Recovering Memories

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The subject of recovered memories is at the center of the so-called false memory debate, sometimes referred to as the “recovered memory debate,” and even the “memory wars,” all terms referring to an intellectual and emotional conflict that has captured both scholarly and popular interest and concern. A web search using the search term recovered memory yields well over a million results dealing with the subject. A recent bibliography of articles listed over 800 published papers relevant to the topic. In many ways the subject of recovered memories seems to be less about memory per se and more about validation, that is, on the one hand, validation of victims’ memories of traumatic events that truly occurred, and, on the other hand, validation of the innocence of people who have been wrongfully accused of being abusers. On the front lines of the memory wars have been clinicians and therapists who typically (but by no means always) have been more vocal about concerns with victims of abuse who recover memories, versus experimentalists who typically (but not always) have expressed more concern over those who have been wrongfully accused based on false memories. Because both of these concerns are so important, we will try to address both as we discuss what recovered memories are, what is known about them, what is controversial about recovered memories, and what is not yet known about them.

Here we ask a number of questions to clarify what is known about recovered memories, what is not known, and what needs to be known. Do recovered memories exist? If so, what causes them, and how common are they? Does repression exist? Are recovered memories valid representations of past events, and are they less (or more) accurate than are continuous memories, that is, memories that were never inaccessible? Is recovery of traumatic memories different from recovery of nontraumatic memories?

Another goal is to clarify a number of terms and concepts, such as recovered memories, suppression, inhibition, interference, normal forgetting, repression, dissociation, discovered memories, memory triggers, amnesia, trauma, reminiscence, mood dependence, and hypnosis. We will offer a taxonomy of a number of phenomena related to recovered
memories, distinguishing, for example, continuous memories from recovered and discovered memories. We review the history of these issues, discuss the available research, and point to issues that should be addressed by future research. In some cases, we make policy recommendations about recovered memories.

HISTORICAL REVIEW

Apparent amnesia and the subsequent recovery of memory were originally studied by researchers and writers such as Sigmund Freud and Pierre Janet. Freud's (1896/1962) "Aetiology of Hysteria" is perhaps the best known early discussion of this topic. In his 1896 address, Freud presented his "seduction theory," in which he argued that "hysteria" resulted from repressed memories of childhood sexual trauma, and that memory recovery (i.e., bringing these memories into consciousness) would lead to alleviation of the hysterical symptom. He subsequently abandoned his seduction theory in favor of his theory of childhood sexual fantasy. Why Freud abandoned his theory and whether or not his initial discoveries were genuine has been a topic of recent debate (see Gleaves and Hernandez, 1999, for a discussion of these issues).

In 1889, Janet published L'automatisme psychologique, in which he reported his investigations into the processes that linked traumatic experiences and psychopathology. Janet is viewed by many (e.g., van der Kolk & van der Hart, 1989) as the first to systematically study dissociation as the psychological process with which people react to overwhelming experiences. Like Freud, Janet also studied "hysteria" and argued that the primary mode of adaptation in hysterical individuals was the dissociation of memories related to frightening experiences.

After Freud and Janet, the concept of amnesia for trauma continued to receive attention, particularly in the literature on wartime trauma. Sargent and Slater (1941) described a World War II account of 1,000 consecutive admissions to a neurological unit. Over 14% of the sample exhibited amnesia, and the extent of amnesia appeared to be associated with the severity of the trauma (e.g., 35% of those exposed to severe stress exhibited significant amnestic disorders). The memory disturbances reported in the wartime literature included all subtypes of amnesia. In describing many of these psychiatric reactions to war trauma, Grinker and Spiegel (1945) wrote, "There may be total amnesia, including both events on the battlefield and the patient's previous life, or memory for part of the battle experience may be retained, with a gap involving the actual precipitating traumatic factors and the events which followed. The majority of patients make persistent attempts to recover their lost memories, and in many instances their efforts may be successful without an aid from the therapist" (p. 10).

Retrieval of these memories of trauma was described as essential to recovery and was accomplished through the use of psychotherapy, hypnosis (Kardiner & Spiegel, 1947), or even drugs such as sodium pentothal (see also Grinker & Spiegel, 1945). This topic became controversial in the 1980s and 1990s when reports of amnesia and memory recovery associated with child sexual abuse became more common (Sivers et al., 2002).
TERMS AND DEFINITIONAL ISSUES

The terms and concepts used in discussions of recovered memories are of great importance, both because the language must be used clearly and unambiguously, and because some nomenclature can carry along baggage or implied meanings that are not intended to be included by a verbal label. An example is the term false memory, a term that has been used alternatively to refer to misremembered details or completely fabricated memories, two very different phenomena whose effects can vary greatly in terms of their consequences (DePrince, Allard, Oh, & Freyd, 2004).

Although the term recovered memory is most frequently used in the context of trauma or abuse, it more generally refers to a conscious memory of an event or an episode that one was previously unable to remember. The generally accepted criteria for a recovered memory are that (1) the event or episode in question must have been successfully encoded, (2) memory for the encoded events must be inaccessible for a time, and (3) conscious memory must occur sometime after the period of inaccessibility. To some, the term recovered memory also suggests that (1) the events in question were traumatic, (2) repression was the cause of temporary inaccessibility, and (3) unconscious processes work to repress and recover lost memories of trauma. It is important, however, to distinguish these implications from the definition of recovered memories, which does not involve trauma, repression, or unconscious mechanisms. A recovered memory can be contrasted with a continuous memory, that is, a memory of an event or episode that was never inaccessible. Similar to the term recovered memories is the term discovered memories, that is, surprising or even shocking memories of experiences that have not been remembered for a long period of time. Although similar, the term discovered memory carries less conceptual baggage for some than the term recovered memory (e.g., Schooer, Ambadar, & Bendiksen, 1997; Schooer, 2001), because it does not imply that the memories in question were repressed, only that they were not remembered. The surprising and shocking nature of discovered memories can be understood sometimes in terms of sudden changes in an individual's understanding of the meaning of the remembered events.

