Module 4: The Neurobiology of Trauma and Sexual Assault

Purpose

This module introduces the basic elements of neurobiology and the parts of the brain affected by traumatic situations such as sexual assault. You also will learn about types of drastic survival reflexes and the relationship between assault and memory.

Lessons

1. Brain Circuitry
2. Reactions in Traumatic Situations
3. Drastic Survival Reflexes During Sexual Assault
4. Roles of Brain Circuitries in Trauma, Memory, and Healing

Learning Objectives

By the end of this module, you will be able to:

- Describe the components of the brain related to trauma.
- Explain common ways the brain is affected during and after sexual assault.
- Recognize common ways a traumatic experience may affect a victim's behavior.
- Assist victims in understanding the neurobiology of trauma, when appropriate.

Participant Worksheets

- Worksheet 4.1, Response Scenarios Case Studies
- Worksheet 4.2, How Would You Respond?

1. Brain Circuitry

Sexual violence such as rape and sexual assault is almost always traumatic for victims. The effects of trauma on the brain can be devastating. Most of us do not really understand what happens in the brain when an individual has been the victim of trauma, such as sexual assault.

In this module, we will present an overview of what happens in the brain in a trauma situation. The brain is a truly complex organ, far too complex to cover in detail in this training. You will not need to memorize brain structures or processes. You *will*, however, be introduced to some basic brain circuitries and structures and how they come into play when a traumatic experience occurs.

Some mental health professionals, agencies, or entities may or may not agree with models of the neurobiology of trauma as scientific knowledge, models, and theories are rarely unanimously accepted.

In this module, we will cover several areas of the brain and its circuitry to give you an overview of neurobiology and trauma. As a victim service provider, you should understand some of the basics of how trauma can affect the emotions and behavior of victims of crime. Topics are:

- The prefrontal cortex of the brain – one very important brain region that we will keep coming back to.
- Key circuitries in the brain affected by trauma.
- Emotional and brain responses when confronted with a traumatic situation.
- Traumatic events and memory.
- How victim service providers can use their knowledge of neurobiology to better assist crime victims.

The area in the slide covered by the yellow oval is called the prefrontal cortex.

This part of our brain allows us to control, or at least guide, what happens in evolutionarily older brain regions, especially the parts of the brain responsible for emotions, fear, and stress.

The prefrontal cortex, more than anything else, is the part of the brain that makes us human. The prefrontal cortex helps us hold thoughts and memories in mind. It also helps us manage our emotions and reflect on our behavior.

The prefrontal cortex carries out many important functions in situations that are not traumatic or extremely stressful. It permits higher functioning and allows us to control – or at least to manage – what happens in other brain regions, such as the fear circuitry, much of which we call the "emotional part of the brain" or the "emotional brain."

The prefrontal cortex can directly and indirectly influence the amygdala (uh-MIG-dah-luh), hypothalamus, and other brain regions involved in emotions, stress reactions, and reflexive and impulsive behaviors.

Under normal conditions, the prefrontal cortex allows us to focus our attention where we choose, and do what we choose – consistent with our goals and values – and to do so deliberately. It allows us to do things that we can be mostly conscious of, like reflecting on our emotional reactions or deliberately directing our attention inward, as well outward.

However, the prefrontal cortex can become impaired or even shut down in traumatic situations like sexual assault.

The brain is made up of many circuitries – connected brain areas that work together to perform specific tasks. Some areas may be far away from each other in the brain, but they are connected by fibers that send information in one or both directions. Scientists know much about brain regions and how they interact with each other, both to produce fear and to regulate it. The amygdala is an important part of the brain and the fear circuitry. We will talk more about the amygdala later.

- The fear circuitry plays a huge role in trauma and posttraumatic stress, as in the case of most victims of sexual assault.

- Fear is located in multiple brain areas, not just one brain area.

- The circuitry of fear operates automatically and mostly outside of awareness. Our brains can detect a reminder of a trauma and generate an emotional response and fear behaviors before we know what has happened – and sometimes without us even knowing that our response was triggered by a trauma reminder. For example, the perpetrator of a sexual assault may have worn a yellow sweater during the attack, creating fear in the victim whenever she sees anyone wearing a yellow sweater. She may not even know what caused the fear.

Although most trainings on the neurobiology of trauma focus on fear, the brain circuitry of seeking is extremely important too.

