

False and Recovered Memories in the Laboratory and Clinic: A Review of Experimental and Clinical Evidence

David H. Gleaves and Steven M. Smith,
Texas A&M University
Lisa D. Butler and David Spiegel,
Stanford University

We review the clinical and laboratory evidence for recovered and false memories. Available data suggest that, at least under certain circumstances, both false and recovered memories may occur. We suggest that the critical questions are: (a) how common is each type of memory phenomenon, (b) what factors lead to the occurrence of each (including under what conditions are each possible and/or likely to occur), and perhaps most importantly, (c) can these two types of memories be distinguished from each other? We describe laboratory analogues for both types of experiences and describe an empirical research protocol that can not only demonstrate both phenomena but also compare the two. Such comparisons can help to determine the causes of these phenomena, discover factors that influence the two, and hopefully reveal signature variables that could pro-

vide telltale signs differentiating false and recovered memories.

Key words: amnesia, dissociation, false memories, recovered memories, false memory syndrome. [Clin Psychol Sci Prac 11: 3–28, 2004]

Blocked and recovered memories of traumatic events have long been regarded as real phenomena by the mental health profession, our legal system, and the public at large. These phenomena originally were studied by Pierre Janet and Sigmund Freud, and Freud's (1896/1962) "Aetiology of Hysteria" is perhaps the best known early discussion of this topic. In this now famous 1896 address, Freud presented his "Seduction Theory" in which he argued that "hysteria" resulted from repressed memories of childhood sexual trauma. Freud further argued that bringing these memories into consciousness would lead to the alleviation of the hysterical symptom.

Freud subsequently abandoned his seduction theory in favor of his theory of childhood sexual fantasy at a time when he was trying to develop a more general theory of psychopathology designed to account for disorders other than hysteria such as obsessive-compulsive neurosis (Freud, 1955) and schizophrenia. However, the concept of repressed memories of trauma continued to receive attention, particularly in the literature on wartime trauma. For example, Sargant and Slater (1941) described a World War II account of 1000 consecutive admissions to a neurological unit. Over 14% of the sample exhibited amnesia, with the severity of amnesia appearing to be associated with the severity of trauma (e.g., 35% of those exposed to severe stress exhibited significant amnesias). Retrieval of these memories of

Address correspondence to David H. Gleaves, Department of Psychology, 230 Psychology Building, 4235 TAMU, Texas A&M University, College Station, TX 77843. E-mail: dhg@psyc.tamu.edu.

trauma was seen 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).

More recently, reported amnesia and/or subsequent recovery of memories have been found to be relatively common in studies of clinical populations that experienced childhood sexual and physical abuse (e.g., Briere & Conte, 1993; Feldman-Summers & Pope, 1994; Herman & Schatzow, 1987; Loftus, Polonsky & Fullilove, 1993; L. Williams, 1994, 1995; for a recent review, see D. Brown, Schefflin, & Whitfield, 1999).

Despite these clinical data, other researchers, clinicians, or journalists have questioned the existence of repressed and recovered memories (e.g., Holmes, 1994; Loftus, 1993; Ofshe & Watters, 1993; H. Pope & Hudson, 1995), challenging the academic community to provide objective evidence of these phenomena and at times going so far as to claim that there is no scientific support for the phenomena (e.g., Ofshe & Watters, 1993). Some have also questioned whether “recovered” memories might actually be confabulated or false memories (e.g., Lindsay & Read, 1993; Loftus, 1993). Empirical evidence from controlled laboratory studies of nonpatient populations reliably demonstrates the reality of false memories (e.g., Brewer & Treyens, 1981; Loftus, Miller, & Burns, 1978; McDermott, 1996; Loftus & Palmer, 1974; Payne, Elie, Blackwell, & Neuschatz, 1996; Read, 1996; Roediger & McDermott, 1995), providing support for this alternative explanation.

The debate over false and recovered memories has polarized the academic and mental health communities into camps that endorse one phenomenon or the other (see Pezdek & Banks, 1996 for a balanced review). The controversy also affects the legal system in that it has seen lawsuits based on alleged repressed and recovered memory as well as lawsuits based on alleged implantation of false memories of abuse (see Bowman & Mertz, 1996a, 1996b; D. Brown et al., 1999; Lipton, 1999; M. R. Williams, 1996).

In the present paper we take the position described by Pezdek and Banks (1996) as well as others (e.g., Brewin, 1996; Butler & Spiegel, 1997; J. J. Freyd, 1996; Knapp & VandeCreek, 2000; Smith, 1995a). We acknowledge that under certain circumstances both false and genuine recovered memories may exist. We describe laboratory

analogues for both types of experiences. Assuming that both types of phenomena are possible, we suggest that the critical questions are (a) how common is each type of memory phenomenon, (b) what factors lead to the occurrence of each (including under what conditions are each possible and/or likely to occur), and perhaps most importantly, (c) can these two types of memories be distinguished from each other? Toward these goals, we review experimental and clinical data relevant to answering these questions and propose and describe an empirical research protocol that can not only demonstrate both phenomena, but that can also compare the two. Such comparisons can help to determine the causes of these phenomena, discover factors that influence the two, and hopefully reveal signature variables that could provide telltale signs differentiating false memories from recovered ones.

THEORETICAL ACCOUNTS AND EVIDENCE OF FALSE MEMORIES

The Logic of False Memories

A number of researchers have found evidence of “false memories,” defined as experiences that to rememberers seem to be memories of events that took place within experiments, but which do not correspond to experimentally presented stimuli (e.g., McDermott, 1996; Payne et al., 1996; Read, 1996; Robinson & Roediger, 1997; Roediger & McDermott, 1995). A false memory is not simply any memory error. The term refers to cases in which one appears to experience a memory of an event that did not occur. Memory errors that do not constitute false memories include, for example, retrieval failures, omission errors in recall, and recognition failures. Rather than the absence of memory that is characteristic of omission errors, a false memory involves an experience of remembering a relatively complete episode that did not in fact occur. The difference between accurate and false memories is in the correspondence or noncorrespondence of the memory with objective reality.

Human memories constitute evidence of prior experiences, but currently there may be no guarantee of accuracy, however authentic the memories may seem to the rememberer. Studies of the relation between subjective metacognitive assessments of one’s memory accuracy and objective measures of accuracy have often

shown weak or even nonexistent correlations (e.g., Wells & Loftus, 1984). Even when such correlations are strong, they are by no means perfect, indicating that the accuracy of memories can be misjudged (Lindsay, Read, & Sharma, 1998).

Clinical Evidence for False Memories

Despite recent claims that false memories of sexual abuse and a false-memory syndrome reached epidemic proportions in the 1990s (e.g., P. Freyd, 1999; Goldstein & Farmer, 1992; Pendergrast, 1995), we found no empirical clinical research to support such a claim (for further discussion of this topic see K. S. Pope, 1996, 1997; for a critique, see Kihlstrom, 1997). The primary clinical evidence for the existence of false memories of trauma comes mainly from anecdotal reports by either persons who claim to have been falsely accused of sexual abuse or from persons known as “retractors” or “recantors,” persons who once reported having had memories of sexual abuse that they now believe to be false. In addition, there are clinical reports (particularly with respect to dissociative identity disorder) that describe admixtures of true and false traumatic memories being recounted by the same patient (e.g., Kluff, 1998). Reports of the first type have appeared as books published in the popular literature (e.g., Goldstein & Farmer, 1992; Pendergrast, 1995) and have been described in review papers published in the scientific literature. For example, Loftus (1993) described having received numerous letters from persons claiming to have been falsely accused of sexual abuse. Anecdotal and case reports of recantors have also recently been published in the popular and scientific literature (de Rivera, 1997, 2000; Gavigan, 1992; Lief & Fetkewicz, 1995; McElroy & Keck, 1995; Nelson & Simpson, 1994; Pasley, 1994).

In addition, there have been published discussions of “high profile” cases in which persons claimed that false memories of abuse had been suggested or implanted. One such case occurred in *Ramona v. Ramona* (also *Ramona v. Isabella*; see Bowman & Mertz, 1996a; H. Pope & Hudson, 1996) in which a man whose daughter allegedly recovered memories of abuse by him successfully sued his daughter’s therapist (against the daughter’s wishes) for suggesting or reinforcing false memories. Another often cited case is that of Paul Ingram, a man serving time after confessing to raping his daughters

repeatedly. Writers who have cited his case as an example of false memories (e.g., Loftus, 1993; Ofshe, 1992) argue that Ingram’s confessions were based on false memories created during interrogation (see Kassin, 1997 for a discussion of “internalized false confession”). Thus, in this case, both the alleged victim and the alleged perpetrator are said to have had false memories of nonexistent sexual abuse.