Encoding refers to forming a mental representation of an event and having that representation stored in long-term memory. Encoded memories of events are said to be available in memory. An experience that is encoded and later forgotten might be recoverable, whereas experiences that are not successfully encoded could never be recovered. Although the initial encoding of an experience may occur immediately, a period of consolidation, lasting hours or even days after the event, is believed by some to be necessary for the encoded event to become stored in a more permanent fashion.

Accessibility refers to one's ability to bring a thought or a memory into one's conscious mind. Access is possible only for memories that are available, that is, memories that are already encoded in long-term memory. Access of a memory means the same thing as retrieval of a memory. Retrieval is a process involved in explicit memory in which memories of encoded experiences are brought to mind and is similar to the term recollection, which refers to consciously inspecting or reexperiencing parts or aspects of previously encoded episodes. A memory can be said to be inaccessible if attempts to retrieve a
memory fail. Not everyone, however, adopts the same criteria for such failures. That is, when motivation is present, and efforts to retrieve a memory are persistent and focused, there is clearer evidence for inaccessibility than if retrieval efforts are feeble or nonexistent. It is difficult to determine that a memory was inaccessible if appropriate cues were never provided, or if no attempts to retrieve the memory in question occurred. We will return to this point below.

A number of terms in the area of recovered memory deal with various forms of forgetting, including suppression, inhibition, amnesia, dissociation, repression, and normal forgetting. Here we briefly explain the meanings of these important terms, and we try to distinguish each term's denotations from its connotations. The terms suppression and inhibition both refer to cognitive mechanisms for excluding ideas and experiences from one's conscious mind. Suppression refers to a temporary vanishing of thoughts or memories from one's conscious mind through a deliberate act of one's will (e.g., Wenzlaff & Wegner, 2000). Inhibition, in the memory domain, is the long-term forgetting that results from repeated bouts of suppression (e.g., Anderson, Bjork, & Bjork, 1994; Anderson & Spellman, 1995; Anderson & Green, 2001).

Use of the term normal forgetting implies that there are also special mechanisms that do not involve normal forgetting, that is, special mechanisms that can cause periods of amnesia for certain memories, mechanisms beyond simple interference (competition and confusion among memories), inhibition (retrieval difficulty or retrieval failure), and decay (loss of memory over time) of memories. One special mechanism is referred to as dissociation, a disruption in the integration of various parts of the mind. Dissociation separates groups of mental processes that are normally integrated, resulting in independent functioning of these processes, such as an abnormal separation of affect from cognition. In most general terms, dissociation is the opposite of association. The current version of the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2001) defines psychological dissociation as "a disruption in the usually integrated functions of consciousness, memory, identity, or perception" (p. 519). It may also be defined as a complex mental state during which there is a change in a person's consciousness that disturbs the normally connected functions of identity, memory, thoughts, feelings, and experiences. A distinction is made between nonpathological dissociation (e.g., absorption and imaginative involvement) and pathological dissociation (e.g., amnesia, depersonalization, and derealization; Waller, Putnam, & Carlson, 1996).

There are many types of amnesia, but all may be characterized by an extraordinary degree of forgetting, such as a loss of memory or a gap in one's memory. The term can be confusing, not only because there are various types of amnesia, but also because the term sometimes implies conclusions about amnesia that may be in contention, such as the amnesia's reversibility, or how amnesia differs from normal forgetting. In most general terms, amnesia refers simply to an inability to remember. The DSM defines dissociative amnesia (previously known as psychogenic amnesia) as a "reversible memory impairment in which memories of personal experience cannot be retrieved in verbal form" (APA, p. 520). The fact that it is reversible implies that the lost memories can be recovered. This is in contrast to amnesias of strictly organic bases, which are more generally not reversible.
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In the DSM and trauma literature, several different types of amnesia are recognized. Localized refers to an inability to remember events that occurred during a circumscribed period of time (e.g., an hour or two surrounding a specific trauma). Selective refers to being able to only recall bits and pieces of events that took place in a defined period of time. For example, an abuse victim may recall only some parts of a series of events around his or her abuse. Generalized amnesia would be diagnosed when a person’s amnesia encompasses his or her entire life. There are sometimes rare but genuine cases who appear as a John or Jane Doe. Continuous amnesia occurs when the individual has no memory for events beginning from a certain point in the past continuing up to the present. Systematized amnesia is characterized by a loss of memory for a specific category of information. A person with this disorder, for example, might be missing all memories about one specific family member. Amnesia for a series of abusive experiences would qualify as systematized amnesia.

It is important to note that the apparent amnesia associated with trauma generally only applies to declarative (autobiographical knowledge) memory and not to nondeclarative (feelings, sensations, and habits) memory. In fact, the effects of trauma may be the opposite for these two types of memory. As Jacobs and Nadel (1998) noted, “It [traumatic stress] can cause amnesia for the autobiographical context of the stressful event and hypermemria for the emotional memories produced by them” (p. 1115). Thus, a person might feel the intense emotion and pain associated with a trauma but not understand the origins of those feelings.

