functional prefrontal cortex – including many victims as they look back on what happened – passive habit responses can be baffling. They seem exactly the opposite of how they surely would – or should – have responded.

But when the fear circuitry takes over and the prefrontal cortex is impaired, [habits](#) and [reflexes](#) may be all we've got.

And if the fear circuitry perceives escape as impossible and resistance as futile, then not fight or flight, but *extreme survival reflexes* (which scientists call [“animal defense responses”](#)) will take over. These can activate automatically when the body is in a predator's grip – and when, as half of rape victims report, we fear death or serious injury.

One such response is *tonic immobility*. In freezing, brain and body are primed for action. But in tonic immobility, the body is literally paralyzed by fear – unable to move, speak, or cry out. The body goes rigid. Hands may go numb.

*Collapsed immobility* is another. Think possum, playing dead. To see what this looks like (and get a humorous break from this difficult topic), you can watch the YouTube videos that come up for [“passes out on Slingshot ride.”](#)

Some people describe feeling “like a rag doll” as the perpetrator did whatever he wanted. And thanks to rapid drops in heart rate and blood pressure, some become faint and may even pass out. Some describe feeling “sleepy.”

Too often, from precinct stations to courtrooms, victims are met with disbelief: *How could it be rape if you were sleepy?!*

Another, more common reflexive response is *dissociation*: spacing out, feeling unreal, disconnected from the horrible emotions and sensations of such an intimate violation.

Unless someone is drugged or intoxicated into unconsciousness, eventually the brain’s fear circuitry will detect the attack.

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.

Few who have experienced these responses realize that they are brain reactions to attack and terror.

They blame themselves for “failing” to resist. They feel ashamed. (Men especially may see themselves as cowards and feel like they’re not real men.) They may tell no one, even during an investigation. Sadly, many investigators and prosecutors still don’t know some or all of these brain-based responses.

*[Men with unwanted sexual encounters often fear they won’t be taken seriously.]*

None of these responses – in women or men – entails consent or cowardice.

None is evidence of resistance too insufficient to warrant our respect and compassion.

They are responses we should *expect* from brains dominated by the circuitry of fear (just as we should expect fragmented and incomplete memories).

May the day come when everyone who knows someone who has been sexually assaulted – which is all of us, whether we know that yet or not – understands these basic ways that our brains can react to such attacks and uses this knowledge to foster healing and justice.

## Why Many Rape and Trauma Survivors Have Fragmented and Incomplete Memories<sup>2</sup>

*James Hopper, Ph.D., trains investigators, prosecutors, judges and military commanders on the neurobiology of sexual assault.*

**In the midst of assault, the brain's fear circuitry takes over and other key brain areas are impaired or even effectively shut down. That's supposed to happen, and accounts for the fragmentary and incomplete nature of most rape memories.**

The door flies open and the police officer suddenly finds himself on the wrong end of a gun. In a flash, his brain is hyper-focused on the weapon. Because of that tunnel vision at the time, later he will remember few details that his brain did not perceive as critical to his immediate survival. Did the shooter have a moustache? What color was his hair? What was he wearing?

Afterwards, when trying to write his report, the officer may be frustrated to find he's unable to remember important details. He may be uncertain and confused about many others, and even recall some inaccurately. Yet he will also remember some elements – the things his brain had focused on – with extraordinary accuracy. He may never forget them.

The officer's immediate reactions and limited memories are not results of poor training. His brain responded to a life-threatening situation just the way it is supposed to.

The brains of rape victims respond the same way when they are being terrorized by the assault.

In my training of police officers, prosecutors, judges, university administrators and military commanders about the memories of rape victims, I've found that it's helpful to share what's known about how traumatic experiences affect the functioning of three key brain regions.

One is the prefrontal cortex. This is the part of our brain that allows us to focus attention where we consciously choose, not where fear or desire automatically demand. It also allows us to think rationally and consider our options, not just react from reflex and habit. You are using your prefrontal cortex right now, to focus your attention on these words, to screen out other things going on around or inside of you, and perhaps at times to stop and reflect on what I've written.