Experimental Evidence of False Memories

Despite the lack of clinical evidence for a false-memory syndrome epidemic, several lines of experimental research support the conclusion that subjects can be made to report remembering events that did not occur. These include studies of the misinformation effect (e.g., Loftus & Palmer, 1974), hypnotic pseudomemory (e.g., Laurence & Perry, 1983), failures of reality monitoring (e.g., Johnson & Raye, 1981), intrusions in schema-guided recall (e.g., Brewer & Treyens, 1981), and intrusions in recall of list words (e.g., Roediger & McDermott, 1995). The putative causes of the false memories in these studies have included overwriting of the original memory trace, which inextricably integrates accurate and inaccurate information, and source monitoring failures that involve such factors as misattributions of familiarity or failures to distinguish perceived events from imagined ones.

The misinformation effect, similar to retroactive interference effects, is generated in three basic steps that include presentation of the original events, intervening events intended to mislead the participant, and a memory test. For example, the participant might witness a videotaped sequence of events, followed by a postevent question that contained a misleading inference. On a later test many participants remember the inferred events as having actually occurred.

In a particularly interesting example of the misinformation effect, the subject is convinced by family members that a fabricated event occurred during the subject’s childhood, at which point the subject may report remembering details of what is a fabricated event (e.g., Hyman, Husband, & Billings, 1995; Loftus & Ketchum, 1994). Although the validity of Loftus’ “lost in the mall study” has been seriously questioned (e.g., D. Brown, 1995), in part because the misinformation was of a relatively common, plausible, and nontraumatic

experience, Pezdek and colleagues (Pezdek, Finger, & Hodge, 1997) replicated the finding to the extent that three of 20 subjects accepted a similar suggestion. However, when a suggestion of a more unusual and possibly traumatic memory analogous to sexual abuse (a rectal enema) was given, none of the subjects adopted the suggestion.

The original explanation of misinformation effects was based upon the notion that related events are not stored faithfully, independently, and veridically, but rather the individual events are used to construct an integrated memory trace that represents the gist or general meaning of the episode (e.g., Bransford & Franks, 1972). This constructed memory supposedly includes inferences, not only from the original events, but potentially from intervening misleading suggestions. Furthermore, according to this explanation, original events cannot be distinguished from the potentially false inferences in a memory representation. In this view, false memories could include retrieval of false suggestions or inferences, or retrieval of blends of original and intervening (false) information (e.g., Loftus & Hoffman, 1989). Alternative explanations of misinformation effects are based upon the presumption that parallel and independent memory traces of original and intervening events are both stored in memory, thereby allowing at least the possibility of later distinguishing original events from inaccurate suggestions and inferences (e.g., Estes, 1997; Zaragoza & Koshmider, 1989). This theoretical debate has not yet been resolved.

Another experimental methodology for creating and demonstrating false memory, which is a variant of the misinformation approach, involves hypnotically created pseudomemory (Barnier & McConkey, 1992; Laurence & Perry, 1983; Lynn, Weekes, & Milano, 1989). In Laurence and Perry's experiment, they hypnotically regressed subjects to a night during the previous week and suggested their having awakened from sleep upon hearing a loud noise. Approximately half of the highly hypnotizable subjects reported the suggested memory as real (although some reported being unsure; also see below discussion for alternative interpretations from Spanos & McLean, 1985–1986, of these results). Barnier and McConkey (1992) extended this line of research by determining that it was hypnotizability rather than induction of a hypnotic trance that better predicted the

report of pseudomemory. Dywan and Bowers (1983) illustrated another nonhypnotic component that affects findings in studies of hypnotic "misinformation." They found that the use of hypnosis increased conviction that recalled information was correct, but not its accuracy. Accuracy was a product of recall effort: the more information produced, the less likely it was to be accurate, indicating that the increase in productivity occurs at the expense of the strictness of the response criterion (Erdelyi & Goldberg, 1979). On the one hand, the best recollection is usually not the first one; repeated recall trials produce more accurate information (Erdelyi & Kleinbard, 1978), meaning that at least some accurate information is not immediately available to conscious recall. On the other hand, pressure to recall more information about an event may result in lower overall accuracy of recall.

Another experimental methodology that has been used to demonstrate false memory effects is the reality-monitoring paradigm (e.g., Johnson & Raye, 1981). Reality monitoring refers to the ability (or inability) to distinguish between memories that were generated from internal and those from external events. In this procedure, participants might be asked to view a mixed list of pictures and words and to form mental images of the referents of the words. On a later memory test the participants are often unable to distinguish between pictures they were shown and those that they generated through mental imagery (although see Johnson & Raye, 1981 for a discussion of the conditions under which participants *are* able to discriminate the two). This phenomenon has its corollary in the hypnotic phenomenon of "source amnesia," in which an individual will recall some information implanted during hypnosis but will be unable to recall, or will misrepresent, the source, for example it as coming from a prior store of information rather than the recent hypnotic suggestion (Evans, 1988).

Johnson, Hashtroudi, and Lindsay (1993) have explained failures of reality monitoring as examples of more general source-monitoring failures. Source monitoring refers to the ability to correctly attribute the source of a memory. A number of attributes of memories, including contextual, semantic, or perceptual features, potentially can be used to discriminate among different sources of the memories. Johnson et al. claimed

that most memory illusions, such as misattributed familiarity (e.g., Jacoby, 1991), cryptamnesia (e.g., A. S. Brown & Murphy, 1989), and confabulation (e.g., Loftus & Palmer, 1974) are due to source monitoring failures. Jacoby's (1991) explanation of misattributed familiarity is based upon a distinction between two types of memory, an automatic, unconscious familiarity response, and an intentional, deliberate type of remembering that is under conscious control. When a memory is automatically stimulated without an accompanying conscious respecification of its source, the resultant familiarity might be attributed to an inappropriate source.

Another approach to the study of false memories has been to observe schema-guided recall and recognition (e.g., Brewer & Treyens, 1981; Rabinowitz & Mandler, 1983). For example, Brewer and Treyens (1981) examined false recognition of objects that fit an episodic schema. They found that schema-consistent memories were more likely to be falsely recalled and recognized than schema-inconsistent responses. This is similar to Pezdek et al.'s (1997) finding that plausibility and script-relevant knowledge determine the extent to which events can be suggestively implanted in memory.

List-learning techniques have also been used to study false memories (e.g., McDermott, 1996; Payne et al., 1996; Read, 1996; Robinson & Roediger, 1997; Roediger & McDermott, 1995). Participants in these paradigms are typically presented with a list of words that are all associatively related to a single nonpresented target word. The critical nonpresented target word is often falsely recalled even though it does not appear on the memorized list. For example, a list might have words associated with the word *spider*, such as *web*, *insect*, and *arachnid*, but not the word *spider*. Participants often claim to recall *spider* even when they are admonished not to report words that were not on the list. In one variant of this procedure, participants are given a categorized list that contains the most common members of a category except for the most typical category member, which is omitted from the list. Participants often falsely recall the nonpresented category member, and the effect is even stronger if the number of associates is increased (Robinson & Roediger, 1997) or the critical nonpresented word is primed on an unrelated task (Smith et al., 1996).

Theoretical accounts of false memories generated in list-learning paradigms include explanations involving implicit associative responses, misattributed source memory, and fuzzy memory traces. The first of these explanations is that when people study a list of words they implicitly think of associates of those words, and memories of the implicit associates are later mistaken for memories of actual list members (e.g., Kirkpatrick, 1894; Roediger & McDermott, 1995). This explanation is related to the source-monitoring explanation of false memories in that it supposes that memories of implicit associative responses are not adequately distinguished from memories of physical stimuli. The source monitoring explanation is also useful for explaining primed false memories (Smith et al., 1996); memories of primed words are not adequately distinguished from memories of correct list words.

Another theory, the fuzzy-trace explanation of false memories in list-word recall, is that both verbatim and gist memory traces are stored during learning, and false recall can result if memory relies on the inaccurate memory trace representing the gist of the event (e.g., Reyna & Brainerd, 1995). Reliance on fuzzy-gist memory traces rather than veridical verbatim traces, according to this theory, is increased by longer retention intervals, a prediction supported by the results of list-learning studies of false memories (e.g., McDermott, 1996). In addition, when memory tests emphasize memory for substance (i.e., meaning), then things that were not previously studied may be easier to endorse on recognition tests than things that were (Brainerd & Reyna, 1998).

Conclusions and Limitations of Conclusions about False Memory Research

The clinical and experimental research on false memory each has its own strengths and limitations. The most glaring limitation of some *clinical* reports on false memory is that they provide no way of determining if the memories are in fact false. In many cases, the credibility of the source of information needs to be considered. For example, Rubin (1996) noted that when the source of information is the parent accused of the abuse, there are numerous alternative interpretations of what may have actually occurred. Rubin noted that "Denial, dynamics of secrecy in incestuous families,

behavioral reenactments of childhood victimization, alcohol-induced blackouts, and outright lying” (p. 447) may explain some claims that persons have been falsely accused of abuse. When the data come from a “retractor” they may be more convincing. However, persons with verifiable histories of abuse are known to vacillate between accepting and denying the reality of their memories of abuse and may be vulnerable to suggestions (by family members or lawyers) that their memories are false (Gleaves, 1994). It is inconsistent to assume that a memory is credible when someone claims not to have been abused, and to assume that a memory is not credible when someone claims the opposite (Schooler, 1996). However, there are reports in which the history of abuse has been documented, such as L. M. Williams’ study in which the episodes were identified through hospital emergency room records of assessment and treatment for abuse (L. M. Williams, 1994, 1995).