Whenever there is something we fear and want to avoid, we also seek some kind of escape. Often it is a quick fix that does not really solve our problems. This is why you may have encountered victims of sexual assault who have substance abuse problems. Addictions are very common in traumatized people.

When we sense fear, anxiety, sadness, or any unwanted experiences, we want to avoid whatever is threatening. Our brains seek escape.

Seeking, in this sense, does not necessarily refer to craving or attachment, just escape.

As with the fear circuitry, elements of seeking circuitry are not located in just one brain area. And again, scientists know much about the brain regions involved and how they interact with each other, both to produce seeking and to regulate it.

The circuitry of seeking operates automatically and mostly outside of awareness. Our brains can respond to an unwanted feeling or experience and generate seeking behaviors, including addictive ones, sometimes without us realizing we have developed an addictive habit. At the same time, assault victims, no matter how badly they have been harmed, still seek to uphold their values and goals, even if their suffering and symptoms make it difficult.

This upholding of values and goals is something very important about the brain's seeking circuitry that is often overlooked. Not only does it seek addictive escapes, but it also seeks the very best in life and human nature. Everything that we seek – whether it's alcohol, drugs, sex, money, praise, promotions, or upholding our highest values and goals – involves the brain's seeking circuitry.

If people strive to be the best version of themselves and to achieve their goals, but they cannot (including due to the impacts of trauma), they become demoralized.

For example, for those in the military, the values of the military and the ideal of being a "good soldier" are extremely important. Or consider a mother or father for whom being a good parent is a cherished value. Imagine that PTSD symptoms are getting in the way of the ability to do one's job well or to parent effectively.

Whatever our values, we can't help but continually ask ourselves – and even judge ourselves – based on how close or far we are from our ideals and goals, and whether we feel like we're moving toward or away from them. When the answers are "far away" or "moving away" from our deepest values, then we can become discouraged, demoralized, and depressed. This is something that many traumatized people struggle with.

Another circuity relates to satisfaction. It overlaps and interacts with the seeking circuitry. The satisfaction circuitry:

- Produces the feeling of satisfaction when we get what we seek.
- Also central to feeling:
  - Soothed and safe in one's body.
  - Connected to other people.
  - Accepting of difficult experiences (not resigned).
  - Not surprisingly, given what most people know about opiate drugs as powerful pain relievers, as well as the "blissed out" high people get from heroin – a powerful synthetic opiate – this circuitry involves opioid chemicals.

In this slide of the satisfaction circuitry, the purple dots correspond to places where opioid receptors associated with satisfaction are found in the brain. It is difficult to study opioids in the brain, so the satisfaction circuitry is not as well understood as the seeking circuitry. But its existence is well established and new research continues to be done.

Again, this circuitry gives us the feeling of satisfaction that comes with getting what we seek – at least when it is actually satisfying.

It also is critical to feelings of connection between parents and children, and feelings of satisfaction and connection between people in general. It is central to experiences of feeling soothed and safe in our bodies, which are so important for healing from trauma.

The final circuitry we will discuss is called the embodiment circuitry. It includes an area called the insular cortex, or insula, which is beneath other cortical areas. This is an extremely important brain region.

The insular cortex gets sensory data from *all* body systems. If we direct our attention to the feeling of what is happening in our body, the insular cortex is the region that can pass that information on to our prefrontal cortex, where we can notice, reflect upon, and come to understand and accept what is happening in our body. Consequently, this circuitry is a key to healing from trauma, depression, addiction, and many other problems.

The insula receives information about what is happening in the body, including when people are experiencing emotions.

- It allows us to know what it feels like to be in our body, moment to moment.
- It also can help survivors heal from trauma, depression, addiction, and many other problems (covered later in the training).
- The insula lets us be an embodied self – that is, to experience ourselves as a self in a body, and for our subjective experience to be grounded in our bodily sensations. This is different than being "lost in our head," overly focused on thoughts but cut off from our body experiences; and different from experiencing our body as an *object* that looks good or bad, that does what we want or doesn't, or that we try to change – by working out, for example.
- The embodiment circuitry can come into play when the victim of a sexual assault has a drastic survival reflex during the attack.
- Most traumatized people, even though their brain and body are having intense fear and anxiety reactions, are not paying attention to their bodies or doing things to calm and sooth them. Instead, they have confusing thoughts about what the trauma means for them and their life, and what the effects, including those reactions, mean in terms of the kind of person they are.

In short, most traumatized people are not making good use of the insula to help themselves heal.