But if gunshots and screaming rang out nearby, your brain would suddenly shift into a totally different mode. Your brain's fear circuitry – which includes a little structure called the amygdala – would kick in and start running the show. And one of its first acts would be to [rapidly impair your prefrontal cortex](#) – maybe even effectively shut it down – by releasing a surge of stress chemicals.

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<sup>2</sup> A version of this article, co-authored with David Lisak, Ph.D., originally was published by Time.com on December 9, 2014.

Why is this true? We may dominate the planet now, but we evolved as prey, and shutting down the prefrontal cortex is the way to go when stopping to think means becoming some bigger animal's lunch. Instead, with the fear circuitry in control, our brains can rely on tunnel-vision attention and life-saving [reflexes](#) and [habits](#).

So inevitably, at some point during a traumatic experience, like a shooting or a rape, the brain's fear circuitry is going to take over. And when it does, it – not the prefrontal cortex – will control where attention goes. It could be the sounds of gunfire. It could be the excited or cold facial expression of a predatory rapist, the grip of his hand on one's neck. Or it could be a plant across the room or a fan whirring overhead, focused upon in an attempt to escape from horrible sensations in one's body.

Either way, what gets attention tends to be fragmentary sensations – not all the details that a video camera or less-terrified brain would see. And only those fragments that get fear-driven attention will reliably get into memory.

Finally, the brain's fear circuitry impacts a third key brain area, the hippocampus. It is the hippocampus that puts what gets attention into short-term memory and can store them away as long-term memories.

But 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-sequence information, like whether the perpetrator ripped off a shirt before or after saying "you want this."

This understanding of altered brain functioning in traumatic and terrifying situations comes from decades of research, which continues to give us important new knowledge. Recent work has shown that right after fear (or just stress) hits, the hippocampus briefly enters a super-encoding state. Someone may remember in vivid detail what was happening just before and after they realized they were being attacked, including even contextual information and the sequence of events. But after that the hippocampus goes into a different mode, where its resources are devoted to encoding that initial information, not whatever has been happening since then.

Again, this makes sense: If an animal is to survive, it's most important to remember *what predicted an attack*, not exactly what happened after the attack was underway. (What enabled survival was reflexes and habits, and will next time too.) Like your prefrontal cortex and your smartphone's memory, the hippocampus is a limited-capacity processor. So when it's flooded with stress chemicals and focused on storing that critical predictive information, it can absorb very little new information, especially about more complex contexts and time sequences.

For all of these reasons, it totally makes sense that rape victims tend to have vivid memories of what was happening when the fear kicked in, and after that mostly what seemed critical to

survival and coping. It totally makes sense that most of their memories of the assault will tend to be fragmentary, incomplete, and not in a clear sequence.

(Alcohol and drug intoxication don't change these basic facts unless the person was passed out or blacked out, when little or nothing gets into memory.)

Clearly these understandings of how trauma and fear impact the brain and memory have huge implications for the criminal justice system.

Just as it is not reasonable to expect every rape victim to fight or yell, it is not reasonable to expect someone who endured a major trauma – whether a rape victim, police officer or soldier – to recall the traumatic event the way they would recall their wedding day. They will remember some aspects of the experience in excruciatingly vivid detail. Indeed, they may spend decades trying to forget them. They will recall other aspects – including ones they really wish they could – not at all or only in confusing and jumbled fragments.

Even police officers who have never been taught about trauma and the brain understand most of this quite well – at least when it comes to their own traumatic experiences on the job. They know how hard it can be, when they're trying to write a report afterward, to remember everything that happened during a particularly violent arrest or after arriving at a particularly horrifying crime scene. They know that what grabbed their attention and got into their memories can be very different from what their fellow officers on the scene remember. And they know how difficult or impossible it can be to recall the exact sequence of events.

Now it's time for all police officers – and prosecutors and judges, and all of us who hear or read about rape victims doing their best to remember what happened – to understand that the same things are true of rape victims' brains and memories.