There are also severe limitations regarding the “high profile” cases that have been presented in the scientific literature. Numerous authors (Gleaves, 1994; Olio, 1994; Olio & Cornell, 1994, 1998; Peterson, 1994) have noted that claims regarding the Ingram case are contradicted by the actual facts. For example, there is testimony from those who initially interviewed Ingram, that he confessed to the sexual abuse the first time he was confronted with the charges, rather than after months of interrogation, suggestions, and pressure, as some commentators (e.g., Loftus, 1993; Kassin, 1997) have suggested. Olio and Cornell (1998) have recently observed that the uncritical acceptance and parroting of the alleged facts of the Ingram case has become “an academic version of an urban legend” (p. 1195). Similarly, regarding the *Ramona v. Isabella* case, we refer the reader to Bowman and Mertz’s (1996a) in-depth discussion of the case to determine to what degree it should be regarded as evidence supporting the reality of false memories of abuse. This type of data suffer from the same limitation as the clinical data described above; there is not convincing evidence that the memories in question are in fact false.

Another limitation of the clinical data on false memories is that the possible occurrence of such phenomena does not imply the existence of a false-memory syndrome (FMS). The current *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV*; Amer-

ican Psychiatric Association, 1994) defines a syndrome as “a grouping of signs and symptoms, based on their frequent co-occurrence, that may suggest a common underlying pathogenesis, course, familial pattern, or treatment selection” (p. 771). Currently there are few or no empirical data supporting the claim that false-memory syndrome exists (Gleaves & Freyd, 1997; K. Pope, 1996, 1997), mainly because so little research on this issue has been conducted. In one published empirical study that we found, Hovdestad and Kristiansen (1996) concluded that, “In sum, the weak evidence for the construct validity of the phenomenon referred to as FMS, together with the finding that few women with recovered memories satisfied the criteria and that women with continuous memories were equally likely to do so, lends little support to the FMS theory” (p. 330). More recently, Dallam (2001) concluded that “in the absence of any substantive scientific support, ‘False memory Syndrome’ is best characterized as a pseudo-scientific syndrome that was developed to defend against claims of child abuse” (p. 10).

Although these conclusions illustrate that data in support of false-memory syndrome are still lacking, objection to the term is not new among the scientific community. As early as 1993, numerous researchers published a formal objection to the term being used in this context arguing that the term false-memory syndrome was really “a non-psychological term originated by a private foundation whose stated purpose is to support accused parents.” They urged, “For the sake of intellectual honesty, let’s leave the term ‘false memory syndrome’ to the popular press” (Carstensen et al., 1993, p. 23).

Kihlstrom (1998) has more recently attempted to defend the use of the term. Basically his argument was that numerous other writers have used the term “syndrome” in nonscientific context (e.g., the “Lolita syndrome,” “sissy boy syndrome,” and “China syndrome,” p. 17); thus there is no reason to question its use in this case. A related defense (noted by a reviewer of this article) is that criticism of use of the term “syndrome” is simply a red herring, and the critical matter is whether memories are accurate or inaccurate. Although we in general agree with the justification here (that accuracy per se is what is critical), the issue is not a red herring because clearly FMS is being described (a) *as if* it is

a scientific diagnosis and form of psychopathology, and (b) as being an entity above and beyond the simple issue of the accuracy of a memory. One needs to look no further than the definition from Kihlstrom quoted on the False Memory Syndrome Foundation web site. He described FMS as a form of psychopathology above and beyond the simple issue of the accuracy of memory. Kihlstrom wrote:

Note that the syndrome is *not* characterized by false memories as such. We all have memories that are inaccurate. Rather, the *syndrome* may be *diagnosed* when the memory is so deeply ingrained that it orients the individual's entire personality and lifestyle, in turn disrupting all sorts of other adaptive behavior. The analogy to *personality disorder* is intentional. [emphasis added]

Clearly false-memory syndrome is being described as if it is a form of psychopathology much above and beyond the issue of the accuracy of memory. The fact that mental health professionals have even testified in court that plaintiffs in sexual abuse cases suffered from "FMS" is further evidence that the term is being misused. Although research may someday suggest that FMS actually exists, current data do not. Thus, it is at best premature to use the term "false memory syndrome" and we recommend that the term not be used. To thoroughly discuss this issue is beyond the scope of the present paper (see Dallam, 2001; K. S. Pope, 1996, 1997 for a more detailed discussion).

Regarding the experimental research on false memories, these studies make it clear that some persons can be made to report remembering events that did not occur (or objects that were not observed), in settings in which the consequences of a mistake are relatively minor. Reported false memories can be reliably and predictably evoked and studied with a variety of laboratory procedures. Furthermore, the occurrence of false memories does not appear to rely on extraordinary affective states or special cognitive processes; rather, they seem to be produced by the same cognitive mechanisms that produce accurate remembering. However, there are a number of limitations to the conclusions and inferences that can be made from experimental research on false memories. One limitation concerns the degree to which

reported false memories reflect genuine alterations in memory (or belief in memory) versus reporting biases (Barnier & McConkey, 1992; Murrey, Cross, & Whipple, 1992; Spanos & McLean, 1985–1986). That is, do research participants reporting false memories really believe that what they are reporting are memories, or are their reports due to the demand characteristics of the research? In their study of hypnotizability and pseudomemory, Lynn, Weekes, and Milano (1989) asked subjects about reported pseudomemories in more than one way. When asked in open-ended style 11.5% of subjects reported actually remembering the suggested event (a phone ringing). However, when actually required (in a forced-choice format) to indicate whether they had heard an actual phone ring or if the ring was suggested, none of the participants exhibited pseudomemory. The findings led the authors to conclude that "Although hypnotic suggestions produce shifts in awareness and attention, subjects are not deluded by suggestions into confusing fantasy with reality" (p. 143).

Similar results were obtained by Barnier and McConkey (1992), who showed participants slides of a purse snatching and then suggested false aspects of the event in the slides (that the attacker wore a scarf and helped the victim pick up flowers). The authors tested for false memories in both formal and informal contexts using high- and low- hypnotizable subjects. Although a sizeable number of the highly hypnotizable subjects reported remembering the false aspects of the events when tested in a formal setting, the majority (13 out of 15 for one memory and 14 out of 15 for another) did *not* exhibit pseudomemory when tested in an informal setting. The authors also collected qualitative data regarding participants' behaviors. Some indicated behavioral compliance. For example, one noted: "I knew he didn't have a scarf. I felt pressured, so I put a scarf on him to give an answer" (p. 525). Response bias does not seem to explain all of the experimental research on false memory, but the degree to which it does should not be minimized and has not been completely determined.

Another limitation of published empirical work concerns the degree to which this research can be generalized and applied to cases of false memories of child sexual abuse (Butler & Spiegel, 1997; J. J. Freyd & Gleaves, 1996) or naturally occurring traumatic events. The reliability of producing certain laboratory phenom-

ena, such as optical illusions, is no assurance that the phenomena are common, naturally occurring events. Indeed, Mook (1983; see also Butler & Spiegel, 1997) suggests that laboratory research best illuminates “what *can* happen, rather than what typically *does*” (p. 384). When the purpose is to predict or explain behavior in the real world, then the generalizability concerns as to the comparability of populations, settings, manipulations, and measurement must be considered (Butler & Spiegel, 1997; Campbell & Stanley, 1967). At issue is the fact that the vast majority of the laboratory research on false memories has involved suggesting memories of schema-consistent, mundane events or objects to nonclinical subjects—events which are, in many cases, corroborated by family members—and eliciting false reports with no long-term personal consequences, such as family disruption or a jail term for a family member. In the only study with adult subjects in which the investigators attempted to implant a memory remotely similar to child sexual abuse (Pezdek et al., 1997), they were unsuccessful in doing so.

There are also many ways in which false memory research fails to parallel what may happen in psychotherapy, thus limiting the generalizability of the results. For example, in Loftus’s “lost in the mall” study, it was actually the family member, rather than the experimenter, who convinced the subjects of the false childhood memories. The generalizability depends on what this finding actually demonstrates. Is it that therapists can have powerful influence over clients or that parents or other family members can deceive their children? If it is the latter, such results do not support the position that false memories frequently occur in therapy.

In another line of recent laboratory research that more closely mimics a possible psychotherapy situation, Loftus and Mazzoni (1998) exposed subjects to a 30-min brief-therapy simulation in which an expert clinician analyzed a dream report that the subject offered. The clinician proposed an interpretation (an “expert personalized suggestion”) that the dream indicated that the subject had probably experienced a given event in early childhood (either being lost or being in a dangerous situation). The theme of the interpretation was determined by random assignment, however the interpretation was personalized to build on the dream

material that the subject had provided. Results indicated that the majority of subjects were more confident at four-week follow-up that they had experienced these childhood events. It is unknown, however, whether participants also developed false memories of the events that corresponded to their increased confidence.

