

Why Rape and Trauma Survivors Have Fragmented and Incomplete Memories

James Hopper and David Lisak | Dec. 9, 2014



James Hopper, Ph.D., trains investigators, prosecutors, judges and military commanders on the neurobiology of sexual assault. David Lisak, Ph.D., is a forensic consultant, researcher, national trainer and the board president of 1in6.

In the midst of assault, the brain's fear circuitry takes over while other key parts are impaired or even effectively shut down. This is the brain reacting to a life-threatening situation just the way it is supposed to

A door opens and a police officer is suddenly staring at the wrong end of a gun. In a split second, his brain is hyper-focused on that gun. It is very likely that he will not recall any of the details that were irrelevant to his immediate survival: Did the shooter have a moustache? What color was the shooter's hair? What was the shooter wearing?

The officer's reaction is not a result of poor training. It's his brain reacting to a life-threatening situation just the way it is supposed to—just the way the brain of a rape victim reacts to an assault. In the aftermath, the officer may be unable to recall many important details. He may be uncertain about many. He may be confused about many. He may recall some details inaccurately. Simultaneously, he will recall certain details – the things his brain focused on – with extraordinary accuracy. He may well never forget them. All of this, too, is the human brain working the way it was designed to work.

In our training of police investigators, prosecutors, judges, university administrators and military commanders, we've found that it's helpful to share what's known about how traumatic experiences affect the functioning of three key brain regions.

First, let's consider the prefrontal cortex. This part of our brain is responsible for "executive functions," including focusing attention where we choose, rational thought processes and inhibiting impulses. You are using your prefrontal cortex right now to read this article and absorb what we've written, rather than getting distracted by other thoughts in your head or things going on around you. But in states of high stress, fear or terror like combat and sexual assault, [the prefrontal cortex is impaired](#) – sometimes even effectively shut down – by a surge of stress chemicals. Most of us have probably had the experience of being suddenly confronted by an emergency, one that demands some kind of clear thinking, and finding that precisely when we need our brain to work at its best, it seems to become bogged down and unresponsive. When the executive center of the our brain goes offline, we are less able to willfully control what we pay attention to, less able to make sense of what we are experiencing, and therefore less able to recall our experience in an orderly way.

Inevitably, at some point during a traumatic experience, fear kicks in. When it does, it is no longer the prefrontal cortex running the show, but the brain's fear circuitry – especially the amygdala. Once the fear circuitry takes over, it – not the prefrontal cortex – controls where attention goes. It could be the sound of incoming mortars or the cold facial expression of a predatory rapist or the grip of his hand on one's neck. Or, the fear circuitry can direct attention away from the horrible sensations of sexual assault by focusing attention on otherwise meaningless details. Either way, what gets attention tends to be fragmentary sensations, not the many different elements of the unfolding assault. And what gets attention is what is most likely to get encoded into memory.

The brain's fear circuitry also alters the functioning of a third key brain area, the hippocampus. The hippocampus encodes experiences into short-term memory and can store them as long-term memories. Fear impairs the ability of the hippocampus to encode and store "contextual information," like the layout of the room where the rape happened. Fear also impairs its ability to encode time sequencing information, like whether the perpetrator ripped off a shirt before or after saying "you want this."

Our understanding of the altered functioning of the brain in traumatic situations is founded on decades of research, and as that research continues, it is giving us a more nuanced view of the human brain "on trauma." Recent studies suggest that the hippocampus goes into a super-encoding state briefly after the fear kicks in. Victims may remember in exquisite detail what was happening just before and after they realized they were being attacked, including context and the sequence of events. However, they are likely to have very fragmented and incomplete memories for much of what happens after that.

These advances in our understanding of the impact of trauma on the brain have enormous implications for the criminal justice system. It is not reasonable to expect a trauma survivor – whether a rape victim, a police officer or a soldier – to recall traumatic events the way they would recall their wedding day. They will remember some aspects of the experience in exquisitely painful detail. Indeed, they may spend decades trying to forget them. They will remember other aspects not at all, or only in jumbled and confused fragments. Such is the nature of terrifying experiences, and it is a nature that we cannot ignore.

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