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**Post-Training Handout:  
Preparing for Victim/Survivor/Complainant Interviews**

Jim Hopper, Ph.D., December 2015

**I. Information to Consider and Review Before the Interview**

A. Brain-based Effects: Vulnerability and Needs

1. Individuals who are reporting a recent sexual assault as well as those who are reporting a sexual assault that occurred long ago are highly vulnerable. It is important to respond to both in the same way.
2. 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.
3. 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.
4. To the victim/survivor/complainant, having to talk about the assault feels like having their avoidant and dissociative ‘defenses’ battered down. This can cause them to have difficulties recalling – even if they sincerely try to do so – parts of the assault experience that are particularly disturbing or about which they feel a great deal of shame. Or after disclosing such painful and disturbing experiences in response to an interviewer’s questions, they may feel violated like they did during the assault, or emotionally overwhelmed and re-traumatized.
5. The victim/survivor/complainant most needs safety, control, trust, understanding, and compassion. Consider ways you can meet these needs within the boundaries of your role. For example, an investigator can often provide the individual with some control by having him/her state what occurred in their own way, as a narrative without interruption. The investigator can then ask follow up questions, as warranted. Even giving him/her simple options and choices, for example about whether they want a drink and whether it’s water or something else, or when to take breaks, or where to sit, can be experienced as compassionate and empowering.
6. How you respond *will* make a difference in the individual’s trust in you and your process, as well as their path toward healing.



B. Brain-based Effects: Memories

1. “Central details” are those details to which the victim/survivor/complainant paid attention during the assault.
  - a. These details are generally very well encoded into memory
  - b. These details are likely to be accurate, consistent and corroborated (including by perpetrator)
  - c. These details may not seem central to the investigation (e.g., the individual may describe an end table in great detail, but may not remember some of the details of what was done to them physically during the assault), but may be evidence that the individual experienced trauma, was in the described location, etc.
2. “Peripheral details” are those details to which the victim/survivor/complainant did not pay attention, probably because their fear circuitry didn’t see it as relevant to survival.
  - a. These details generally are not encoded into memory or are poorly encoded
  - b. These details are likely to be remembered poorly and/or inconsistently over time
  - c. These “peripheral details” (e.g., what the respondent said and did, whether others were present) may be the central focus of your investigation. Many individuals who do not understand how trauma affects memory find it difficult to understand a victim/survivor/complainant’s “failure” to recall such important information. This may include the victim/survivor/complainant himself/herself.
3. Contextual information and timing information are usually poorly encoded
4. Experiences around the time “when the fear kicked in” are likely to be well encoded
  - a. These details still require attention for encoding
  - b. These details may include contextual and time-sequence information
5. For the above reasons, victims/survivors/complainants will tend to:
  - a. Have difficulty recalling – despite great effort – important details of what happened and/or the order in which events unfolded, because it’s just “not there” to retrieve
  - b. Have fragments and “islands of memory” that are disorganized
    - i. They may only have access to fragmentary sensations and emotions

- ii. They will generally have “islands of memory” of key aspects of the assault, such as:
    - When their “fear kicked in”
    - When the experience of defeat/giving up happened (if present)
    - Their survival reflex states – freezing, dissociation, tonic immobility, collapsed immobility
    - The beginning or end of their survival reflex states
    - Anything they experienced as particularly intense or disturbing
  - c. Have memories that in some ways are inconsistent, not only across interviews, but even sometimes within a single interview
    - i. This generally happens with the “peripheral details” (those details to which they did not pay attention, perhaps because it was not deemed relevant to survival by their brain) and also to sequencing information.
    - ii. This generally does not happen with respect to the “central details” (those details to which they paid attention, for example, as their attention was captured by a sneer on the respondent’s face or rested on a spot on the wall as they disassociated).
6. You can make use of the both the strengths and limitations of the memories of those who have experienced trauma.
- a. Strengths: Those details upon which the victim/survivor/complainant focused their attention are well encoded. Thus it is likely that these details are accurate and capable of being corroborated, thereby enhancing both the individual’s credibility and the credibility of their account. The victim/survivor/complainant is generally best able to give detailed accounts of:
    - i. Key islands of memory
    - ii. When fear kicked in
    - iii. When experience of defeat/giving up happened (if present)
    - iv. Habit-based responses (e.g., “I said I had to go,” “I reminded him he has a partner,” etc.)
    - v. Survival reflex states – freezing, dissociation, tonic immobility, collapsed immobility