Although you do not need to be an expert in neurobiology, you'll be better able to understand what a victim needs after a sexual assault if you understand the circuitries of the brain that are related to seeking, satisfaction, and embodiment.

2. Reactions in Traumatic Situations

The amygdala is one of the most important regions of the brain during a traumatic event.

Notice how the arrows from the amygdala to other brain regions are the largest arrows. That means the amygdala has the most central and powerful role in coordinating the brain's responses during traumatic experiences.

Scientists know a lot about how the amygdala controls the brain in traumatic situations, that during traumatic experiences there is a loss of prefrontal cortex regulation and most of the brain's reactions happen automatically and outside our awareness.

The fear circuitry (especially the amygdala) causes several things to happen, including:

- Loss of prefrontal regulation: Chemicals from the brain stem impair (and may shut down) the prefrontal cortex.
- Bottom-up attention: Attention is automatically captured by anything perceived as dangerous or threatening, or as needed for survival.
- Emotional reflexes**:** Reflexes are automatic and include freeze, flight, or fight responses, as well as bodily responses like your heart pounding quickly.

Where did your attention go when this picture popped up?

It was your amygdala, not your prefrontal cortex, that automatically put your attention on the knife. That is what happens during a sexual assault. From the moment the fear kicks in, the fear circuitry, not the prefrontal cortex, is mostly or entirely determining where attention goes.

Attention can latch onto things that, in the moment, the fear circuitry determined were critical to survival. For example, during an attack, a victim might focus on a picture on the wall or a crack in the ceiling to escape from the awful sensations. Later, looking back on the assault, the victim and others – including loved ones, investigators, prosecutors, judges and juries – might not understand why the victim was focused on something inconsequential.

The point is we have no right to second-guess what the fear circuitry focused attention on in the midst of the assault, thus what is encoded into memory. That is just how human brains are wired to respond to being attacked or assaulted, based on hundreds of millions of years of evolution in mammals and the species from which they evolved.

All of this lets us to do things we could not do under ordinary circumstances – so we can survive what we perceive as a life-threatening experience such as encountering a predator.

"Fight or flight" is misleading and gets in the way of understanding how human brains are wired to respond to being assaulted.

That phrase seems to indicate that if someone is "brave," "a real man," or "a true soldier" he or she would react to assault by fighting back, and that only cowards try to escape. But that is simply not how our brains evolved or how they are wired.

We evolved to freeze first, then flee. Even if humans do fight when attacked by a predator, it is not because they want to win the fight; they just want to escape. We evolved knowing that if we fight a big predator that has menacing jaws and sharp teeth or claws we are going to lose. The same applies when the predator is human and carries a gun or knife or other threat.

Sometimes an assault victim may fight back, like a "cornered animal," in a sustained way against a more powerful and/or armed perpetrator. But that is extremely unusual.

It is very important that sexual assault victims and those who work with them understand this, because victims often feel ashamed that they did not fight back. Even otherwise supportive family members and friends may not understand, and may have incorrect expectations for how the victim should have responded – or how they would have responded had it happened to them.

Freeze reaction usually happens at the beginning of a trauma, and is usually brief.

Signs of a freeze reaction in a victim include:

- Brief response, when the victim perceives danger.
- Being highly alert.
- Having a heightened attentional state that is receptive to a wide array of information in the external environment.
- Not moving, because that could provoke or worsen attack, and because that would absorb brain resources that initially need to be focused on assessing the situation.
- Readiness to suddenly burst into action.

3. Drastic Survival Reflexes During Sexual Assault

During the initial freeze response or at any time during an assault, the prefrontal cortex will be affected, impairing rational thought processes. It is the brain's fear circuitry that may automatically determine that escape is impossible. The victim is attempting to escape and survive when there is no apparent (physical) escape.

Looking back later, the victim and others – that is, their prefrontal cortexes – may recognize that escape was possible (e.g., through an open door). But what matters is what the fear circuitry concluded at the time.

When this happens – that escape is **perceived** as impossible – the fear circuitry can trigger some drastic "survival reflexes." Victim service providers should be aware of these survival reflexes in victims because they can affect how the victim sees him or herself after the assault.

One of these automatic survival reflexes over which the victim has no control is dissociation. Dissociation involves disconnections of awareness from emotions and even sensations in one's body. It includes experiences such as feeling like you are unreal, or the situation is unreal, feeling like you're in a fog or a movie, or feeling like you're disconnected from your body.