This distinction between increasing confidence that something has happened and increasing the production of false memories of the event is a potential limitation to the relevance of the recent “imagination inflation” literature to the understanding of false-memory creation. In these studies, having subjects simply imagine events increases their confidence that the events have indeed occurred (e.g., Garry, Manning, Loftus, & Sherman, 1996; reviewed in Garry & Polaschek, 2000). However, changing beliefs about the likelihood of the events does not necessarily create memories of the event. In one false-memory study, however, coupling imagination with authoritative suggestion (for an event confirmed by family members) increased false-memory creation over authoritative suggestion alone (Hyman & Pentland, 1996), confirming that imagination can facilitate false-memory creation.

For a different reason, laboratory research may *underestimate* the degree of influence and suggestion that may occur in therapy. Contact between experimenter and research participant is generally brief compared to therapist-client contact. In Hyman et al.’s (1995) study of false childhood memories, participants only reported false memories after two or three sessions but never did in the first. In the Loftus and Mazzoni study (1998) only one experience was interpreted. The possible effects of several weeks or even months of suggestion, or of multiple converging suggestions/interpretations, have not been studied experimentally. Of relevance to the former possible effect, Zaragoza and Mitchell (1996) found that repeated exposure to suggestion can increase confidence in and conscious recollections of false memories of witnessing an event.

Experimental studies have not yet determined whether false memories could occur for bizarre or affectively charged events, important concerns to clinical psychologists. It is not yet known whether bizarreness in a memory identifies it as a false memory or an accurate one. The limitation of our understanding of false memories that is most relevant to the present paper is

whether accurate and false memories can be distinguished from one another, either by the subject who is remembering, or by an observer. Whether or not there are experiential or behavioral “signatures” that indicate the likelihood that a memory is false or accurate is a critical question that has not been thoroughly addressed by empirical research. To date, findings suggest that memories for true events tend to be described with more words, contain greater clarity of perceptual details, and are held with greater confidence than are false memories (for reviews see Oakes & Hyman, 2000; Pezdek & Taylor, 2000). The sensory detail results are similar to those found when experimenters compare remembered versus imagined autobiographical childhood events (Johnson, Foley, Suengas, & Raye, 1988) or childhood events that subjects *remember* happening rather than simply *know* happened (Hyman, Gilstrap, Decker, & Wilkinson, 1998).

To summarize, the empirical findings of false memories provide an alternative explanation for memories recovered in therapy, casting some doubt as to the accuracy or reality of the memories. However, the circumstances under which false memories can or are likely to occur have yet to be determined. Furthermore, the existence of false memories does not imply the existence of a syndrome nor does it contradict the possibility that blocked and accurately recovered memories can also occur. We now consider evidence concerning blocked and recovered memories.

EMPIRICAL EVIDENCE AND THEORIES OF MEMORY BLOCKING AND RECOVERY

Defining Blocked and Recovered Memories

What we refer to as blocked and recovered memories are cases in which established memories are rendered inaccessible for some period of time, after which the essentially intact memories are retrieved. Memory blocks and the potential recovery of memories are directly relevant to clinical disorders such as post-traumatic stress disorder and the dissociative disorders. Our operational definition of blocked and recovered memories specifies three criteria: (a) There must be corroborating evidence that the event in question was actually experienced by the person, (b) At some later time it must be found that the event cannot be recalled, and (c) After the period of inaccessibility, it must be

found that the event can be successfully recalled. Criteria similar to these have also been used by Haber and Haber (1996) and Schooler and colleagues (Schooler & Fiore, 1995; Schooler, Ambadar, & Bendiksen, 1997).

Clinical Evidence of Blocked and Recovered

Memories: Dissociative Amnesia

In the current *DSM* (APA, 1994), dissociative amnesia is defined as “a reversible memory impairment in which memories of personal experience cannot be retrieved in verbal form” (p. 478). The events that cannot be recalled are “usually of a traumatic or stressful nature” (p. 478) and the inability to remember is “too extensive to be explained by normal forgetfulness” (p. 478) (see also Gleaves, 1996; Loewenstein, 1991; or van der Hart & Nijenhuis, 1995 for more extensive reviews).

Although there have been claims that dissociative amnesia is a recently recognized (or invented) phenomenon (e.g., Ofshe & Singer, 1994), it has been recognized by clinicians since the beginning of the 19th century (Nemiah, 1979; Prince 1906). Dissociative (or psychogenic or hysterical) amnesia was studied and described extensively by Pierre Janet in the 1880s as well as by Freud in some of his early writings. There are also numerous descriptions of dissociative amnesia in the early and recent literature on combat and war trauma (e.g., Bremner, Steinberg, Southwick, Johnson, & Charney, 1993; Grinker & Spiegel, 1945; Kardiner & Spiegel 1947; Kolb, 1988; Sargant & Slater, 1941) and civilian violence (e.g., Kaszniak, Nussbaum, Berren, & Santiago, 1988). Modai (1994) also described total amnesia for childhood in a survivor of the holocaust. In many of these reports, the authors also described how memory for the traumatic experiences of war could be retrieved through therapy, hypnosis, or even narcosisynthesis. These authors did sometimes caution that what was retrieved was often a mixture of accurate memory and fantasy (e.g., Kolb, 1988; Sargant & Slater, 1941).

More recent research has focused on the presence of amnesia and/or recovered memory for experiences of child sexual abuse (CSA). Recently reported anecdotal, legal, and clinical cases (e.g., Bull, 1999; Cheit, 1998; Corwin & Olafson, 1997; Dalenberg, 1996, 1997; Duggal & Sroufe, 1998; Schooler et al., 1997) of amnesia and memory recovery offer compelling “existence proof” for these phenomena. D. Brown, Schefflin, and Whitfield

(1999) recently reviewed the clinical research in this area. They concluded that “In just this past decade alone, 68 research studies have been conducted on naturally occurring dissociative or traumatic amnesia for childhood sexual abuse. Not a single one of the 68 data-based studies failed to find it” (p. 126). Similar conclusions were reached by van der Hart and Nijenhuis (1995) and Schefflin and D. Brown (1996) in their earlier review of the literature. Critics of these conclusions may point to the report of H. G. Pope, Hudson, Bodkin, and Oliva (1998), who reviewed 63 different studies of victims of non-CSA types of trauma and claimed that they “could not find any clear and unexplained occurrences of amnesia for the traumatic events” (p. 213), though some of the evidence and conclusions presented in this review were disputed by D. Brown et al. (1999). More recently, some of D. Brown and colleagues’ own evidence and conclusions have also been vigorously challenged (Piper, Pope, & Borowiecki, 2000). Nonetheless, collectively the clinical evidence does seem to suggest that varying degrees of amnesia for traumatic experiences and subsequent recovery of memory are real phenomena.

Experimental Evidence for Blocked and Recovered Memory

Critics or skeptics of the concept of recovered memory (e.g. Ofshe & Watters, 1993; Wakefield & Underwager, 1994) often claim that there is no experimental (or laboratory) evidence for the concept of recovered memory. Almost invariably, the reference cited for such statements is a literature review by Holmes (1990) who concluded that “despite over sixty years of research . . . at the present time there is no controlled laboratory evidence supporting the concept of repression” (p. 96). To thoroughly discuss Holmes’s conclusions and the relevance to the recovered memory/false memory controversy would be beyond the scope of this article (see Gleaves, 1996 or Gleaves & Freyd, 1997 for more extensive discussions). The critical point is that Holmes only reviewed evidence for one possible mechanism of memory blocking and recovery (repression), defined in a very specific form.

In reality, empirical evidence of memory blocking (or inhibition) and recovery has come from several experimental paradigms, including spontaneous recovery from retroactive interference (e.g., Wheeler, 1995), tip-of-the-tongue (TOT) research (e.g., Jones, 1989;

Read & Bruce, 1982; Smith, 1994b), blocking in implicit memory (e.g., Lustig & Hasher, 2001; Smith & Tindell, 1997), recovery from posthypnotic amnesia (e.g., Kihlstrom, 1987), output interference and recovery (e.g., J. Brown & Smith, 1992; Roediger, 1974; Smith & Vela, 1991), retrieval-induced forgetting (e.g., Anderson, Bjork & Bjork, 1994), directed forgetting and recovery (e.g., Bjork & Bjork, 1996), and memory inhibition through executive control (Anderson & Green, 2001). In each of these cases the memory blocks are more enduring than a few seconds, as is the case with many other empirical findings of temporary inaccessibility, such as negative priming effects (e.g., Tipper, 1985), Stroop interference tasks (e.g., MacLeod, 1991), or inhibitory orthographic priming (e.g., Grainger, 1990). We will briefly review each of these areas of empirical research that documents memory blocking and recovery (for a more extensive review of interference and inhibition effects in memory retrieval see Anderson & Bjork, 1994; Anderson & Neely, 1996).

