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Is Traumatic Memory Special?

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The current debate over false memories arises in part from a concern that certain psychotherapeutic strategies, sometimes known as recovered memory therapy, may encourage patients to reconstruct inaccurate mental representations of their life histories. Recovered memory therapy, in turn, is predicated on the *trauma-memory argument*—that memories of traumatic events have special properties that distinguish them from ordinary memories of the sort usually studied in the laboratory (Kihlstrom, 1996). One major consequence of this assumption is to limit the degree to which principles of ordinary memory function—including the idea that illusory memories can be created through suggestion and inference—can be generalized from the laboratory to the clinic. In this article, we examine some of the most prominent claims that traumatic memories have "special" properties reflecting the distinctive ways in which traumatic events are represented and processed.

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BACKGROUND: HYSTERIA AND WAR NEUROSIS

The origins of the notion that traumatic memory is special are to be found in the psychiatry of the late 19th century. For example, Janet (1889) argued that traumatic stress interferes with the integration of the traumatic experience with the ongoing stream of conscious experience, thought, and action. This state of *dissociation* results in an amnesia for the traumatic event. However, according to Janet, this functional amnesia (Kihlstrom & Schacter, 1995) affects only conscious recollection, or explicit memory. A complete mental representation of the event remains available in storage, and is expressed implicitly through dreams, behavior, and the like.[2]

Similarly, Breuer and Freud (1893–1895/1955) asserted that traumatic events are subject to another mental process, *repression,* an act of cognitive inhibition or suppression that renders the person amnesic for the event. However, they (like Janet) argued that memory for the event is not abolished entirely. Rather, the memory persists in an unconscious state, and is manifested in the form of the symptoms of hysteria (a broad category of mental illness including what are now known as the conversion and dissociative disor-

ders)—thus Breuer and Freud's famous formulation that "hysterics suffer . . . from reminiscences" (p. 7). Even after Freud shifted his interest from actual trauma (the seduction hypothesis of hysteria) to fantasies (the theory of infantile sexuality, castration anxiety, and the Oedipus complex), he maintained this essential formulation: Repressed impulses, affects, and ideas are at the root of normal personality and mental illness.

The notion that traumatic events are repressed or dissociated was especially popular among those psychiatrists and psychologists involved in the treatment of war neurosis during and after the two world wars (e.g., Grinker & Spiegel, 1943/1945), and it has been revived more recently by clinicians who treat soldiers, rape victims, and other people suffering the symptoms of posttraumatic stress disorder (PTSD; Herman, 1992). Although there are important conceptual differences between dissociation and repression (Singer, 1990), both processes are held to deny certain mental contents to conscious awareness and voluntary control, and these surface similarities have often led the two terms to be used interchangeably.

TWO TYPES OF TRAUMATIC MEMORY?

The first problem confronted by proponents of the trauma-memory argument and recovered memory therapy is that research with both humans and animals indicates that high levels of stress enhance rather than impair memory—perhaps by virtue of hormones that are released in response to stress and in turn regulate memory storage (McGaugh, 1992), or perhaps by virtue of activating the amygdala, a subcortical brain structure known to be involved in fear and other emotions (LeDoux, 1996). In addition to this neuroscientific evidence, results from behavioral and cognitive research suggest that explicit memory for emotionally arousing events is well retained, at least for their central details, or themes, if not for their peripheral details (Christianson, 1992). The association with high levels of stress may also render a memory more distinctive, and thus easier to recollect. Thus, from the perspective of experimental research on memory, it is difficult to understand how traumatic events could be dissociated or repressed and require special techniques to be recovered and brought back into awareness.

One prominent solution to this problem has been offered by Terr (1991, 1994), who distinguishes between two types of trauma. According to Terr, Type I traumas involve single, surprising, well-defined events that leave fully detailed traces in memory. By contrast, Type II traumas are repeated, sometimes in a varying manner, over a long period of time. According to Terr, such events invoke defenses such as denial, psychic numbing, and dissociation, with the result that they are poorly remembered.