- b. Limitations: Those details upon which the victim/survivor/complainant did not focus attention (not as a result of conscious choices, but rather of their brain's automatic responses to the trauma they were experiencing), as well as contextual and time sequencing information
  - i. Not encoded or poorly encoded
  - ii. But can be used to demonstrate trauma and failure/inability to consent.

C. Brain-based Effects: Reenactment

- 1. The victim/survivor/complainant may have a history of child abuse or repeated assault, and if so may:
  - a. See you as a perpetrator or an uncaring bystander. This can particularly problematic if you strive to be “objective” and “neutral” in your demeanor, but do so in a manner that lacks compassion and warmth. In these interviews, connection and compassion – within your role and in ways that are effective for that particular interviewee – are prerequisites to obtaining the most complete, accurate and objective information. If you are perceived as uncaring or cold, the victim/survivor/complainant may feel very unsafe and be unable to recall important information. He/she may “shut down” emotionally and be unable to cooperate. If an interviewee has this reaction, even if you feel you have exhibited warmth and compassion appropriate to your role, it's important not to take it personally, to understand that this is a normal reaction for some victims/survivors/complainants (with histories of neglect and/or important bystanders who failed to protect them), and to find a way to reconnect with the interviewee and refocus on your role and the tasks to be accomplished (or attempted) through the interview.
  - b. “Reenact” abusive relationship patterns with you (can be subtle). For example, she/he may get angry and accusatory and convey that verbally or nonverbally (through body language or facial expressions). Again, it's critical not to take it personally, to understand that these are normal reactions of some traumatized people, and to find a way to reconnect and refocus on your role and tasks as well as you can.
  - c. Make you feel frustrated, so be careful not to:
    - i. “Blame the victim”
    - ii. Give up on getting usable testimony
    - iii. Give up on prosecuting/investigating the case, etc.
    - iv. Forget the other principles and practices contained in this outline

- D. Key Principles for Effective Interviewing: Empowerment and Connection
1. Sexual assault involves disconnection and disempowerment, so healing and seeking justice require the opposite experiences with investigators and prosecutors
  2. Within the appropriate confines of your role and task, consider the following:
    - a. How well are you empowering the victim/survivor/complainant?
      - i. Remember that the assault involved traumatic helplessness
      - ii. Do you tell him/her what to expect during the interview and your overall process?
      - iii. Do you give him/her options and choices?
      - iv. Does he/she feel like a competent partner in the interview?
      - v. Consider checking with advocates to see what victims/survivors/complainants are reporting about their experiences during your interviews. While it can be difficult to hear criticism, you may receive helpful information to improve the interview experience and therefore increase reporting and, very likely, the quality of information/participation in your process. Remember that empowerment also aids with the victim/survivor/complainant's healing process.
  3. How well are you connecting with the victim/survivor/complainant?
    - a. Remember that the assault involved traumatic disconnection.
    - b. Can you put yourself in his/her shoes?
    - c. Does he/she feel heard?
    - d. Does he/she feel respected?
    - e. As noted above, seek feedback regarding your connection with victims/survivors/complainants. The information may help you improve your connection with them, your investigation and their healing process.
  4. How much you connect and empower largely depends on:
    - a. Your empathy and compassion for the victim/survivor/complainant.
    - b. Your comfort level while hearing about and imagining his/her horrible memories and unwanted emotions.
    - c. Your comfort level with emotions and memories of your own that are triggered by his/her report.
- E. Effects that you will have on the victim/survivor/complainant and his or her brain
1. Your verbal and nonverbal behavior during the interview will affect his/her:
    - a. 'Baseline' level of physiological distress