Retroactive Interference and Spontaneous Recovery. Retroactive interference has been one of the longest standing topics of interest in the experimental study of human memory. When experiences similar to an event in question are stored in memory after the target event, the resultant forgetting of the target event is referred to as retroactive interference. Lengthening the retention interval, however, causes recovery of the forgotten material (e.g., A. S. Brown, 1976), suggesting either that associations weakened by retroactive interference somehow recover their strength, or that original associations remain intact and interference only causes temporary inaccessibility. Consistent with the notion that original memories remain intact after retroactive interference are findings from associative-matching tests that show retention of original memories (e.g., Postman, Stark, & Fraser 1968), as well as evidence that original and interfering memories are independent entities (e.g., Martin, 1971). Spontaneous recovery effects in verbal learning and memory have been found with paired associate learning tasks, serial recall, and free recall (Wheeler, 1995). These findings show that whatever the mechanisms involved, it is nonetheless clear that learned associations can become temporarily inaccessible and can be recovered at a later time.

Output Interference and Reminiscence. Memory blocking and recovery can be used to explain another interesting conundrum, the question of what causes hypermnesia and reminiscence (Payne, 1987). Hypermnesia is a net improvement in recall when repeated recall tests are given without extra practice sessions. Reminiscence, a very similar concept, refers to the recovery of unrecalled material, independently of the amount forgotten from one test to the next. These phenomena defy the notion that forgetting increases over time, because more is remembered on later tests.

Hypermnesia and reminiscence can be explained as recovery from initial blocking in recall. That is, when people recall a list of words or pictures, the act of recalling some of the items on the list has the effect of blocking other items that have not yet been recalled (e.g., Roediger, 1974). This inhibition or interference has been termed *output interference* (e.g., Rundus, 1973). Thus, hypermnesia and reminiscence may occur on a later test because blocks caused by output interference weaken over time, in accordance with predictions of stimulus fluctuation theory (e.g., Estes, 1955; Mensink & Raaijmakers, 1988). The theory predicts that delaying a second recall test should allow more time for output interference to weaken, and therefore should increase recovery. This prediction was supported by the finding of incubated reminiscence and hypermnesia effects (Smith & Vela, 1991).

Output interference is caused not only by one's own recall efforts, but also by experimenter-provided items from a learned list. The procedure in which the experimenter provides some of the list items as cues on a recall test is called part-list or part-set cuing. Surprisingly, part-list cuing inhibits or interferes with recall of the remainder of the list (e.g., Rundus, 1973; Nickerson, 1984).

If part-list cuing causes output interference, and if greater initial output interference leads to greater recovery and hypermnesia, then using part-list cues on an initial recall test should increase the hypermnesia observed on a retest. Experiments reported by Basden and Basden (1995), Basden, Basden, and Galloway (1977), and J. M. Brown and Smith (1992) supported this prediction; part-list cues caused memory blocking on an initial recall test, and increasing recovery (reminiscence) on a later recall test. An exaggerated

version of this part-list cuing procedure constitutes an essential component of the comparative memory paradigm that we report in the present study.

Directed Forgetting. The directed forgetting paradigm (e.g., Bjork, 1972) has been used successfully to impair the accessibility of experimentally presented materials. In one version of the directed forgetting paradigm, the list method, experimental participants are told that they can forget the list of words they had just been trying to memorize because, they are told, they will not need to remember that list on a later memory test (e.g., Basden, Basden, & Gargano, 1993; Bjork & Bjork, 1996). Instead, participants are told, they should concentrate on memorizing a second list of words, which are then presented. In the control condition, participants are not given this *forget* instruction. The typical directed forgetting effect is evidenced by two results: (a) the first list is recalled more poorly if forget instructions are given, and (b) the second list is recalled better if the forget instruction is given, presumably due to decreased proactive interference from the forgotten first list.

Bjork and Bjork (1996) found that the inaccessibility caused by directed forgetting can be eradicated if experimental participants are re-exposed to some of the forgotten material on a recognition test. In this study Bjork and Bjork found that if they included a few forgotten list-1 words on an intervening recognition test, then directed forgetting effects were not seen on a final recall test. This result constitutes another finding of recovery of memories that had been made inaccessible.

Posthypnotic Amnesia and Hypermnesia. Perhaps the strongest experimental support for blocked and recovered memories comes from the research on hypnotic (or posthypnotic) amnesia and hypermnesia (e.g., Cledes, 1964; Evans, 1988; Kihlstrom, 1979; Kihlstrom & Evans, 1979). This body of research shows that when hypnotizable participants are given suggestions during hypnosis to forget some events they have already experienced, memories of those events appear to be blocked or inaccessible. Although the degree of forgetting induced by hypnotic suggestion is often great, it has also been found that the "lost" memories can be largely recovered if the participant is given

a prearranged signal to cancel the suggested amnesia. As noted by Evans (1988), "When the experimenter administers a prearranged cue, the critical memories appear to flood back into awareness, and the hitherto amnesic subject is now able to remember the events and experiences clearly and without difficulty" (p. 161).

It is this reversibility of amnesia that makes the hypnotic phenomenon most analogous to blocked and recovered memories of naturally occurring traumatic events (for an examination of the parallels between formal hypnotic and pathological dissociative states, see Butler, Duran, Jasiukaitus, Koopman, & Spiegel, 1996). Furthermore, experimental tests of implicit memory suggest that during their period of inaccessibility, memories may indirectly affect experiences and behavior (Kihlstrom & Barnhardt, 1993) in the same sense that dissociated memories are allegedly assumed to affect behavior even though one may have no explicit memory of the events.

Another aspect of posthypnotic amnesia that makes it a good laboratory model for dissociative amnesia concerns Bowers and Woody's (1996) study of hypnotic amnesia and the "paradox of intentional forgetting." This paradox refers to the fact that, in many instances, when someone tries to forget some learned material, the result is an intrusion of the to-be-forgotten material (see Wegner's 1989 study of forgetting white bears). As noted by Bowers and Woody and known by many clinicians, the very intention to *not* think about something paradoxically can bring the material to mind (cf. Anderson & Green, 2001).

This paradox of intentional forgetting in some ways parallels what is observed with victims of psychological trauma. That is, most put great effort into not thinking about the events in question (Koutstaal & Schacter, 1997), but frequently still (or perhaps consequently) experience intrusive thoughts (Horowitz, 1986). In fact, the *DSM-IV* (APA, 1994) diagnostic criteria for post-traumatic stress disorder include both avoidance (e.g., trying to avoid thinking about the event, amnesia for the experience) and re-experiencing/intrusive symptoms (e.g., intrusive thoughts, nightmares, flashbacks). The fact that many persons with PTSD seem to exhibit this paradoxical inability to forget has led some critics of dissociative amnesia to argue that it is totally inconsistent with what is observed in actual victims of trauma (i.e.,

actual trauma victims cannot forget). For example, in describing her experiences at a conference for the False Memory Syndrome Foundation, Wylie (1993) wrote, "People remember their traumas, speakers point out again and again; their problem is not that they've lost their memories, but that they can't get rid of them—they intrude relentlessly into their daily lives and always have" (p. 22). However, this analysis suggests a fundamental lack of understanding of the clinical phenomenon. The problem in PTSD is not simply a paucity *or* a flooding of memories. Rather it is poor modulation of these emotionally charged memories, such that they are sometimes overwhelming and at other times avoided (Horowitz, 1986). Their intrusive strength invites withdrawal, and their re-appearance is experienced as an unbidden re-inflicting of the trauma, analogous to the effect of the traumatic event itself, now recapitulated through the nature of its reappearance in memory (Horowitz, 1986; Spiegel, 1997). As Widiger and Sankis (2000) noted, explaining why PTSD is more similar to the dissociative disorders than the anxiety disorders, "difficulty forgetting (or letting go of) a horrifying experience may simply be the opposite side of the same coin of difficulty remembering (accepting or acknowledging) a horrifying experience" (p. 391).

In Bowers and Woody's (1996) study, however, they found that hypnotic amnesia was *not* associated with paradoxical effects. They noted that the majority of high-hypnotizable individuals showed no intrusions when administered suggestions for amnesia and concluded that "thought suppression and hypnotic amnesia represent quite different processes" (p. 381). This distinction may be the laboratory analogue of what happens to some victims of trauma. The clinical data on dissociative disorders, some of which we reviewed above, suggest that some persons *are* able to block out trauma memories to varying degrees. Furthermore, the diagnostic criteria for PTSD actually include amnesia. Thus, the above assertion that all trauma victims cannot "get rid of" their traumatic memories appears inaccurate. It would be more accurate to say that victims of trauma experience varying degrees of intrusive memories versus amnesias for the events. A diathesis-stress model has been proposed in which the level of hypnotizability (or a related trait) interacts with the nature of the traumatic event to the degree to which

memories intrude or are blocked at any given point in time (Butler, et al., 1996). The level of motivation and the forgetting strategy the person uses (Bower, 1990; L. M. Williams, 1995) may also be factors in determining memory accessibility.