As evidence for this distinction, Terr (1991, 1994) offered a contrast between the children who were victims in the Chowchilla kidnapping case (in which a group of children were abducted in their school bus) and other children who were victims of repeated abuse or other trauma. The Chowchilla victims remembered their experiences well, whereas the other children did not—although Terr argued that the latter expressed their memories unconsciously through behavior and personality changes. However, close examination of Terr's evidence reveals a number of problems with the comparison. For example, the two groups of traumatized children differed markedly in age. The Chowchilla victims were all 5 to 14 years of age, but the abuse victims were all less than 5 years old. Thus, the abuse victims' lack of memory of their trauma may have been a function of the normal tendency to forget the events of infancy and early childhood (phenomena known as infantile and childhood amnesia), rather than any defensive process instigated by repeated trauma. Moreover, because Terr was aware of the life histories of the children whose behavior she analyzed, her interpretations of their behavior may well have been contaminated by this prior knowledge; nor did Terr compare the behavior of the abused children with that of an appropriately matched control group.

In fact, results inconsistent with Terr's formulation of Type II trauma were obtained in a recent study of 3- to 10-year-old children who underwent (sometimes more than once) a voiding cystourethrogram, a stressful and embarrassing procedure involving genital probing and catheterization of the urinary tract (Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1994). Memory for the procedure was unaffected by its repetition, although the youngest children (aged 3–4) showed the poorest memory, an effect that may be attributable to normal childhood amnesia, rather than to any repressive or dissociative process instigated by trauma.[3] Solitary and repeated traumas may well have different psychological consequences, but there is no evidence that these include special memory mechanisms.

TRAUMATIC MEMORY AS IMPLICIT MEMORY?

Terr's notion that unconscious memories of trauma may be mani-

fested in behavior and other aspects of personality is echoed in another group of theories that rest on the popular distinction between explicit and implicit, or declarative and nondeclarative, memory. Most prominently, van der Kolk (1994) has argued that traumatic stress interferes with the consolidation of a verbalizable explicit memory, but has no effect on implicit sensory, motor, or affective representations of the traumatic event. Furthermore, by virtue of high levels of adrenaline and other stress hormones, such implicit representations are deeply imprinted in memory, and can intrude on consciousness in the form of annoying sensations, images, feelings, and motor activities. Thus, in a manner reminiscent of Breuer and Freud (1893–1895/1955), van der Kolk (1994) argued that "the body keeps the score," albeit unconsciously, concerning the individual's history of trauma. Similarly, Herman (1992) suggested that traumatic memories lack verbal narrative and context, and exist only as static, unverbalizable, but vivid sensations and images. And Freyd (1996) proposed that betrayal by a primary caregiver, such as sexual abuse by a parent, evokes evolved coping mechanisms that block awareness of the abuse so as not to interfere with normal attachment processes.

Again, the chief problem with such proposals is that high levels of stress and emotionality seem to be associated with memory enhancement, not memory failure; therefore, one would expect to observe good explicit memory for traumatic experiences. One reply to this criticism is that laboratory studies are irrelevant to the case of memory for genuine trauma. Thus, van der Kolk and Fisler (1995) wrote,

> If trauma is defined as the experience of an inescapable stressful event that overwhelms one's existing coping mechanisms, it is questionable whether findings of memory distortions in normal subjects exposed to videotaped stresses in the laboratory can serve as meaningful guides to understanding traumatic memories. (p. 506)

Another resolution of the apparent contradiction is to accept the evidence that memory for emotional events is enhanced, but to argue that such enhancement applies to the implicit perceptual, somatic, and emotional components of memory, as opposed to the explicit verbalizable narrative. Thus, van der Kolk and Fisler (1995) suggested that "traumatic memories may be encoded differently than memories for ordinary events, perhaps via alterations in attentional focusing, perhaps because extreme emotional arousal interferes with hippocampal [i.e., explicit] memory functions" (p. 508). In other words, traumatic events are well preserved in implicit memory, as vivid images, sensations, and feelings, but not in explicit memory, as verbalizable narratives.

As evidence of this dissociation between implicit and explicit memories of trauma, van der Kolk and Fisler (1995) offered a study of 46 individuals who responded to a newspaper advertisement inviting "people who were haunted by memories of terrible life experiences" (p. 514) to participate in a 2-hr interview. During the interview, the subjects were asked to rate the characteristics of their memories at three points: at the time the events occurred, when their memories were at their peak, and currently. All of the subjects reported that their initial memories of trauma involved bodily or emotional feelings, and that narrative memory emerged only later—results that van der Kolk and Fisler interpreted as confirming the special qualities of traumatic memory.