One special mechanism postulated to cause amnesia for traumatic experiences is repression, an unconscious defense mechanism that supposedly banishes unacceptable ideas, fantasies, affects, or impulses from consciousness. Even when an experience cannot be consciously recalled, memory of repressed material is theorized to emerge implicitly, that is, in certain responses or behaviors related to the inaccessible memories. Repression is a key concept in psychodynamic theory, explaining how the unconscious wards off from conscious awareness threatening and uncomfortable content. That repressed memories might subsequently enter consciousness, perhaps as a product of psychotherapy, has historically served as the basis of recovered memories. Although there is now ample scientific evidence that supports the existence of recovered memories, the same cannot be said for the existence of this unconscious form of repression, which has proved elusive to scientific scrutiny. Whereas the concept of repression is embraced by some (e.g., Edelson, 1990), others dismiss the concept completely (e.g., Holmes, 1990; Kihlstrom, 2002). Still others have endeavored to revamp the concept of repression, showing that straightforward cognitive processes, such as memory inhibition (e.g., Anderson, Bjork, & Bjork, 1994; Anderson & Green, 2001), interference and retrieval bias (Smith, Gleave, et al., 2003), and implicit memory (e.g., Bower, 1990), can explain ways that unwanted memories can be banished from consciousness. These cognitive explanations do not rely on an unconscious mechanism that manages emotional memories by keeping them out of conscious awareness.

In general, the term trauma refers to a highly stressful event. However, depending on how it is defined, the term may also be quite subjective. That is, what is traumatic to one
individual may not be traumatic to another. In an attempt to maintain the reliability of the PTSD diagnosis, the DSM offers an operational definition of a traumatic event that "involves actual or threatened death or serious injury, or other threat to one's physical integrity; or witnessing an event that involves death, injury, or a threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member or other close associate. . . . The person's response to the event must involve intense fear, helplessness, or horror" (p. 463). Examples include, but are not limited to, military combat, violent personal attack, natural or man-made disasters, and torture. For children, sexually traumatic events may include age-inappropriate sexual experiences without violence or injury. The term betrayal trauma (Freyd, 1996) refers to a kind of trauma that is independent of the reaction of the event. According to Freyd (2003), "betrayal trauma occurs when people or institutions we depend on for survival violate us in some way."

LABORATORY RESEARCH
AND THEORETICAL UNDERPINNINGS

A good deal of empirical research on memory for events has examined mechanisms for long-term forgetting. These mechanisms can be grouped into two general categories, mechanisms based upon inadequate encoding of memories and those based on processes that take effect after encoding. Forgetting due to inadequate encoding of experiences can result from a number of causes, such as inadequate attention to an event, or apprehending only superficial aspects of events. Experiences that are inadequately encoded are said to be unavailable and cannot be recovered. Successful encoding of an event can be verified if the event is explicitly or consciously remembered after some period of time has passed; generally, memory after more than a few minutes is considered evidence of an adequately encoded episode. It should be noted, however, that consolidation processes, which occur after initial encoding (such as during sleep the night after an experience), may be needed to make an event memory permanently available. That is, a memory that was initially encoded, but not successfully consolidated, might not be recoverable.

The most commonly researched cognitive mechanisms that could cause forgetting of successfully encoded memories are interference and inhibition. In interference, events are forgotten because competing memories come to mind. Experimental psychology boasts a long and rich history of laboratory research on the nature of memory interference (e.g., Anderson & Neely, 1996; Postman & Underwood, 1973). Inhibition, in contrast, causes forgetting by making memories less accessible independently of competing memories. Although the two are difficult to distinguish experimentally, there is now considerable evidence of forgetting that is explainable by an inhibitory forgetting mechanism, but not by interference (e.g., Anderson & Spellman, 1995; Anderson & Green, 2001).

A single period of thought suppression may be immediately followed by a "rebound" period during which a formerly suppressed thought becomes hyperaccessible (e.g., Wegner, 1989). Increasing the number of times that someone tries not to think of a response has been found to decrease the chance that the response will be remembered (e.g., Anderson
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Individually, each of these mechanisms could potentially play a role in the occurrence of recovered memories. Collectively, these cognitive mechanisms fix the limits of the spectrum of phenomena that have been termed normal forms of forgetting. Those limits, however, might be surprising to some. Research on most normal forgetting phenomena, such as directed forgetting, retrieval-induced forgetting, part-list cuing inhibition, and inhibition from the think/no-think method show that experimental manipulations can cause recall levels to drop by about 5–20%. Such effects, although reliable and well replicated, do not seem to account for the magnitude of forgetting effects one might associate with repression or amnesia.

Recently, however, reversible laboratory forgetting effects of 35–60% have been found (Smith, 1995; Smith et al., 2003; Smith and Moynan, 2004) with the use of experimental methods based on interference and cue-dependent memory mechanisms. Memory of the Forget Group for the three targeted word lists has been found to be up to 62% worse than recall of those three lists by the Control Group. These forgetting effects are rather remarkable for simple laboratory behavioral procedures involving a single hour-long session, yet they clearly do not involve any special cognitive or affective mechanisms. Perhaps even more remarkable is the finding that those same laboratory interference procedures produce large forgetting effects even for a list of expletives (Smith & Moynan, 2004); that is, subjects were made to forget that they read and wrote down an entire list of curse words! This research is described further below.

Another body of experimental research has been devoted to memory recovery. Spontaneous recovery refers to the recurrence of a conditioned response after extinction has occurred; it is one of the most basic phenomena in Pavlovian conditioning. Extinction refers to the finding that if conditioned and unconditioned stimuli are not paired for many trials, an individual will stop giving the conditioned response. Recovery can occur after a period of nonexposure to the conditioned stimulus, and it is called spontaneous when the causes of the recovered response may not be obvious. Spontaneous recovery is one laboratory analogue of a recovered memory in that encoding (conditioning) is initially successful, then a period of inaccessibility occurs (extinction), followed by recovery of the original memory (spontaneous recovery). Examples of spontaneous recovery include recovery of extinguished fears and phobias (e.g., Jacobs & Nadel, 1985) and return of extinguished alcohol cravings (Rodd, Bell, Sable, Murphy, & McBride, 2004).