Blocking and Recovery in TOT Research. The tip-of-the-tongue (TOT) state is one in which a word or name cannot be recalled at the moment, but one feels that the memory will pop into mind any moment (e.g., R. Brown & McNeill, 1966). The TOT experience, a metacognitive monitoring state, appears to be brought about by a number of causes, and one cause is a momentary memory block (A. S. Brown, 1991; Smith, 1994a). Typically, TOT states have been elicited by asking experimental participants to recall words from their definitions, although a number of other methods have also been used.

Jones and Langford (1987) appeared to find evidence of memory blocking in TOT experiences. When participants heard a word (e.g., *publication*) that is phonologically similar to the target word (e.g., *pediatrician*), they reported experiencing more TOT states. This apparent blocking was replicated by Jones (1989). Meyer and Bock (1992), however, showed that the increase in TOTs was accompanied by an increase in recall, rather than a decrease, as would be expected if these TOTs were indicative of a memory block.

Other researchers have found evidence that suggests that TOTs are the result of memory blocks (e.g., Read & Bruce, 1982; Reason & Lucas, 1984). In a study by Smith, Tindell, and Balfour (1995) participants were shown a word semantically related to the target word just before the definition was shown. For example, after seeing the semantically related word “diffraction,” or an unrelated filler such as “scavenger,” the definition, “impenetrable by light” is given (correct answer: “opaque”). Participants have been found to experience more TOT states and recall fewer correct answers when definitions followed semantically related words (Smith et al., 1995). Thus, memories of words that participants already knew before the experiment were experimentally blocked.

Some research has shown that the TOT state is partly illusory in that the answers are not always truly on the tips of participants’ tongues (e.g., Schwartz, Travis,

Castro, & Smith, 2000; Smith, 1994b). That is, in spite of how imminent recall seems, the answer is not likely to be remembered while people remain in TOT states. The answer is more likely to pop into mind later, after a delay. In this sense, the memory can be said to recover over time, when the block is weaker (Smith & Choi, 2001). Studies have shown that given enough time most TOTs can be resolved (e.g., Burke, MacKay, Worthley, & Wade, 1991; Read & Bruce, 1982).

Blocking and Recovery in Implicit Memory. A standard implicit memory test is the word fragment completion task (e.g., Tulving, Schacter, & Stark, 1982); so-called “repetition priming” effects are observed when word fragments (e.g., “A N A _ _ G Y”) are easier to complete if one has recently seen the solution to the fragment (e.g., “ANALOGY”). Implicit memory operates without accompanying conscious awareness of remembering.

In a number of experiments Smith and Tindell (1997) examined blocking in word-fragment completion using primes that were orthographically similar to the correct solutions. For example, either the related blocker “ANALOGY” or the unrelated prime “UNICORN” would be given for the fragment “A _ L _ _ G Y” (solution: “ALLERGY”). Relative to the unrelated prime condition, fragment completion was found to be worse if blockers were used as primes. Thus, Smith and Tindell observed blocking on an implicit memory test. They also found that the memory blocks induced in their study could not be avoided when people had been warned about them. In three different experiments participants were warned that remembering the previously presented words could hinder their ability to solve word fragments, and they were told to avoid thinking about the primes as best as they could. Such instructions in no way mitigated the implicit blocking effects. Smith, Carr, and Tindell (1993) found that initial impasses on word fragments are more likely to be resolved after a delay, a finding of incubation similar to those found in other memory and problem-solving tasks. This evidence of recovery from implicit memory blocks adds to the body of experimental evidence concerning blocked and recovered memories.

Memory Suppression Through Executive Control. A recent study by Anderson and Green (2001) provides

another laboratory analogue of the process of voluntary repression (suppression), where intentional efforts to prevent awareness of unwanted memories make these memories less accessible (see also, Koutstaal & Schacter, 1997; cf. Wegner, 1994). In this study participants were trained on unrelated word pairs (for example, ordeal–roach) to be able to recall the right-hand member of the pair when presented with the left-hand pair member. Following training, subjects were cued on multiple intermixed trials either to recall and report the associated word or not to think about the associated word. The objective of the study was to determine whether associated memories could be kept out of awareness through executive control processes and whether these suppression attempts would make the retrieval of the associated memory more difficult on later recall trials. The results indicated that final recall of suppressed items was poorer than it had been at baseline and that this inhibition effect increased linearly with the number of times suppression had been attempted. Based on these findings the authors argue that voluntary attempts to keep memories out of awareness may result in later difficulties in retrieving these memories, and this effect is tied to the number of times the initial memory was cued and then avoided.

Theoretical Explanations for Blocked and Recovered Memories

Our brief review of theoretical mechanisms that could cause memory blocking and recovery reveals a number of potential causes of these phenomena that can occur even in simple laboratory situations. Although we make no definitive claims as to which of these mechanisms are at work in naturally occurring cases, it is nonetheless clear that there already exist several possible explanations of blocking and recovery that have been used to explain experimental findings. Theoretical mechanisms that could be used to explain blocked and recovered memories include explanations of hypermnesia, recovery from retrieval inhibition, state-dependent memory, arousal effects, and a special emotion mechanism.

Repression and Hypermnesia. Erdelyi and Goldberg (1979) defined repression as a tendentious rejection from awareness of aversive memories for the purpose of avoiding the painful feelings associated with the rejected memories. This rejection from awareness may or may

not occur as a result of unconscious mechanisms, depending upon one's theoretical outlook. The best evidence of the existence of repression, according to Erdelyi and Goldberg, is hypermnesia, a lifting or recovery from the amnesia that is symptomatic of repression. Citing evidence from a broad array of clinical and nonclinical sources, they conclude that most people experience such hypermnesias, recalling events that had previously excluded from consciousness to avoid psychic pain. An alternative explanation, that hypermnesia effects are due not to memory, but rather to a reporting bias, was not supported by the results of Roediger and Payne (1985), who found that the observed level of hypermnesia was not affected by a relaxed reporting criterion, or even by "forced recall" instructions that required experimental participants to guess at to-be-recalled memories once intentional attempts to recall had been exhausted. Although the cognitive mechanisms that give rise to hypermnesia have not yet been conclusively determined, it is conceivable that laboratory-induced and clinically observed hypermnesias have the same causes.

State Dependence. Mood-dependent memory, sometimes seen as a type of contextual dependence (e.g., Smith, 1988, 1995c), refers to findings that show that memory of events can be enhanced by reinstating the affective state present when the events were initially experienced (e.g., Bower, 1981; Eich, 1989, 1995). Mood-dependence could be one of the reasons that traumatic memories become blocked from conscious awareness. That is, if the critical events were associated with an extreme or unusual affective state, then dissociation could occur, or become exacerbated, by the low likelihood of reentering that mood state. Bower (1994) has proposed this as a possible model of how some memories and identity information could remain inaccessible at times for patients with dissociative identity disorder.

Interference, Inhibition, and Spontaneous Recovery. Interference, a classic issue of interest in the experimental study of memory (e.g., McGeoch, 1933; Melton & Irwin, 1940; Postman & Underwood, 1973), is forgetting caused by the presence of material in memory that is similar to the target of one's memory search. Mechanisms that have been proposed as underlying interference effects include

response competition, occlusion, inhibition, and unlearning. Whereas unlearning (Melton & Irwin, 1940) refers to a loss of material from memory, response competition, occlusion, and inhibition refer to temporary memory failures. Response competition (e.g., McGeoch, 1942) occurs when the retrieval of one associated response impedes or delays retrieval of another associated response. Occlusion (e.g., Anderson & Bjork, 1994; Anderson, Bjork, & Bjork, 1994) is similar to competition, and refers to forgetting that depends upon the strength of competing associations.

Inhibition, a theoretical mechanism analogous to neural inhibition, refers to a temporary deficiency in one's ability to retrieve material stored in memory. Retrieval inhibition has been suggested as the mechanism responsible for a number of forgetting phenomena, including post-hypnotic amnesia, directed forgetting (e.g., Geiselman et al., 1983; but see Kihlstrom, 1983; Kihlstrom & Barnhardt, 1993), retrieval induced forgetting, part-list cueing effects (e.g., Anderson & Bjork, 1994), and memory suppression (e.g., Anderson & Green, 2001). In the Anderson and Green study, both associative interference and unlearning of the cue-target association were ruled out as the mechanisms underlying the observed retrieval impairment, providing strong support in this case for the existence of an inhibitory control mechanism inhibiting the unwanted memory itself.

Recovery from interference (or inhibition), sometimes called spontaneous recovery, constitutes the best evidence that interference does not necessarily render memories permanently inaccessible. A theoretical model that explains recovery from retroactive interference originated with Estes' (1955) stimulus-sampling theory, and has been developed by several other theoreticians, including Bower (1972), Glenberg (1979), and Mensink and Raaijmakers (1987). The general form of this model states that interfering memories, which are cue-dependent, are rendered inaccessible over time or with contextual changes because temporal/contextual change leads to altered encodings of memory cues. Decreasing the accessibility of competing memories makes the originally blocked memories less inaccessible, thereby increasing the chances of recovering the original memories (see Smith, 1994a). This research is consistent with the notion that conflicting memories regarding abusive parents that emerge from victimization and

continued dependence on the same people may hamper episodic memory retrieval (Freyd, 1996). This type of model can also be used to explain recovery of memories in other experimental paradigms (Smith, 1995b).

