Debunking Myths About Trauma and Memory

Richard J McNally, PhD[1]

How trauma victims remember—or forget—their most horrific experiences lies at the heart of the most bitter controversy in psychiatry and psychology in recent times. Whereas experts maintain that traumatic events—those experienced as overwhelmingly terrifying at the time of their occurrence—are remembered all too well, traumatic amnesia theorists disagree. Although these theorists acknowledge that trauma is often seemingly engraved on memory, they nevertheless maintain that a significant minority of survivors are incapable of remembering their trauma, thanks to mechanisms of either dissociation or repression. Unfortunately, the evidence they adduce in support of the concept of traumatic dissociative amnesia fails to support their claims. The purpose of this review is to dispel confusions and debunk myths regarding trauma and memory.

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Highlights

- Memories of trauma are seldom, if ever, truly forgotten.
- Memories of trauma are often vivid, but they are not immutable (memory does not operate like a videotape machine).
- Not thinking about a trauma for a long time is not the same as being unable to remember it.

Key Words: *memory, trauma, dissociation, amnesia, repression, posttraumatic stress disorder, sexual abuse*

Psychologists have studied memory ever since the end of the 19th century (1). Early work seldom involved material of much personal or emotional significance. Ebbinghaus, for example, had subjects learn and recall lists of nonsense syllables in his effort to ascertain the laws governing remembering and forgetting (1).

However, times have changed. One hundred years after the heyday of the nonsense syllable, memory has become the flashpoint of one of the most bitter controversies ever to afflict the fields of psychology and psychiatry (2,3). How people remember—or forget—their most horrific experiences has become the central battleground of "the memory wars" (4,5). On one hand, experts hold that combat, rape, and other overwhelmingly terrifying events are seemingly engraved in memory and are seldom, if ever, truly forgotten (for example, 6). Conversely, others claim that the mind can protect itself by banishing the most horrific experiences from awareness. As Brown, Scheflin, and Hammond claim,

> when emotional material reaches the point of being traumatic in intensity—something that cannot be replicated in artificial laboratories—in a certain subpopulation of individuals, material that is too intense may not be able to be consciously processed and so may become unconscious and amnesic (7, p 97).

While acknowledging that trauma is often memorable, these authors nevertheless claim that victims develop amnesia for trauma precisely because it can be so overwhelmingly terrifying.

Moreover, traumatic amnesia theorists believe that dissociated memories of trauma are far from benign. Silently poisoning the lives of victims, these buried memories must be exhumed and emotionally processed for healing to occur.

Further, certain techniques are deemed especially helpful in the memory recovery process (for example, 8). As Brown and others put it,

> Because some victims of sexual abuse will repress their memories by dissociating them from consciousness, hypnosis can be very valuable in retrieving these memories. Indeed, for some victims, hypnosis may provide the only avenue to the repressed memories (7, p 647).

In sum, the memory wars constitute 2 drastically different views about how the mind works. Whereas one side appeals to the science of memory, the other holds that memory for trauma obeys different laws, rendering much of this science irrelevant. As psychiatrist David Spiegel emphasized in the foreword to his edited volume, *Repressed Memories*,

> the nature of traumatic dissociative amnesia is such that it is not subject to the same rules of ordinary forgetting; it is more, rather than less, common after repeated episodes; involves strong affect; and is resistant to retrieval through salient cues (9, p 6).

Although Spiegel and other traumatic amnesia theorists question the relevance of much work on memory, considering it irrelevant to traumatic memory, they are by no means opposed to science. Indeed, they cite study after study from the clinical literature as showing that many trauma survivors develop amnesia for their most horrific experiences. Unfortunately, they often misread the very studies they adduce in support of the phenomenon, inadvertently fostering myths about memory and trauma (see 7). The purpose of this article is to debunk these myths.