Hypermnnesia and reminiscence are also laboratory analogues of recovered memories (e.g., Erdelyi, 1990; Shaughnessy, 2002); both terms refer to findings that people sometimes recall more after repeated recall attempts. Reminiscence refers to the elicitation of memories that were not remembered earlier, and hypermnnesia is the related finding that repeated tests can increase the total amount recalled. Events forgotten on one test might be recovered, that is, successfully recalled on a later test. Hypermnnesia and reminiscence are some of the oldest reported phenomena in the experimental literature on memory (e.g., Ballard, 1913) and have been shown with a wide variety of materials,
including lists of words, pictures, and stories (Payne, 1987). Although there are different theories of the causes of reminiscence and hypermnesia, most are based on the notion that multiple retrieval attempts do not all produce the same memories. Therefore, later recall attempts sometimes will bring memories to mind that were not previously remembered.

Tip-of-the-tongue (TOT) states, and recovery from them, represent clear everyday examples of blocked and recovered memories. The TOT is defined as a situation in which one cannot recall a word or name that seems to be in memory, and it feels as if recall of the missing name or word is imminent (Smith, 1994). Most TOT experiences are thought to occur for names and words that are actually known, but are temporarily and inexplicably inaccessible (e.g., A. Brown, 1990; Burke, McKay, Worthley, & Wade, 1992). Most naturally occurring TOTs are eventually resolved, some after a short time, but some take days or longer to resolve. The cognitive mechanisms that give rise to TOT states include memory blocks (e.g., Jones, 1989; Jones & Langford, 1987; Choi & Smith, 2005) and incomplete activation of memories (e.g., A. Brown, 1990; Burke et al., 1992). Both of these theories acknowledge that TOTs are surprising retrieval failures for memories that have been successfully encoded and that TOT states are often accompanied by partial retrieval of the target memories and by strong feelings that the target memory, though temporarily inaccessible, is actually available (encoded) in memory. It is also important to note that illusory TOTs can occur (e.g., Schwartz, Travis, Castro, & Smith, 2000), that is, strong feelings that never-encoded memories are actually available. These false metamemories and others can result from an inappropriate use of inferential mechanisms, such as cue familiarity (e.g., Metcalfe, Schwartz, & Joachim, 1993; Schwartz & Metcalfe, 1992), social pressure (Widner, Smith, & Graziano, 1996), or retrieval of material related to the target (e.g., Koriat, 1993; Schwartz & Smith, 1997).

Another phenomenon studied in the experimental literature is mood-dependent memory, a type of cue-dependent memory. Cue dependence is the reliance of memory on appropriate hints or associations, typically stimuli that were present or that were thought about when encoding of the events in question originally took place. Memory accuracy is generally better when the conditions of the original encoding are better reinstated (e.g., McGeoch & Irion, 1952), including reinstatement of verbal cues (e.g., Light & Carter-Sobell, 1970; Tulving & Thomson, 1973), encoding environments (e.g., Smith, 1979; Smith, Glenberg, & Bjork, 1978; Smith & Vela, 2001), drug states (e.g., Eich & Birnbaum, 1982), and mood states (e.g., Bower, 1981; Eich & Metcalfe, 1989). It is a possibility that stressful and traumatic experiences are accompanied by unusual emotional states, and those rare states, once reexperienced, might trigger memories that would otherwise be inaccessible. Such an explanation of recovered memories, although logically consistent, has not been experimentally investigated because of ethical problems with inducing such states in experimental volunteers. This mood-dependent theory, if true, would apply only to cases in which memories were experienced and encoded in unusual emotional states.

Hypnosis is often defined as a state of inner absorption, concentration, and focused attention. It is also a clinical tool used to treat a variety of problems. Hypnosis is sometimes used in the treatment of dissociative disorders (Maldonado, Butler, & Spiegel,
10. RECOVERED MEMORIES

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2002) and has been studied as a tool for retrieval of memories (see Kihlstrom & Barn-
hardt, 1993). However, in 1985, a committee commissioned by the American Medical
Association cautioned against the systematic use of hypnosis for recollection for both its
unreliability (the possibility for example of confabulation) and its potential to create
vivid false memories with an artificially induced sense of certainty. "The Council finds
that recollections obtained during hypnosis can involve confabulations and pseudo-
memories and not only fail to be more accurate, but actually appear to be less reliable
than non hypnotic recall" (AMA, 1985, p. 1918). Because of this potential problem,
many states in the United States and several countries now confine legal testimony to
that obtained prior to any systematic hypnotic treatment. Despite these concerns, in
naturalistic research, use of hypnosis has not been found to be substantially associated
with recovered memories of sexual abuse (Leavitt, 2001).

Consistent with classical models of learning, stimuli associated with original condi-
tioning events may also elicit the same response as that event. Memories may be trig-
ger after a period of amnesia by situations that are similar to the original traumatic
event, general emotional activation, relationships, hearing about others' recent traumatic
events, sexual encounters, or seeing someone associated with the trauma or with the
time period of the trauma (Brown, Schefflin, & Hammond, 1998; Harvey, 1999; Schoo-
ler, 1999). Interestingly, some research has found that recovered memories are least likely to
occur in the context of psychotherapy (Brown et al., 1998). When they do occur in ther-
apy, recovered memories are frequently additional memories recovered during work on
previously known memories. Exposure treatment sessions, by their very nature, are likely
to reactivate additional details of reported memories and trigger previously unrealled
memories (Leskin et al., 1998).