Mechanisms Related to Emotion and Arousal. Approaches to repression as forgetting of emotionally traumatic experiences focus more on the traumatic aspects of the phenomenon rather than the resultant amnesia. Experimental evidence of such a putative emotional mechanism is understandably sparse. However, in studies by Loftus and Burns (1982) and Christianson and Nilsson (1984), both of which used material that was perhaps as stressful as ethically possible, both found that amnesia was associated with trauma. Although Loftus and Burns concluded that their results suggested that "mentally shocking episodes" (p. 318) possibly disrupt processes related to storage of information in memory (p. 318), Christianson and Nilsson found amnesia on tests of recall but not recognition, indicating that retrieval rather than storage was affected by the traumatic experience.

Conclusions and Limitations of Conclusions Regarding Blocked and Recovered Memory

As with the reviewed research on false memory, there are many limitations associated with the clinical and experimental research on blocked and recovered memory. Many of the clinical reports suffer from limitations of retrospective research. In many instances, the alleged events of abuse were not corroborated. When they were, the type of corroborating evidence was sometimes not described (e.g., Feldman-Summers & Pope, 1994) and thus is not open to objective evaluation. In some of the research, especially the report by L. M. Williams (1994), one cannot be certain that failure to report memory is due to failure to remember or that failure to remember is due to anything other than normal forgetting, although the documented intensity of the trauma and resulting injury make this explanation less plausible.

Nonetheless, there is an accumulating, if small, store of corroborated and well-documented case studies (e.g., Bull, 1999; Cheit, 1998; Corwin & Olafson, 1997; Dalenberg, 1996, 1997; Duggal & Sroufe, 1998; Schooler et al., 1997; L. M. Williams, 1995) that may help illuminate the phenomena and inform future research. In

fact, in one clinical case study (Corwin & Olafson, 1997) the initial memory recovery event was videotaped and has been examined and evaluated by a variety of commentators (e.g., Ekman, 1997; Neisser, 1997; Putnam, 1997). Additionally, clinical studies of the circumstances and triggers of memory recovery (e.g., Andrews et al., 2000; Herman & Harvey, 1997) have helped to further describe the nature of amnesia and memory recovery in the case of real traumatic memories.

Some of the laboratory research also suffers from limitations. For the same ethical reason that one cannot try to induce false memories of actual sexual trauma, one cannot subject participants to truly traumatic experiences to determine the degree to which persons can block or “repress” these memories. Thus, the degree to which research on blocking and recovery of memory can be generalized to memories of trauma cannot be directly determined.

Some researchers (e.g., Coe, 1978; Spanos, 1986) have argued that findings of posthypnotic amnesia are limited no less than are findings of hypnotic pseudomemories. It is not clear to what degree reports of amnesia are due to compliance, role playing, or strategic enactment, although these studies rarely take hypnotizability into account and overemphasize subjects’ motivation to “behave like a hypnotized person.” As with the research on hypnotically induced false memory, these factors do not appear to account for all of the findings of posthypnotic amnesia (Evans, 1988).

Comparing False and Recovered Memories

Despite the limitations of the clinical and experimental data reported above, we suggest that the reported results are sufficient to conclude that, at least under certain circumstances, both false memories and genuine recovered memories may exist. Indeed, they may be two sides of the same coin: if it is possible to falsely remember a traumatic event that did not occur, it must also be possible to falsely remember that a traumatic event did not occur when it did. In either case, competition between false, suggested, or misleading schemes and memory traces can distort recollection. As we noted above, attention should now be turned to the important questions of determining the conditions under which each are likely or unlikely to occur, the relative

frequency of each, and the degree to which one can discriminate between the two types of phenomena.

With the above empirical and theoretical considerations in mind, Smith, Gleaves, Pierce, Williams et al. (2003) designed the *comparative memory paradigm* to elicit blocked and recovered memories along with false memories within a single experimental treatment. The reason for having both effects within one experimental paradigm was to be able to directly compare the two phenomena in a controlled test.

The rationale behind the comparative memory paradigm was this: In a naturally occurring case, a false memory cannot be distinguished from a recovered one, given our current state of knowledge of these phenomena, unless the details of the original episode are clearly and objectively known. Smith et al. (2003) hypothesized, however, that there may be features of the retrieval process that could be used to distinguish recovered memories from created ones. That is, there may be one behavioral “signature” that is characteristic of recovered memories, and a different signature for created memories. Such hypothetical signatures could be of great value to therapists, for whom it could be very important to distinguish recovered memories from false ones.

For example, metacognitive reports, such as confidence judgments or feelings of knowing, might be useful in distinguishing false memories from recovered ones. Another type of measure that might distinguish these phenomena could be the time course of retrieval of material relevant to an episode, which might be different for recovered memories than for created memories. Information might be produced rapidly, say, for recovered memories, and slowly for the false memories. Besides possible differences in behavioral signatures, recovered and created memories might also be differentially affected by factors such as suggestion, emotionality, or bizarreness. In short, a paradigm that compares the two phenomena could provide an experimental means to explore these and other questions about recovered and false memories.

Some support for the hypothesis that there *are* ways of discriminating false and genuine recovered memories can be found in research on reality monitoring (e.g., Johnson & Raye, 1981), the ability to discriminate memories of real versus imagined events (see also Oakes & Hyman, 2000 and Pezdek & Taylor, 2000 for

differences between true and false memories). Based on their own research and their review of the literature in this area, Johnson and Raye reached the overall conclusion that “[m]emories from external and internal courses [do] appear to differ in class-characteristic ways” (p. 82) and that data support the existence of “a memory system that preserves information remarkably well; the decision criteria through which this information is filtered, however, allow for some error in attributing memories to sources” (p. 82).

Initial goals for Smith and colleague’s research with the comparative memory paradigm have been to induce strong memory blocks, to stimulate recovery of the original memories, and to induce false memories, all within a single experimental treatment. In brief, memory blocks were induced using an extension of the retrieval-induced forgetting method (e.g., Anderson et al., 1994), recovery was stimulated with category cues, and false memories were produced with a forced-recall procedure in which subjects tried to recall items from categories that were plausible memory targets, but that had not been studied.

Smith et al. (2003) investigated practiced interference with a variant of the retrieval-induced forgetting paradigm in which extra retrieval practice of part of a memory set blocks or inhibits retrieval of unpracticed items (e.g., Anderson et al., 1994; Roediger, 1978). Thus, the first empirical question addressed was whether practiced interference can give rise to high levels of forgetting. The second question we addressed concerned recovery of memories. Recovery has been experimentally induced by providing appropriate cues (e.g., Smith, 1979; Tulving & Pearlstone, 1966). Smith et al. used category cues to evoke memories blocked by retrieval-induced forgetting. The third intention was to stimulate false memories with the same experimental manipulations used to stimulate recovered memories. This goal was accomplished on a cued recall test by giving participants category cues that were plausible, but that had not been studied, mixed in with category cues that had been studied.

Smith et al. (2003) conducted three separate experiments. Substantial memory blocking of critical lists on the uncued test and recovery on the cued recall test was observed in all three experiments. In the second and third experiments, a substantial number of both false and

recovered memories were elicited on the cued recall test. False memories were distinguishable from truly recovered memories in cued recall by “know” vs. “remember” judgments, and by confidence ratings, with accurately recovered memories associated with higher confidence. False and recovered memories could not be discriminated based on recall latency. The authors concluded that (a) recovered and false memories can be elicited within a single experimental procedure, and (b) there may be unique characteristics of each. Although the authors urged caution in generalizing to false and recovered memories of trauma, they suggested that this comparative memory paradigm may be useful for learning about such phenomena.

In the first experiment, false memories were as likely to be filler intrusions (i.e., items inappropriately recalled from other experimentally presented categories) as new intrusions. In the second experiment, the majority were filler intrusions. Thus, even though participants falsely remembered to which category studied list items belonged, they frequently remembered items that they had in fact seen as part of the experiment. One could question whether these should be termed false memories, because some of the incorrectly recalled items were actually presented during the experimental procedure. We suggest, however, that these events may reflect a type of false memory that could have some degree of clinical relevance: patients might remember experiences that are based upon accurate memories, but with important details incorrectly inserted, such as when or where some event occurred, or who was involved. Such inaccurate memories could be due to source-monitoring failures (e.g., Johnson et al., 1993). It is also important to note that the cued-recall tests in the present experiments elicited a substantial number of intrusions that were animals which participants had not seen as part of the experiment. These new intrusions more clearly fit the definition of “events that did not happen” (e.g., Roediger & McDermott, 1995).