The quotation is a from a research participant, describing her dissociative experience when reminded of an assault she experienced years before:

"It was silence, looking at her through a glass wall,
so it couldn't affect me, couldn't touch me."

There is currently little data on the biology of dissociation during trauma, although there are a few brain imaging studies on dissociative responses to trauma reminders, i.e., reminders of the trauma that generate an emotional response and fear behaviors.

However, there is definitely evidence that dissociation involves altered functioning of the embodiment circuitry and/or disconnection between the embodiment circuitry and the prefrontal cortex. And this fits with many victims' experiences of lacking awareness of bodily sensations of physical contact involved in the sexual assault and/or bodily sensations associated with emotions the assault is triggering.

When a victim experiences dissociation during a traumatic event, he or she may feel:

- "Spaced out," as if they were not part of what happened.
- Disconnected from their emotions and their body – as though in a dream or a fog, or watching a movie.
- "On autopilot," such that the victim goes through the motions without feeling any sense of control or choice, and only later realizes that they did things they never consciously intended or decided to do. This can mean participating in sex acts, not because the victim choose to, let alone consented or wanted to, but because she or he was in a terrified dissociative state.

Dissociation is a common response to repeated sexual abuse in children, especially when the perpetrator is someone close to the child, and it can become a more habitual response that carries over to all kinds of stressful situation – including sexual assault in adulthood.

But even someone who had no prior history of child abuse may dissociate during a physical or sexual assault as an adult.

Dissociation, especially dissociative autopilot, can be a huge source of shame and confusion to victims. They may be upset with themselves for not resisting and even actively participating in unwanted and terrible sexual acts.

Loved ones, investigators and others my misinterpret dissociative autopilot as consent and willing participation, and perpetrators and defense attorneys may point to such behavior as evidence that there was consent and no assault when nothing could be further from the truth.

Remember, it is critical for you to help victims who dissociated during an assault to understand that this is a brain-based, automatic, survival reflex.

Another survival reflex is tonic immobility. Tonic immobility is a brain-based response that is over 300 million years old. It is found in birds, sharks, and mammals, including humans. The chicken shown here is in a state of tonic immobility, after being restrained by a person. See how rigid its legs and neck are? If someone were to hit its feet or head, they would barely move.

Tonic immobility is different from freezing, in which movement is possible but not engaged in while assessing the situation and avoiding an even more dangerous attack.

With tonic immobility, the victim is actually paralyzed, unable to move and unable to speak or cry out – even if he or she wants to.

Like dissociation, with which it may overlap, tonic immobility happens when escape is or appears impossible. Tonic immobility is understood as a last-ditch, most extreme version of "shutting down" in the face of overwhelming threat or trauma.

An estimated 10-50 percent of victims experience tonic immobility to some extent in both sexual and nonsexual assaults.

The onset of tonic immobility is sudden, usually after a failed struggle; the immobility also terminates suddenly. This reflex response can last from seconds to hours. It does not impair alertness or memory encoding.

Tonic immobility can also overlap with dissociation and may include:

- Trembling or shaking.
- Stiff, rigid muscles.
- Feeling cold.
- Feeling numb to pain.
- Fixed or unfocused staring or intermittent eye closure

Collapsed immobility is another reflex, but it is different from tonic immobility and dissociation. Collapsed immobility results from a massive input to the heart from the parasympathetic branch of the autonomic nervous system, which causes extreme decreases in heart rate and blood pressure, which in turn can cause faintness, sleepiness, or even loss of consciousness.

Consistent with the name, collapsed immobility causes muscle tone to be lost and the body goes limp. If you were to pick up the possum in this picture, the body would be limp and floppy, not rigid like an animal in a state of tonic immobility (Kozlowski et al. in press 2015; Baldwin 2013).

Collapsed immobility often is accompanied by the experience of mental defeat – feeling totally overwhelmed and helpless. It can be triggered by seeing blood, a skin puncture, a knife, or other sharp objects.

Evidence suggests that collapsed immobility is more likely in those who faint while having blood drawn, and like blood phobia, the evidence suggests it is more likely to occur in women than in men.

Also, a significant percentage of animals resort to tonic immobility or collapsed immobility when attacked by a predator. Collapsed immobility is not as common as tonic immobility, but it is not uncommon, either.

Like tonic immobility, collapsed immobility can be a source of confusion and shame in victims, who look back at what happened and think they should have escaped or fought back. It can be disturbing to family members and friends, as well as investigators, prosecutors, judges, and juries. Their confusion can lead to doubt, blaming, and even shaming of victims.