Memory Does Not Operate Like a Videotape Recorder

Regardless of how "photographic" our memories sometimes seem to be, the mind does not operate like a videotape recorder. When we call an episode from our past, we reconstruct it from elements distributed throughout the brain. Recollection is always reconstruction. It is not a matter of reloading a videotape for replay in the mind's eye. Memory for trauma is not exempt from this principle. The living brain is dynamic, and even the most vivid traumatic memories are not literal, unchanging reproductions of what occurred. Although certain theorists assert that manifestations of traumatic memory "are invariable and do not change over time" (10, p 520), this is mistaken. No memory, traumatic or otherwise, is ever frozen and immune from the vicissitudes of time.

It is especially important to keep this principle in mind when considering PTSD. The concept of flashback, for example, seemingly implies the literal reinstatement of the sensory context of the traumatic event. Yet the notion of a timeless, inflexible, photographic replay flies in the face of what we know about the dynamics of the brain (3, p 113–7). To be sure, the feeling of sensory reinstatement can be very powerful, but this metacognitive sense of literal replaying is illusory.

The same holds for traumatic nightmares. Although patients often report that their nightmares are replays of the traumatic experience (for example, 11), this cannot literally be true. To be sure, dreams tied closely to the traumatic event can be reconstructed and "reexperienced" during sleep, but such relivings are not reproductions.

Does the Body Really "Keep the Score" by Itself?

Psychiatrist Bessel van der Kolk's vividly entitled article "The Body Keeps the Score" (12) inspired the belief that victims may exhibit bodily expressions of traumatic memory not necessarily accompanied by narrative memory of the trauma. Dr van de Kolk believes that memory of a trauma can be "entirely organized on an implicit or perceptual level, without an accompanying narrative about what happened" (10, p 512). In other words, victims can be entirely oblivious to the fact that they suffered extreme trauma, yet their bodies will "keep the score." Endorsing van der Kolk's theory, Brown and others affirmed that it authorizes therapists to interpret "body memories, flashbacks, fragments, sudden intense feelings, avoidant behaviours, images, sensory processes, and dreams" (7, p 187) as implicit memories of dissociated trauma. The body remembers even if the mind cannot (13). Unfortunately, this line of mistaken reasoning inspired so-called "recovered memory therapy," arguably the most serious catastrophe to strike the mental health field since the lobotomy era.

Conceptual and empirical problems plague van der Kolk's theory (for a detailed critique, see 3; p 177–82). Although implicit memory is a genuine phenomenon, it cannot be translated into narrative memory, and it does not show traces of its origins. Accordingly, one cannot assume that spontaneous panic attacks, for example, are implicit expressions of a dissociated memory of a sexual assault. Indeed, although physiologic reactivity to reminders of trauma most certainly does occur, it is accompanied by conscious, explicit memory of the traumatic event. Finally, implicit memory, like all forms of memory, is subject to alteration over time (14). There is no convincing evidence that trauma survivors exhibit implicit memories of trauma, such as psychophysiologic reactivity,

Abbreviations used in this article

CSA	childhood sexual abuse
PTSD	posttraumatic stress disorder

without also experiencing explicit memories of the horrific event as well. Thus, even when the body does "keep the score," so does the mind.

Emotionality Does Not Confirm Veracity

People suffering from PTSD who recall their traumatic experiences in the laboratory often report intense anguish and exhibit psychophysiologic activation congruent with the subjective experience (15). However, one cannot infer the veracity of a memory from the emotion that accompanies recollection—a fact sometimes forgotten by traumatologists. For example, several years ago, when some patients were recovering "memories" of satanic ritual abuse, the intense emotion accompanying these "recollections" convinced many therapists that something truly horrific had happened to these individuals. As Bloom affirmed, "we can say with a high degree of certainty that their symptom picture is consistent only with trauma of monumental proportions" (16, p 463).