- b. Intensity and manageability of trauma-related emotions
  - c. Likelihood of ‘disconnecting,’ ‘spacing out,’ etc.
  - d. As a result, when interviewing, be mindful of your demeanor (appearing bored, disbelieving, pressed for time, etc.)
2. It is extremely important to moderate your behavior, because additional stress during the interview will affect prefrontal cortex functioning needed to:
    - a. Maintain attention on the interview
    - b. Retrieve critical pieces of memory
    - c. ‘Get back on track’ after feeling overwhelmed
    - d. Resist getting lost in trauma-related responses to you (as described above)

## **II. The Interviewer’s Behavior – Practicing Techniques to Improve Investigations**

- A. Identify one or two attitudes, behaviors or questioning techniques (see lists below) that you do not currently use and practice them until they become habitual. Then try another until you are able to call upon each of these attitudes, behaviors and techniques as warranted by the situation. These attitudes, behaviors and techniques:
  1. Generally help the interview feel and go much better, for both the interviewee and for you
  2. Generally enable you to get the best possible information from the interviewee:
    - a. However limited his or her encoding of the experience into memory
    - b. However limited his or her capacity to retrieve whatever was encoded
- B. Helpful interviewer attitudes and behaviors include:
  1. Empowerment – giving interviewees options and choices whenever possible
  2. Compassion – conveying warmth and respect, even when what the interviewee is saying is confusing or at first sounds unbelievable. Do not convey disbelief or “cold neutrality.”
  3. Patience – Not rushing the interviewee in any way or expressing impatience
- C. Effective questioning techniques include:
  1. Trying to elicit information by asking about sensory memories (for all senses). For example, “You mentioned a point when he had his arm across your throat. What if anything do you recall feeling in your body at that time? What if anything do you remember seeing at that time? What if anything do you remember smelling at that time? Etc.
  2. Using forensic interviewing techniques by asking open-ended questions with follow up as warranted, not yes/no or leading questions.

3. Seeking information about the interviewee's response, including evidence of freezing, dissociation, tonic immobility, collapsed immobility, defeat, habit-based behaviors and other subjective and behavioral responses that are (a) consistent with trauma and which (b) the perpetrator may corroborate (in the belief that such behaviors can be construed as consent).
- D. Commit to trying one or two new attitudes, behaviors or questioning techniques in your next interview.
1. Consider practicing outside of the interview first, perhaps with another member of your office who agrees to take on the victim/survivor/complainant role (this person should have a good understanding of the impact of trauma so that they can properly play the role of interviewee). This can feel uncomfortable, since it's not a real life situation, but it is a very good (and harmless) way to establish a new interview "habit" and receive helpful feedback.
- E. After the interview, honestly assess:
1. How well did I do at deploying the attitudes and/or behaviors? Where do I need more practice?
  2. How did this affect the interview experience of the interviewee? How did it affect my experience?
  3. How did this affect the quantity and quality of the information/evidence I collected?
  4. Am I ready to adopt another attitude/behavior/questioning technique?
  5. If another person (other than the interviewee) was present during the interview, ask them to assess your use of this new skill. For example, if another member of your office was present (e.g., a second interviewer) or if a victim advocate was present with the interviewee.

### **III. Bottom Line Reminders**

- A. No matter what happens, if you understand trauma and memory – and use an effective, trauma- and neuroscience-informed interview protocol – you can gather the best possible information and make the best possible case.
- B. The more connected, empowered and calm that you (and an advocate/support person, if present) can help the interviewee feel, the more information you will receive and the more accurate and consistent it will be.
- C. Fragmented, disorganized, and inconsistent verbal accounts are consistent with trauma. This is understood to be and can be explained as:
  1. Consistent with the science.
  2. Consistent with the other psychophysiological information you've gathered.
  3. Consistent with a highly traumatic assault having occurred.