So again, it is extremely important that sexual assault victims who have had these reactions during assault, and those who work with them, understand that these are normal, brain-based responses rooted in hundreds of millions of years of evolution; it is how human brains are wired (Kozlowski et al. in press 2015; Baldwin 2013).

You and the victims you work with are often told by other people that a victim's reported behaviors during the assault "don't make sense."

These are four major responses that lead people – not only friends, family members and partners, but police investigators, prosecutors, judges and juries – to doubt that the victim was actually sexually assaulted.

- Did not resist.
- Made no attempt to escape.
- Did not scream.
- Was an "active participant."

Defense attorneys try to use these brain-based trauma responses to undermine the credibility of the victim, by describing such responses as "evidence of consent."

Sadly, victims themselves often view these same responses as evidence that they were cowardly or weak in their response to the assault.

However, these responses make perfect sense if you understand the neurobiology of trauma responses during assault. As an advocate who has learned that these are completely normal brain-based responses – responses that have been studied by researchers and given names such as dissociation, tonic immobility and collapsed immobility – you can help victims to understand and feel validated in their experiences.

You can teach victims that these are normal, brain-based responses well understood by people who research and work with sexual assault victims. Understanding these brain-based responses may have huge positive effects on victims and their experiences with friends, family members, law enforcement, and the legal system.

Look at the differences in response and brain activity between most perpetrators and most sexual assault victims, who experience intense distress and fear during the assault.

In the typical perpetrator, the prefrontal cortex is in control, definitely more in control than the emotional brain – even if the perpetrator is acting compulsively. So the perpetrator is thinking clearly and able to carry out a planned sexual assault and to use their prefrontal cortex to direct and modify assaultive behaviors that are practiced, even habitual.

For the victim, the fear circuitry has kicked in, and the victim is terrified and overwhelmed. Thoughts are driven by the perpetrator's actions. Behaviors are controlled by emotional reflexes – and sometimes partly by habitual responses to aggression and domination first developed in childhood.

The activity explores survival reflexes.

4. Roles of Brain Circuitries in Trauma, Memory, and Healing

What happens to memory during a traumatic situation? Why are some sexual assault victims unable to recall what happened, or why do they remember some things and not others?

During trauma, the brain releases high amounts of stress chemicals. The amygdala is also very active, so there is strong encoding of emotional and sensory memories. The prefrontal cortex is impaired, including the language production area (Joels et al. 2012).

The function of the hippocampus also is altered, resulting in the following effects:

- The context of the assault and the elements of the event are poorly woven into a whole.
- The sequence of events is poorly encoded.
- Emotional memories however, are well encoded, especially for experiences surrounding the onset of fear/terror (e.g., when the victim realized she or he was being or going to be sexually assaulted).

  (Joels et al. 2012)

What we pay attention to largely determines what gets encoded into memory. During states of intense fear and distress, in which the prefrontal cortex is impaired and attention is determined by the fear circuitry, "bottom-up" attention latches onto specific stimuli. When this happens, there is much less encoding of more complex contextual information, such as how objects are arrayed in a room, or how events are sequenced over time (Joels et al. 2012).

Knowing this can help advocates and victims understand why assault memories are often fragmented and missing information about how a room was configured or the exact sequence in which things occurred. Even though the victim and others (including investigators, attorneys, judges, and juries) may believe the victim "would have to" remember how certain things were arrayed in space and time, in the midst of a traumatic assault the victim simply was not noticing or encoding such information.

For all these reasons, memories of sexual assault tend to be fragmentary images, sounds, and body and other sensations, as well as strong emotions like disgust and horror.

Traumatic memories have few peripheral details (because those were things given little attention or memory encoding resources), little or no time sequence information, and little or no words or narrative, especially soon after the trauma and early in recovery.

Exactly how are traumatic memories encoded? And how does the brain affect the kinds of memories assault victims have later, including when meeting with investigators and prosecutors and testifying in court?

Remember, during a sexual assault the fear circuitry takes control of the brain's response. The fear circuitry impairs the prefrontal cortex and releases stress hormones that impact the body and brain.

The combination of fear circuitry control and prefrontal cortex impairment leads to bottom-up attention, i.e., attention that is automatically captured or focused on those aspects of the experience that the fear circuitry perceives as dangerous, threatening, or essential to survival and coping.