In reality, sincere belief that one has been traumatized can produce intense emotional arousal at least as great as that exhibited by PTSD patients. For example, our research group recruited individuals who reported having been abducted and traumatized by space aliens and exposed them to audiotaped scripts of their abduction trauma in the psychophysiology laboratory (17). The typical abductee was not suffering from psychosis, was characterized by a rich imagination, had a history of isolated sleep paralysis accompanied by hypnopompic ("upon awakening") hallucinations of extraterrestrial intruders in the bedroom, and had undergone hypnotic memory recovery sessions in which detailed accounts of being medically and sexually probed on spaceships emerged (18,19). Exposure to their audiotaped "false memories" of trauma provoked marked subjective distress and psychophysiologic reactivity (for example, heart rate, skin conductance, and facial electromyographic activity) (17). Strikingly, the degree of reactivity was greater than that exhibited by Vietnam veterans diagnosed with PTSD when they listened to audiotaped scripts of their war trauma (20). Belief that one has been traumatized can result in subjective and psychophysiologic responses indistinguishable from responses of those suffering from PTSD. Accordingly, one cannot infer the veracity of a memory from the emotional responses accompanying it.

Confusion About Repetition, Emotional Arousal, and Memory

The previously cited quotation from Spiegel expresses the view that victims are most likely to dissociate memories that are emotionally intense and most likely to block out repeated, rather than single, traumatic events. Both notions contradict what we know about how arousal and repetition affect memory. Release of stress hormones during aversive or traumatic events strengthens memory for the traumatizing experience (21). Intense arousal enhances memory for the core features of the arousing event; it does not attenuate it.

Moreover, as psychologists have known since the days of Ebbinghaus, repetition strengthens memory, it does not weaken it. The more often a type of event occurs, whether it is flying on airplanes, eating breakfast, or being sexually abused, the more likely the person is to remember having experienced that type of event. The details of any particular airplane trip, breakfast, or abuse episode may meld with others over time, making it difficult to disaggregate many highly similar instances of the same kind of event. However, repetition itself strengthens memory for the class of event. Hence, the more a person is traumatized, the more likely he or she is to remember having been traumatized, even though details of any particular event may become blurred with others.

Confusion About Traumatic Dissociative Amnesia

By far, the most confusion regarding trauma and memory concerns the concept of traumatic (or dissociative) amnesia (22). Traumatic amnesia theorists acknowledge that most victims remember their trauma all too well. However, they also claim that a significant minority of victims are incapable of remembering their most horrific experiences, precisely because these experiences are too traumatic for the mind to contemplate. Indeed, Brown and others proclaimed "overwhelming scientific support for the existence of repressed or dissociated memory" (7, p 538–9). However, these theorists commonly misread the very studies they cite in support of the phenomenon.

Incomplete Encoding Is Not Traumatic Amnesia

As evidence for traumatic amnesia, some clinical theorists point to the DSM-IV PTSD criterion of "inability to recall an important aspect of the trauma" (23, p 428). Of course, the mind does not operate like a videotape recorder, and so there is no reason to expect that every aspect of a traumatic experience will be encoded into memory in the first place. Under conditions of high arousal, most people attend to the central features of the event at the expense of the peripheral ones. Individuals robbed at gunpoint sometime fail to encode the face of the robber, often because their attention is glued to his weapon. A failure to recall the assailant's face would not constitute "amnesia" for an important aspect of the trauma, because the victim never encoded the face into memory in the first place. The DSM-IV symptom is ambiguous because it fails to distinguish between encoding followed by retrieval failure (that is, amnesia) and simple failure to encode during the event itself. Accordingly, endorsement of this symptom does not unambiguously support the notion that people cannot recall aspects of their traumatic experiences.

Everyday Forgetfulness Is Not Traumatic Amnesia

People suffering from various psychiatric disorders, including PTSD, often complain that their memory is not as good as it used to be. Preoccupation with personal misfortune, including memories of trauma, may result in the subjective sense of poor memory. However, everyday forgetfulness that develops following a traumatic event is not the same thing as traumatic amnesia—an inability to remember the trauma itself. Unfortunately, traumatic amnesia theorists proffer studies documenting this general memory problem as if they confirmed amnesia for trauma. For example, citing Archibald and Tuddenham's study on World War II battle fatigue patients (24), Freyd adduced it as showing "veterans' amnesia for their combat experiences" (25, p 40). Although 65% of the combat fatigue patients did complain of memory difficulties, this refers to everyday forgetfulness, not amnesia for the traumatic experiences themselves. Indeed, Archibald and Tuddenham found precisely the opposite of what Freyd claims they found. Rather than having "amnesia" for their combat experiences, these patients "cannot blot out their painful memories" (24, p 480). Apparently, their vivid, intrusive memories of combat interfered with their ability to remember things in everyday life.