Currently, there is no evidence that recovered memories, particularly for the central
themes of traumatic events, are any more or less accurate than continuous memories
(Brown et al., 1998; Williams, 1995; Dalenberg, 1996; Smith, Gleaves, et al., 2003).
However, as described above, extreme trauma can disrupt the storage of the spatial-
temporal aspects of a memory. In addition, the process by which somatic fragments are
reconstructed into a coherent narrative is imperfect and subject to influence. Jacobs and
Nadel (1998) described the circumstances, according to their model of the psychophys-
iology of reconstructed memory, under which recovered traumatic memories are likely to
be more or less accurate. They argued that specific memories would be most accurate if
a person had experienced one massive traumatic event. With multiple, similar traumas
there would be less but still some degree of confidence in specific memories. However,
the authors argued that when an individual has experienced numerous different trau-
matic events (e.g., sexual assaults by different perpetrators, numerous traumatic war
experiences, and/or several automobile accidents), they would have little confidence in
the memory for specific events because the spatiotemporal context of the varying events
could be inaccurately linked to the somato-emotional memory fragments. However, to
conclude that the specifics of a memory are questionable is different from concluding
that a person has not been traumatized (i.e., that a memory is completely false). In fact,
it is the severity, variety, and extent of the trauma that theoretically cause the problems
with accurate retrieval and reconstruction. It is also important to note that this model
applies to memory for events that involved extreme amounts of stress. Memories of less stressful events may be blocked and recovered through differing mechanisms. The accuracy of such memories has not been established but has also not been empirically challenged.

Experimental studies of blocked and recovered memories have shown large, consistent, and reversible memory blocking effects, demonstrating a laboratory analogue of recovered memories (e.g., Gerkens, 2004; Smith, 1995; Smith, Gleaves, et al., 2003; Smith, Gerkens, Choi, & Hull, 2003; Smith & Moynan, 2004). As noted above, this laboratory method is based upon straightforward cognitive mechanisms that include interference for memory blocking, and cue-dependent memory for recovery. In these experiments students' memories were tested for three targeted lists of words, say, a list of tools, a list of fish, and a list of sports, each containing a dozen items. Initially, subjects all viewed and wrote down the three targeted lists of words mixed in with 18 other lists of words (filler lists), which were also viewed and written down. Both the Control Group and the Forget Group, after a 20-minute delay, tried to recall the lists. The Forget Group, however, saw the 18 filler lists (but not the three target lists, tools, fish, and sports) several more times before the recall test. Both groups saw the three target lists only once, but the Forget Group saw the fillers many more times, causing a very large (30–60%) interference effect for the three targeted lists on the initial recall test. Importantly, the large forgetting effects in these studies were completely reversible. A person who, on the initial recall test, had forgotten about reading the list of tools, for example, was nonetheless able to recall the tool list and as many list items as participants who had continuous memories of the material when appropriate cues were provided. Thus, the method produces a very large and robust recovered memory effect without the use of any special or exotic mechanisms. It has been found that when these memory recovery effects occur, the accuracy (amount recalled) is equivalent for both continuous and recovered memories, and the levels of false memories are also equivalent (Gerkens, 2004; Smith, Gleaves, et al., 2003). The equivalence of false memories for continuous and recovered memories has been found for completely suggested fabrications, episodically confused details (Smith, Gleaves, et al., 2003), and semantic confusion errors (Gerkens, 2004). Thus, the experimental evidence indicates that the levels of accurate and false memories are not different for continuous and recovered memories.

CLINICAL ISSUES

In this section we deal with issues that concern various clinical aspects of recovered memories. These issues include traumatic amnesia, betrayal trauma, effects of suggestibility in therapy, so-called memory work in psychotherapy, post-traumatic stress disorder, the use of exposure in therapy, and questionable aspects of treatments.

It is important to distinguish the phenomenon of traumatic amnesia from the mechanism(s) responsible for it. There are numerous possible mechanisms for reported amnesia, including repression, suppression, dissociation, simple forgetting due to lack of
retrieval cues and interference, avoidance (conscious minimization and denial), lack of discussion (practice) due to shame, lack of state-dependent retrieval cues, and precipitous forgetting of nocturnal experiences. Sivers, Schoeler, and Freyd (2002) discussed other possible mechanisms, including some specific to sexual abuse.

In some cases, amnesia may be a direct physiological effect of trauma. Extreme stress appears to affect memory both at the neurological level and in terms of subjective experience. A physiological effect of traumatic stress can be a disruption of the mechanisms responsible for encoding the spatiotemporal context of memory (Jacobs & Nadel, 1998). With everyday experiences, autobiographical memories are created such that events, feelings, context, and the relations among them are linked. Moderate levels of stress can produce contextually linked, exceptionally vivid memories because of enhanced encoding of spatiotemporal information (due to the effect of stress hormones on hippocampus function) and enhanced encoding of emotional elements (due to hormonal effects on amygdala function). However, at high levels of stress, the hippocampus-based system appears to shut down, whereas the amygdala-based system is enhanced. This effect can lead to emotional and somatic information being stored separately from the spatiotemporal contexts of a memory (Jacobs & Nadel, 1998).