Unfortunately, van der Kolk and Fisler's (1995) comparison of traumatic and nontraumatic memories is badly confounded. In the first place, 78% of the subjects had experienced their trauma in childhood (usually sexual or physical abuse or assault), and 42% of these subjects reported having experienced a significant or total amnesia for the event at some point in their lives. Thus, the poor narrative qualities of the traumatic memories, and even the periods of amnesia, may have been due to normal processes associated with infantile and childhood amnesia, rather than any special qualities of traumatic memory. Moreover, recruiting people who were "haunted" by traumatic memories may have biased subject selection against individuals who remembered their traumas explicitly. Finally, the subjects were free to select their own nontraumatic events for comparison with their traumatic ones. These control experiences were such events as weddings and graduations, which may not have been matched to the traumatic events in terms of such crucial factors as age of occurrence and intensity of emotional arousal (whether positive or negative). It should not be surprising that a subject cannot give a narrative account of an episode of abuse that occurred when he or she was 1 year old, and does not experience flashbacks of his or her high school graduation. Such differences may have nothing to do with any special qualities that traumatic memory might possess.

TERROR AND BETRAYAL

The puzzle remains: Why do some trauma victims remember their experiences poorly, and others remember them only too well? It is not clear when traumatic stress should enhance memory, as in the flashbacks typical of PTSD, and

when it should impair it. Freyd (1996) narrowed the type of trauma causing amnesia to betrayal. For Freyd, terror, such as experienced in combat, enhances memory, whereas betrayal, in which there is a violation of trust and "a conflict between external reality and social dependence" (p. 75), impairs memory through a process of knowledge isolation analogous to dissociation or repression. The fate of traumatic memory, then, depends on the balance between terror and betrayal experienced by the victim. Thus, Freyd appears to succeed where other trauma-memory theorists do not, in explaining why trauma should have such variable effects on memory. However, the actual extent of this success is unclear. For example, although Freyd noted that "the fear-inducing traumas on which van der Kolk bases his theory" (p. 101) may not fit into her formulation, the vast majority of the childhood trauma victims studied by van der Kolk and Fisler (1995) had been sexually abused as children—experiences that, in Freyd's view, would presumably involve betrayal, not terror.

Moreover, it should be understood that Freyd's (1996) explanation is almost entirely speculative. She provided little empirical data to support her hypothesis, offering instead a list of "testable predictions" (p. 128). Unfortunately, some of the evidence, arguments, and predictions offered by Freyd are of unclear relevance to her theory. For example, she cited an unpublished study in which students who reported high levels of dissociative experiences showed greater interference on the Stroop task[4] than those reporting low levels of dissociation. However, because the subjects were not classified in terms of their abuse histories, we do not know whether victims of child sexual abuse deploy attention differently than victims of other forms of trauma, or nontraumatized control groups. In order to test her prediction, Freyd should have employed subjects with documented histories of abuse, and she should have employed stimulus materials clearly relevant to betrayal and other forms of trauma.

Freyd (1996) also speculated that the Type II traumas described by Terr (1991, 1994) involved betrayal, but ignored the methodological problems with Terr's study, such as those we noted earlier. Similarly, Freyd cited evidence of amnesia among victims of childhood incest and sexual abuse as supporting her theory (e.g., Williams, 1994), but discounted the well-known methodological problems of these studies (e.g., Lindsay & Read, 1994; Loftus, Garry, & Feldman, 1994)—in particular, their reliance on retrospective self-reports of either abuse, amnesia, or both.

TRAUMATIC MEMORY AS STATE DEPENDENT

Sometimes, the argument for recovered memory therapy is based on the assumption that traumatic memory is state dependent. In state-dependent memory, the memorability of an event is determined by the congruence between the person's psychological or physiological state at the time the event occurred and when he or she attempts to remember that event. Accordingly, Whitfield (1995) has argued that state dependence "is usual" (p. 45) in traumatic amnesia, and that "getting back into the original state can appear to be a catalyst to recalling an otherwise forgotten event or experience" (p. 46). Similarly, van der Kolk and Fisler (1995) asserted that "recall is triggered by exposure to sensory or affective stimuli that match sensory or affective elements associated with the trauma" (p. 509).