Psychogenic Amnesia Is Not Traumatic Amnesia

Although the term psychogenic amnesia is sometimes used as a synonym for traumatic amnesia, they are different. Canonical cases of psychogenic amnesia are characterized by sudden, massive, retrograde memory loss, including loss of personal identity (26). Although occasionally preceded by stressors of uncertain etiologic significance (for example, difficulties with one's job or marriage), these are seldom traumatic, and there is no obvious physical insult to the brain, such as a serious blow to the head. This rare syndrome usually remits suddenly after several days or weeks and without any memory-restoration therapy.

Alleged cases of amnesia for trauma are very different. Not only is it claimed that the syndrome follows exposure to a traumatic event, the memory failure is also specific for the trauma itself. Traumatic amnesia does not involve complete loss of one's identity and a failure to remember anything from one's past. Accordingly, the syndrome of psychogenic amnesia must not be adduced to support claims that trauma victims are unable to remember their trauma.

Organic Amnesia Is Not Traumatic Amnesia

Traumatologists occasionally confuse organic amnesia resulting from direct damage to the brain with amnesia resulting from psychic causes. For example, Brown and others (7) wrote that "Dollinger found that 2 of the 38 children studied after watching lightning strike and kill a playmate had no memory of the event" (7, p 609–10). However, Brown and others forgot to mention that both amnesic children had themselves been struck by side flashes from the main lightning bolt, knocked unconscious, and nearly killed. Given the massive trauma to the brain suffered by these 2 youngsters, it is little wonder that they had amnesia for the lightning strike. Children who had witnessed this horror, but who had not themselves been struck by lightning, remembered it all too well. Therefore, we can be sure that amnesia in the 2 children struck by the lightning was attributable to the physical, not psychic, aspects of their misfortune.

Nondisclosure Is Not Traumatic Amnesia

Some confirmed victims of childhood abuse fail to acknowledge having been abused when questioned by survey interviewers (for example, 28). Although these cases may indeed constitute genuine inability to recall abusive events, a failure to disclose abuse upon questioning does not count as unambiguous evidence of amnesia. For example, in one study researchers recontacted nondisclosing respondents and discovered that none of them had failed to recall their abuse during the previous interview (29). For various reasons, such as dislike of the interviewer, each of these respondents had been unwilling to disclose and discuss the abuse. Although nondisclosure may signify amnesia, it cannot be equated with a genuine inability to recall unless further evidence supports that hypothesis.

Childhood Amnesia Is Not Traumatic Amnesia

Most people remember very little of their lives before age 4 or 5 years. Brain maturation and cognitive changes, especially in language, make it difficult for older children—let alone adults—to recall events encoded during the preschool years. The upshot is that very young children may be unable to recall adverse events that occurred during their earliest years, not because the experience was so traumatic that it has been blocked out of awareness but because next to nothing is remembered from these years anyway, thanks to childhood amnesia. Some cases of apparent inability to recall early CSA seem attributable to childhood amnesia because of the very young age of the children when it occurred (30).