Although the physiological effects of stress may explain some cases of amnesia, they most likely do not explain all cases. Particularly relevant are those associated more with betrayal experiences (e.g., Freyd, 1996). Some child molestation cases, such as the well-documented case of Ross Cheit (see Freyd, 1996, or Horn, 1993), serve as an example. At the age of 38, Cheit recovered memories of being repeatedly molested between the ages of 10 and 13 years by a camp administrator. The original events, although also emotional, may not have been experienced with the same level and types of emotions as occur with life-threatening events. Cheit wrote (as described in Freyd, 1996), “The concept of trauma never seemed right to me. It didn’t fit my story. There were no threats. I never sensed danger. I didn’t fear him” (p. 11). Rather than terror, the original emotions were probably more akin to disgust, shame, and a sense of betrayal. Cheit reported feeling “frozen” at the touch of the molester and later described his memories as disgusting and embarrassing. However, in some cases, both mechanisms may apply. That is, an event may be a betrayal and be life-threatening.

Although the underlying mechanism should not be confused with the phenomenon itself, the underlying mechanism involved in a particular case may be important because it may determine the likelihood that a recovered memory is accurate. If, for example, amnesia was due to an encoding failure, it would be impossible to recover a memory of the event. If the event involved extreme levels of stress and the physiological effects described above, although the memory may be recoverable, its accuracy may be in question.

In addition to the characteristics described above, betrayal trauma theory predicts that apparent amnesia for abuse will be higher when the relationship between perpetrator and victim involves closeness, trust, and/or care-giving. Freyd (1996) re-analyzed a number of relevant data sets (including the prospective sample reported by Williams [1994, 1995] and the retrospective samples reported by Cameron [1993] and Feldman-
Summers and Pope (1994) and stated that reported amnesia was more highly associated with incestuous abuse than nonincestuous abuse. Subsequently, Freyd, DePrince, and Zurbriggen (2001) found that physical and sexual abuse perpetrated by a caregiver was related to higher levels of self-reported memory impairment for the events compared with noncaregiver abuse. See Freyd (2003) for additional examples.

It appears that men experience more nonbetrayal traumas than do women, whereas women experience more betrayal traumas than do men (Goldberg & Freyd, 2004). Women may seem to have more recovered memories of abuse because they may have more experiences with the sorts of events that lead to forgetting (DePrince & Freyd, 2002).

In terms of suggestibility, Leavitt (1997, 1999) examined samples of persons reporting recovered memories of sexual abuse found with the use of the Oudjousson Suggestibility Scale. In the first study, Leavitt found that persons reporting recovered memories were in general less suggestible than a psychiatric comparison group. In the second study, he found that, following 2 years of treatment, the most suggestible of the patients did not recover memories. Those with the lowest levels of suggestibility recovered memories from the same therapeutic practices. These findings obviously do not support the position that suggestibility is responsible for reports of recovered memory.

In a series of studies, McNally and colleagues examined how persons reporting recovered memories of sexual abuse differ from those reporting continuous memories (and in some cases, other conditions). McNally, Clancy, Schacter, and Pitman (2000) reported that recovered memory participants scored higher on absorption and dissociation than did those reporting either continuous memories or no abuse history. In a study of reality monitoring, McNally, Clancy, Barrett, and Parker (2005) reported that adults reporting either repressed or recovered memories of childhood sexual abuse (CSA) were less able to discriminate between words they had seen from words they had imagined seeing, as compared with adults reporting either never having forgotten their CSA or adults reporting no history of CSA. However, relative deficits in the ability to discriminate percepts from images were apparent only on some tests.

One aspect of this topic that is frequently misunderstood is the reason that a therapist might engage in memory work or memory recovery as part of therapy. Critics of such therapy frequently argue that the justification for such practices is based purely on disproved Freudian concepts. Although Freud's original work was indeed based on the assumption that unconscious material needed to be made conscious, more modern trauma treatments, including those accepted as empirically supported (e.g., Keane, 1998), are actually based largely on Pavlovian models of learning as well as Mowrer's (1960) two-factor theory. That is, thinking about and processing memories of trauma is viewed as a form of imaginal exposure, in which extinction of conditioned emotional responses is the goal.

Information/emotional processing theories of PTSD have also expanded on the basic learning model by adopting network models of emotion to understand how fearful associations are maintained and how they can be altered. Foa and colleagues (1989) conceptualized PTSD by using Lang's (1985) biinformational model of emotions. In this model, information regarding associations between stimuli, responses, and meaning
highly associated and, DePrince, and a caregiver was events compared women, whereas d, 2004). Women have more expec-yd, 2002). persons reporting son Suggestibility memories were in second study, he patients did not covered memories support the posi-ons reporting re-mories (and t (2000) reported dissociation than a study of reality adults reporting A) were less able agined seeing, as SA or adults re-discriminate pers-son that a thera-vy. Critics of such ed purely on dis-based on the ass-modern trauma rane, 1998), are er's (1960) two-ma is viewed as ional responses is xpanded on the tand how fearful illeagues (1989) of emotions. In es, and meaning is stored in memory networks. Foa and Kozak (1986) proposed that successful processing occurs when the memory network is fully activated (stimulus, response, and meaning elements are accessed, and arousal is experienced) and new information is incorporated into the network. Doing so thus involves processing the traumatic memory.

As the above illustrates, although based on a variety of theoretical rationales, empirically supported therapies for traumatic memory involve exposing participants to memories and feelings associated with trauma. Research suggests that such interventions are associated with significant symptom reduction. Furthermore (and of most relevance to this chapter), processing of trauma memories quite frequently invokes additional memories. As Leskin, Kaloupek, and Keane (1998) wrote, "One of the expected consequences of exposure treatment sessions is reactivation of additional details for reported memories, as well as triggering previously unrecalled memories" (italics added) (p. 996). Thus, when memory recovery occurs in therapy (which is rare relative to other contexts in which it happens), it is most likely during processing of other existing memories.