The idea that traumatic memories are state dependent, and thus difficult to retrieve under ordinary (i.e., nonemotional) circumstances, gains plausibility from the fact that studies have demonstrated that both humans and animals exhibit congruence effects under a variety of circumstances. For example, if they experience an event while under the influence of a psychoactive drug, they remember it better later if they are again under the influence of the drug. Similarly, if emotional state or even environmental context during learning and during remembering match, both animals and humans remember the event better (e.g., Eich, 1987, 1995). However, state dependency itself is not evidence that traumatic memory is special: All memory is dependent on the degree of congruence between the context in which encoding took place and that in which retrieval is attempted. Thus, even if there were good evidence that traumatic memories are state dependent, this would not lead us to conclude that traumatic memories are special.

However, it should be understood that, in fact, there is no laboratory or clinical evidence that traumatic memory is state dependent. Rather, the claim of state dependency is based on extrapolation from laboratory studies of nonhuman animals and college students—a somewhat ironic situation, given the tendency of trauma theorists to reject laboratory studies of memory as irrelevant to the clinical case. But even if the generalization were valid, state dependency could not justify some of the techniques employed in recovered memory therapy (Herman, 1992). Hypnosis, for example, is generally relaxing, and sodium amytal (so-called truth serum) and other barbiturates are sedative drugs. It is hard to see how these techniques could possibly reinstate feelings of traumatic stress, and thus facilitate

the retrieval of memories encoded during states of negative emotional arousal.

CLINICAL LORE AND SCIENTIFIC EVIDENCE

Although their ideas about the underlying mechanisms are different, Terr, van der Kolk, Freyd, and Whitfield all agree on the outcome: Memories of trauma, or at least of certain forms of trauma, are encoded by processes, such as repression and dissociation, that make them difficult to retrieve as coherent, verbal narratives. The result is that traumatic memories are primarily available as isolated, nonverbal, sensory, motor, and emotional fragments. If this conclusion were valid, it might follow that special techniques such as imagination, story telling, and mutual disclosure of traumatic experiences between patient and therapist, or among patients in group therapy, would be necessary to restore traumatic memories to a state of conscious accessibility, and to weave them into the fabric of the person's conscious awareness of his or her past. Although this conclusion may be intuitively appealing, the preponderance of laboratory evidence indicates that memory is more likely to be enhanced than impaired by high levels of emotion and stress, so that memories for trauma are distinctive, long-lasting, and easily retrieved.

Maintaining the conviction that traumatic memories have special properties requires that one reject laboratory evidence as irrelevant to cases of clinical trauma, and accept instead evidence from clinical case studies of actual trauma victims. However, as we have shown, the clinical evidence is itself highly ambiguous. What on initial inspection appear to be exceptions to the rule of enhanced emotional memory are either poorly documented or else explicable by other, normal, memory processes. Nothing about the clinical evidence suggests that traumatic memories are special, or that special techniques are required to recover them.

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Notes

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2. Explicit memory refers to conscious recollection, as when a person recalls or recognizes an event from the past; implicit memory refers to the influence of past events on current experience, thought, or action, even though these events may not be accessible to conscious recollection (Schacter, 1987). Some theorists characterize this difference as one between declarative and nondeclarative memory (Squire, Knowlton, & Musen, 1993).

3. It should be understood that memory for any experience will diminish with the passage of time. Moreover, repetition of any experience makes it harder to remember the precise details of any particular episode—a phenomenon known as proactive or retroactive interference. Thus, even when the details of specific incidents of repeated trauma and stress are forgotten, the forgetting may be due to processes that are entirely normal, rather than specifically related to trauma.

4. On the Stroop task, subjects are asked to report the colors in which strings of letters are printed. This task is quite easy when the items are strings of Xs or random sequences of letters, but becomes harder when the items are words (and is especially difficult when the word is the name of a color different from the color of the ink with which the word is printed!).

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