Not Thinking About Something for a Long Time Is Not Traumatic Amnesia

Perhaps the most common confusion in the field is misinterpreting not thinking about something as an inability to remember it. For example, Briere and Conte found that nearly 60% of adult psychiatric patients who reported having been sexually abused as children answered affirmatively when asked whether there had been "a time when you could not remember [the sexual abuse]" (31, p 24). Briere and Conte interpreted these data as evidence for "sexual abuse-related repression" (31, p 26). An affirmative response to this question implies that the subject spent a period of time trying

unsuccessfully to remember his or her sexual abuse. However, if Briere and Conte's subjects had been totally unaware of having been traumatized, on what basis would they attempt to recall abuse memories in the first place? The question borders on the nonsensical, and the most likely account of the results is that subjects interpreted the question to mean, "Has there ever been a time when you did not think about your abuse?" Nevertheless, not thinking about something for a long time is not the same thing as being unable to remember it, and it is inability to remember encoded information that constitutes amnesia. To be sure, it is entirely conceivable that subjects in Briere and Conte's study might very well have recalled their abuse only with great difficulty, had someone directly asked about it during the years when it never came to mind, but failure of a memory to enter awareness for many years does not mean that it has been actively blocked from awareness by putative inhibitory mechanisms such as repression or dissociation.

Further complicating matters, some individuals who believed they had not thought about their abuse for many years did, in fact, recall it, but then forgot that they had remembered it (32). These individuals were surprised when others told them that they previously discussed their abuse during the period when they thought the memories had never come to mind. Thus it is possible that some subjects in studies such as Briere and Conte's may have forgotten previous recollections of their abuse.

There is yet another explanation for why individuals may fail to remember their CSA until many years later. At least in our research program, many adults reporting recovered memories of sexual abuse failed to experience their abuse as traumatic, partly because they failed to understand what was happening (33,34). Our typical subject reports having been nonviolently abused (for example, fondled) by a trusted adult (for example, a grandfather) on one or several occasions and reports having been upset, scared, and confused, but not overwhelmingly terrified. Failing to understand the abuse as abuse, the subject manages not to think about the experience, often aided by the absence of retrieval cues (for example, the perpetrator moves away). Years later, an encounter with reminders prompts recollection of the long-forgotten experience, which the subject now correctly understands to be sexual abuse. Thus, contrary to the standard view of dissociative traumatic amnesia ("repression"), subjects do not forget their abuse, because it was neither traumatic nor understood as abuse. One need not postulate any special mechanism, such as dissociative amnesia or repression, to explain why these early, unpleasant, and misunderstood experiences did not come to mind for many years.

It goes without saying that to emphasize that CSA is not invariably traumatic, in the sense of being terrifying, in no way diminishes its moral reprehensibility. Sexual abuse is a social evil regardless of whether it triggers terror or causes psychiatric disease.

Conclusion

The memory wars are not about science against antiscience. Instead, they concern correctly interpreted science in contrast to incorrectly interpreted science. When the science is interpreted properly, the evidence shows that traumatic events—those experienced as overwhelmingly terrifying at the time of their occurrence—are highly memorable and seldom, if ever, forgotten.

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[1]Professor, Department of Psychology, Harvard University, Cambridge, Massachusetts.
Address for correspondence: Dr RJ McNally, Department of Psychology, Harvard University, 1230 William James Hall, 33 Kirkland Street, Cambridge, MA 02138
e-mail: rjm@wjh.harvard.edu

Résumé : Dégonfler les mythes sur les traumatismes et la mémoire

Comment les victimes de traumatismes se remémorent — ou oublient — leurs expériences les plus horribles se trouve au cœur de la controverse la plus affligeante de la psychiatrie et de la psychologie des récentes années. Alors que les experts soutiennent que les événements traumatiques — ceux qui sont vécus dans une terreur écrasante au moment où ils se produisent — sont trop bien présents à la mémoire, les théoriciens de l'amnésie traumatique sont d'avis contraire. Bien que ces derniers admettent que le trauma est souvent apparemment gravé dans la mémoire, ils soutiennent néanmoins qu'une minorité significative de survivants sont incapables de se souvenir de leur trauma, grâce aux mécanismes soit de la dissociation, soit de la répression. Malheureusement, les preuves qu'ils présentent à l'appui du concept de l'amnésie dissociative traumatique ne soutiennent pas leurs allégations. Le but de cette étude est de dissiper la confusion et de dégonfler les mythes sur les traumatismes et la mémoire.