Based on the existing trauma treatment literature, the use of such treatments per se should not be a cause of concern. In fact, failing to use them in bona fide cases of trauma should be regarded as a greater concern. However, there would be at least two questionable uses of such treatments. One would be prematurely attempting to address traumatic memories in therapy. Phases of psycho-education and stabilization are generally necessary before trauma resolution should be attempted (Zerbe Enns et al., 1998), and premature attempts can clearly cause clients to de-compensate. Furthermore, comprehensive treatment guides by Chu (1998) and Gold (2000) make clear that addressing traumatic memories is far from all that one does with such patients. Thus, a treatment that focuses exclusively on recovery and exposure to traumatic memories should be regarded as inappropriate and potentially harmful, regardless of the authenticity of the memories.

The second questionable use of such therapeutic approaches, of significant relevance to this chapter, would be in cases where there is no known history of abuse. That is, to help trauma patients recover memories of trauma so they would then be processed using the means described above would, at best, depart from how these treatments are supposed to be used. Zerbe Enns et al. (1998) provide a variety of guidelines for clients who may have experienced abuse, including the possible need for dealing with the uncertainty.

A TAXONOMY OF PHENOMENA

Because recovered memories are not a unitary phenomenon, but rather refer to several related phenomena and concepts, we present a taxonomy of phenomena that may help distinguish various types of experiences. Thus, blanket statements that appear to refer to all such phenomena can be replaced with more specific, and it is hoped, more accurate statements.

**Single Event vs. Series of Abusive Experiences.** Recovered memories can refer to either a single event, what Terr (1995) refers to as Type I trauma, or forgetting and
recovery of more long-term repeated experiences, Terr's Type II trauma. For example, the mechanisms that underlie forgetting and recovery of a single physical trauma are undoubtedly different from those that underlie forgetting of repeated abusive experiences over a period of months or years. Whereas a vast body of research over the past century has examined and documented forgetting of single events, there is little experimental research on the forgetting and recovery of experiences that have been repeated over a long period of time, which would involve unethical levels of negative affect.

**Traumatic Experiences vs. Post hoc Suppression.** Recovered memories of abusive experiences can vary widely in terms of when the mechanism underlying forgetting of those experiences took place. Events originally experienced as highly traumatic, as described above, may be encoded in a manner in which the events are fragmented and inaccurately reconstructed in memory. Recovery of fragments of such traumatic memories may be accurate in content, whereas the themes around which the reconstruction is made can be confabulated. In contrast, events originally experienced as peculiar or unsettling might be subsequently discovered to be shameful or morally shocking; in such cases, the events might be suppressed, inhibited, or otherwise forgotten. There are no theories or empirical results that would lead to the conclusion that these forgotten experiences, if subsequently recovered, would be less accurate than continuous memories that were never inaccessible.

**Recovered vs. Discovered vs. Continuous Memories.** The definition of recovered memories includes the criterion that such memories must undergo a period of inaccessibility to be considered recovered. In contrast, the definition of discovered memories includes no such requirement, such memories may have been inaccessible for a time, or they may have been remembered in a way that creates a new personal understanding of the events (e.g., an adult newly becoming aware that previously misunderstood childhood experiences actually constituted sexual abuse), whether or not the events could have previously been remembered. Continuous memories are those that have been accessible all along. Whereas both recovered and discovered memories can reveal new content that was previously unavailable, continuous memories do not.

**Traumatic vs. Emotional vs. Unemotional Memories.** Virtually no controversy exists over the existence of recovered memories of unemotional experiences. Although there is some skepticism over the notion that emotional experiences can be forgotten and recovered, there have been research reports documenting that emotional events may be forgotten just as unemotional ones can. Whether highly traumatic experiences can be forgotten is more controversial.

**Memories of Gist vs. Detail.** Memories for the gist of incidents differ from memories of the details of those episodes, and the same is true for recovery of memory gist and details. That is, even when the gist of an episode can be recalled, details may remain temporarily inaccessible. Likewise, forgotten gist can be accompanied by remembered details.
Suggested vs. Triggered Recovered Memories. It is important to distinguish between recovered memories that result from leading suggestion versus those that are triggered by cues or events in the absence of suggestion. This dichotomy is relevant both for memories recovered in therapy and for those recovered outside of therapeutic settings.

IMPORTANT QUESTIONS: CONSENSUS
ANSWERS AND DISAGREEMENTS

Do recovered memories exist? If so, how common are they?
Consensus: The consensus appears to be that recovered memories do occur. That is, most scientists and practitioners believe that it is possible for memories of experiences to be encoded, then to undergo a period of inaccessibility, followed by a successful experience of remembering the original episode.
Disagreements: The major points of contention are whether emotional (particularly traumatic) experiences are likely to be forgotten, whether the putative mechanism for such forgetting is conscious or unconscious, whether recovered memories constitute accurate representations of past experiences, and whether recovered memories are common or rare.

Does repression exist? Do people have ways to avoid remembering traumatic experiences?
Consensus: Most would agree that thoughts and memories can be suppressed, avoided, and forgotten, and that formerly forgotten experiences might later be remembered. Most also agree that traumatized individuals are motivated to banish painful thoughts and memories from consciousness.
Disagreements: Whereas some believe that unconscious mechanisms of repression commonly keep out of mind unwanted thoughts, such as traumatic memories, others claim that there is no evidence for the existence of such mechanisms and that trauma is far more likely to be remembered than forgotten.

Are recovered memories less (or more) accurate than continuous memories?
Consensus: Research on this question has not shown any differences in the accuracy of recovered versus continuous memories. Neither forgetting nor false memories have been found to differ for these two types of memories.
Disagreements: There is no consensus as to whether recovered memories are valid representations of events, primarily because not everyone agrees that any memories are valid representations of the past. Whereas some believe that memories are generally accurate, others see memory as largely reconstructive, and always subject to inferential errors.