Fear circuitry and the stress hormones change the way the hippocampus functions. Importantly, the hippocampus is a key structure for encoding memories. It weaves together details and contextual and time information. During a traumatic experience, the hippocampus is altered in ways that decrease the encoding of most of what is happening, especially contextual and time information (Schwabe et al. 2012; Joels et al. 2012).

The focus on danger from bottom-up attention and the altered hippocampus cause the victim's memories to be fragmentary. The memories that are retrieved can be unpredictable, incomplete, and disorganized. However, some aspects are often recalled accurately, such as the onset of fear, central details, survival reflexes, and other "islands of memory" (Schwabe et al. 2012; Joels et al. 2012).

In these "islands of memory," the micro islands contain fragmentary sensations, and the larger islands contain key periods of memory during the assault. These key periods include when fear kicks in, typically right before, during, and after the onset of the assault.

For that initial phase, contextual and time sequence information may be very well encoded (sometimes even especially so, if it seemed like everything was happening in slow motion).

These islands also contain memories that were part of the survival reflexes – freezing, dissociation, tonic immobility and collapsed immobility – or the shift from one reflexive state into another one; for example, moving from dissociation into collapsed immobility just before becoming dizzy or passing out.

In addition to the assault itself, alcohol and drug usage can affect an assault victim's memory.

A low to moderate dose or level of intoxication impairs the ability of the victim to encode the context of the situation, but it does not impair the victim's coding of sensation.

A high dose or level of intoxication impairs both context and sensations, and in a severe blackout, no information is encoded at all. The victim remembers nothing (Bisby et al. 2009, Bisby et al. 2010).

The state of the brain at the time of remembering affects which encoded aspects of the memory will be retrieved. For example, if a victim feels unsafe and judged, for example, by a police investigator who doesn't understand the impacts of sexual assault and doesn't believe the victim, then he or she may not be able to use their prefrontal cortex to understand questions and retrieve the memories the investigator wants.

On the other hand, if the victim is feeling traumatized by remembering and/or by the investigator, this may trigger the automatic retrieval, in a bottom-up way, of fragmentary sensations and emotions that are nearly as intense as the assault itself.

Even under the best of conditions, someone who has been assaulted is likely to have a hard time putting the fragments that they can remember into words, let alone into a coherent story.

To make things even more complex, someone may remember in a dissociated way – which can be how they experienced the original trauma, or a response to remembering it this time – and that involves its own impairments and problems.

For example, the more dissociated someone is the less activated their embodiment circuitry tends to be, and the less the memory feels real, true, or valid to them. And this can be contagious: If someone is talking about a terrible trauma but it sounds like they are reading a grocery list, it can cause the listener – including a victim advocate, police investigator, prosecutor, judge, or jury member – to doubt the reality of what happened and the credibility of the victim.

In short, the state of the brain during remembering is going to powerfully shape the remembering experience, and this can have very significant consequences – especially if people involved do not understand that these are normal experiences and behaviors caused by how the brain responds to trauma.

Because the language areas of the brain are impaired or shut down during trauma, the memory may have few words, or no narrative or "story" associated with it – at least at first, before the victim begins healing from the trauma and is able to add words and tell it as a story, however incomplete.

Traumatic memories are often associated with powerful emotions with little or no language. Therefore, when victims of sexual assault try to remember the trauma, they often have trouble. However, those memories can pop up later, when they do not expect them or want them.

Also, because of the associative nature of memory and the strength of associations made during a trauma, all kinds of things can get linked to the trauma. Thick eyebrows like the perpetrator's, an angry or threatening tone of voice, maybe walls the color of those in the room where the assault took place – all can trigger remembering, including the emotional reflexes linked to it.

In short, life can become a minefield of potential trauma memory triggers.

When you have some knowledge about just how profoundly neurobiology contributes to a victim's trauma, you'll have a much better understanding of why victims of sexual assault respond the way they do – why their memories are fragmented or incomplete, why they may have appeared to "cooperate" during the assault, or why other behaviors that might at first seem to "make no sense" are actually normal (or at least not rare) brain-based responses.

You will understand why victims need to feel safe talking about such experiences and to be understood as having responses and memories that totally make sense.

Your empathy for the victims will empower them. Victims that feel safe are more cooperative, more able to remember, and more willing to report. Your deeper understanding of the experiences of victims will also make it easier for you to determine the victims' physical and psychological needs, and to assist them in court and in meetings with the prosecutor if they do choose to report.

The activity explores responses to survival reflexes.