Are traumatic memories special?
Consensus: Most, but not all, would agree that memories of traumatic experiences differ from memories of nontraumatic experiences.
Disagreements: Whereas some maintain that natural coping mechanisms, such as repression and dissociation, routinely act to protect people from reexperiencing traumatic
memories, others believe that emotional experiences, including traumatic ones, are unlikely to be forgotten. A third view has it that traumatic memories may consist of fragments of real experiences that are accurately or inaccurately reconstructed, depending on the appropriateness of the schema used to guide memory reconstruction. A fourth view is that even though traumatic memories may differ systematically from nontraumatic memories in that they may represent events that might be unlikely to come up in daily conversations, or that the events are associated with unusual emotional states that are rarely reexperienced, traumatic memories nonetheless obey normal laws of forgetting, such as inhibition, interference, and cue dependence.

DIRECTIONS FOR FUTURE RESEARCH

Future research should address the question of recovery of gist versus detail. A good deal of memory research (e.g., Brainerd & Reyna, 1993, 1998; Brainerd, Wright, Reyna, & Mojardin, 2003) indicates that gist and detail are encoded as different types of memories. This important distinction must be addressed in research on recovered memories. Continuous memory of gist, for example, does not ensure that memories of details are also continuously accessible, or vice versa. A soldier who can continuously recall only the vague gist of a battle, for example, without being able to recall details, might be shocked to recover or discover memories of those details. Likewise, an individual who can continuously recall a detail of an episode might be surprised to discover the meaning or gist encompassing that detail.

One of the stickiest issues in the recovered memory debate is the definition of inaccessibility. To be a recovered memory, the individual in question must have undergone a period of time during which the memory was inaccessible. The history of memory research is replete, however, with studies that show that what is remembered with one type of test is different from a different test, what is recalled with one cue is different from another cue’s influence, and what is retrieved on one occasion is going to be different from retrieval on other occasions (e.g., Shaughnessy, 2002). It is therefore impossible to prove that a memory is 100% inaccessible without the use of all types of tests, cues, and occasions to verify the inaccessibility. A consensual operational definition of inaccessibility would help enlighten those engaged in the recovered memory debate.

Are there unconscious mechanisms involved in recovered memories? Although much has been learned about unconscious mechanisms in memory and perception, little is known about the role of unconscious mechanisms with respect to banishing memories from consciousness. The role of unconscious mechanisms is also unclear in terms of implicit memory, of experiences prior to their conscious recovery, and in terms of how unconscious mechanisms might trigger memory recovery. Although the role of affect in memory is beginning to be understood, its role in the occurrence of recovered memories is not. In particular, it is not clear whether highly emotional memories are likely to be truly forgotten. Whereas one body of research indicates that emotional experiences are more likely than nonemotional ones to be remembered, other work indicates that one’s personal belief in the superiority of his or her emotional memories is not supported by
objective evidence. There is also a dearth of evidence on the ways in which traumatic memories can be forgotten and recovered.

Whether there are individual differences in the susceptibility to recovered memories is not known. Are some individuals more predisposed than others to forget traumatic experiences, and to later recover those lost memories? It is also not clear how individuals who experience recovered memories are subsequently affected in their thinking and behavior. That is, are their memories accurate? Is the recovery of those memories therapeutic for those individuals?

SUMMARY, CONCLUSIONS, AND POLICY RECOMMENDATIONS

Recovered memories are not unitary phenomena, but rather are caused by a number of mechanisms, many of which are normal in the sense that all people experience them. Although the existence of repression, particularly a form that involves unconscious mechanisms, is highly controversial, the existence of recovered memories is not in doubt, nor does the existence of recovered memories rely upon the reality of repression. Some have expressed doubt, however, that emotional experiences, particularly traumatic ones that have been repeated over long periods of time, are likely to be forgotten. Recovered memories have not been found to differ from continuous memories in terms of the amount recalled or the level of false memories.

Although recovered memories are defined in part by a period of inaccessibility, even in cases in which partial memory is continuous, it is possible for additional material to be recovered at a later time, and it is possible for surprising new interpretations of memories to be discovered. The issue of inaccessibility can have important legal implications if a recovered memory of an event appears as new evidence that was not previously available for a case. As we previously noted, it is difficult to know whether a particular memory is inaccessible, because research so often shows that an event that is not remembered on one test might be accessed on a different test. Clearly, it is impossible to conduct an infinite set of tests to determine that a memory is truly inaccessible, nor is there any gold-standard test that can be used to determine true inaccessibility. Rather than questioning the previous inaccessibility of a recovered memory, one should question whether the eyewitness withheld from evidence the memory of an event of which he or she was aware. Potential memories of experiences cannot be held in evidence; only conscious awareness of those memories can allow them to be used as evidence. Thus, memories should be considered as new evidence if they were not known and withheld. Such cases include memories that had never been previously recalled; those that had been recalled prior to the evidence-gathering, but that could not be recalled when requested; as well as memory discoveries that involve new realizations or understandings of old memories.

Having just defended the validity of once inaccessible memories, we must be quick to point out that the fact that memories are recovered or discovered confers no special validity to those new memories. We have every reason to believe that, like memories of any other experiences, recovered memories are likely to be just as susceptible as
continuous memories to the effects of memory decay over time, distortion, suggestion, false inference, and interference. Recovered memories of events that were originally experienced as traumatic would be susceptible to the distortion and/or fragmentation that can occur for memories formed under high levels of stress. Given that all long-term memory of events is susceptible to forgetting and false memories, it is clear that recovered memories, just like continuous memories, are fallible entities whose accuracy can be bolstered by corroborating evidence.

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