There was considerable variation among participants in terms of the frequencies of false and recovered memories. The modal response for both types of memories was zero. For some participants, however, we elicited as many as 21 out of a possible 21 false memories. Future research should investigate which individual differences predict the elicitation of blocked

and recovered versus false memories. Based on the assumption that amnesia is a dissociative experience, we might predict that practiced interference could cause the greatest forgetting in subjects with the greatest dissociative ability. Fantasy proneness, on the other hand, might predict the degree of false memory seen in the comparative memory research. Hyman and Billings (1998) did recently find scores on the Creative Imagination Scale to predict creation of false memories. Varieties of suggestibility (see D. Brown, 1995 for a discussion of different forms of suggestibility) might also predict false memory formation, but Leavitt's (1997) recent findings suggest that memory blocking and recovery might not be associated with suggestibility. Other variables, such as dissociative experiences might be found to predict both false and recovered memories. Hyman and Billings (1998) did also find scores on the Dissociative Experiences Scale (DES) to predict false memory formation, but did not study memory blocking and recovery. However, Clancy, Schacter, McNally, and Pitman (2000) found that women who reported recovered memories of CSA were more likely to exhibit false recognition of semantic associates (in the Roediger-McDermott paradigm) when compared to other memory groups (those with continuous CSA memories, those with no CSA history, and those who believed they had been abused but had no memories of it). Overall false recognition was associated with DES scores in this study, though scores did not significantly differ by group.

The direct relevance of the profound forgetting effect (found in this experimental research) to naturally occurring cases of blocked memories, such as the amnesia associated with posttraumatic stress disorder or dissociative disorders, cannot be established from these two experiments. However, the use of practiced interference to occlude target memories is consistent with several theoretical accounts of amnesia (e.g., Bower, 1990; Bowers & Farvolden, 1996; Cloitre, 1992; Dollard & Miller, 1950), and deserves greater experimental scrutiny.

CONCLUSIONS AND FUTURE DIRECTIONS

When memories of traumatic events appear to be recovered, do such experiences reflect truly recovered memories that are essentially accurate, or are such events likely to be false memories of events that never

happened? Although no immediate resolution of this important question is at hand, in the present paper we acknowledge and demonstrate the reality of both recovered and false memories. That is, the conclusion that we want to convey is that there is a wealth of data related to both sides of this controversial coin. Recurrent claims that no data exist that support either of these phenomena are, in our opinion, contradicted by the actual data. Furthermore, we believe that it is also inaccurate to paint this debate (as has been done both in the popular and scientific media) as being the academics against the clinicians with only the clinical data supporting the recovered memory position and the experimental data supporting the false memory position. Research from numerous bodies of experimental research supports the reality of memory blocking and recovery.

The issues that are truly debatable concern what inferences can be drawn from the available data. All of the data are limited to some degree. For ethical reasons, research that would perhaps definitively resolve this controversy cannot be conducted. It is noteworthy that the same ethical limitation applies to both aspects of this topic. That is, it would be unethical to subject research participants (particularly children) to the types of events allegedly associated with dissociative amnesia (i.e., physical and/or sexual traumas). However, it would also be unethical to attempt to create false memories of horrific events in research participants. We are then left with different bodies of research that, each in its own way, is limited in terms of what inferences can be drawn.

Pezdek and Banks (1996) described the unavoidable dialectic of "control versus applicability" (p. 1) or that of internal versus external validity. Often the research that has the highest of the former has the least of the latter (or vice-versa), and this appears to be the case when it comes to false versus recovered memory research. We urge researchers to exercise appropriate cautions and to consider seriously both types of validity when interpreting research. We also suggest that there is much room for improvement in terms of finding a balance of the different types of validity. That is, we believe that the external validity of research can be improved without necessarily sacrificing internal validity. Pezdek et al.'s (1997) study of the limits of what types of memory can be suggested is an example of a step in the correct direction. Applying controlled experimental paradigms to clinical

samples (rather than simply undergraduate students) is another.

Another step in the correct direction was Smith et al.'s (2003) attempt to study both false and recovered memories within a single experimental procedure, allowing for the possibility of directly comparing the two phenomena. We believe that the greatest advancements will be made by researchers with interests in studying both phenomena. Unfortunately, few researchers seem interested in doing so. Smith et al. (2003) were indeed able to discriminate between false and recovered memories on the basis of metacognitive reports, including confidence ratings (Experiments 1 and 2) and remember/know judgments (Experiment 2). To our knowledge, this was the first experimental attempt to make such a discrimination. Two variables measuring response latencies did not prove to be useful in discriminating the two types of memories. One of the major goals of future research on this topic should be to experimentally test other variables (e.g., emotionality of events, affective states, retention intervals, and personality factors) that might discriminate the two types of memory phenomena.

By exploring these naturalistic phenomena in controlled experimental settings we can learn more about the mechanisms that underlie them. The same signatures that occur in experimental paradigms could be investigated in naturally occurring cases. Retrospective accounts of individuals with histories of memory dissociation and of therapists who have treated such individuals could be examined as a function of evidence that corroborates or falsifies the reality of the recovered memories (similar to the methodology of Dalenberg, 1996, 1997). The clearest cases of recovered and false memories, as determined by corroborating evidence, would hopefully display the same signatures that can be observed in controlled laboratory studies. Thus, only by returning our attention to those naturalistic contexts, looking for the same patterns identified experimentally, will we learn whether or not the mechanisms we identify in the laboratory are relevant to real life cases of memory blocking and recovery.

REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Anderson, M. C., & Bjork, R. A. (1994). Mechanisms of inhibition in long-term memory: A new taxonomy. In D. Dagenbach & T. Carr (Eds.), *Inhibition in attention, memory and language*. New York: Academic Press.
- Anderson, M. C., Bjork, R. A., & Bjork, E. L. (1994). Remembering can cause forgetting: Retrieval dynamics in long-term memory. *Journal of Experimental Psychology: Learning, Memory & Cognition*, *20*, 1063–1087.
- Anderson, M. C., & Green, C. (2001). Suppressing unwanted memories by executive control. *Nature*, *410*, 366–369.
- Anderson, M. C., & Neely, J. (1996). Interference and inhibition in memory retrieval. In E. Bjork & R. A. Bjork (Eds.), *Memory: Handbook of perception and cognition*, (2nd ed., pp. 237–313). San Diego: Academic Press.
- Andrews, C., Brewin, C. R., Ochera, J., Morton, J., Bekerian, D. A., Davies, G. M., et al. (2000). The timing, triggers and qualities of recovered memories of therapy. *British Journal of Clinical Psychology*, *39*, 11–26.
- Barnier, A. J., & McConkey, K. M. (1992). Reports of real and false memories: The relevance of hypnosis, hypnotizability, & context of memory test. *Journal of Abnormal Psychology*, *101*, 521–527.
- Basden, D. R., & Basden, B. H. (1995). Some tests of the strategy disruption interpretation of part-list cuing inhibition. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *21*, 1656–1669.
- Basden, D. R., Basden, B. H., & Galloway, B. C. (1977). *Journal of Experimental Psychology: Human Learning & Memory*, *3*, 100–108.
- Basden, B. H., Basden, D. R., & Gargano, G. J. (1993). Directed forgetting in implicit and explicit memory tests: A comparison of methods. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*, 603–616.
- Bjork, R. A. (1972). Theoretical implications of directed forgetting. In A. W. Melton & E. Martin (Eds.), *Coding processes in human memory* (pp. 217–236). Washington, DC: Winston.
- Bjork, R. A., & Bjork, E. L. (1996). Continuing influences of to-be-forgotten information. *Consciousness and Cognition*, *5*, 176–196.
- Bower, G. H. (1972). Stimulus-sampling theory of encoding variability. In A. W. Melton and E. Martin (Eds.), *Coding processes in human memory* (pp. 85–124). Washington, DC: Winston.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, *36*, 129–148.
- Bower, G. H. (1990). Awareness, the unconscious, and repression: An experimental psychologist's perspective. In J. L. Singer (Ed.), *Repression and dissociation: Implications for personality theory, psychopathology, and health*. Chicago: University of Chicago Press.

- Bower, G. H. (1994). Temporary emotional states act like multiple personalities. In R. M. Klein & B. K. Doane (Eds.), *Psychological concepts and dissociative disorders* (pp. 207–234). Hillsdale, NJ: Erlbaum.
- Bowers, K. S., & Farvolden, P. (1996). Revisiting a century-old Freudian slip—from suggestion disavowed to the truth repressed. *Psychological Bulletin*, *119*, 355–380.
- Bowers, K. S., & Woody, E. Z. (1996). Hypnotic amnesia and the paradox of intentional forgetting. *Journal of Abnormal Psychology*, *105*, 381–390.
- Bowman, C. G., & Mertz, E. (1996a). A dangerous direction: Legal interventions in sexual abuse survivor therapy. *Harvard Law Review*, *109*, 549–639.
- Bowman, C. G., & Mertz, E. (1996b). What should the courts do about memories of sexual abuse: Toward a balanced approach. *The Judges Journal*, *35*(4), 6–17.
- Brainerd, C. J., & Reyna, V. F. (1998). When things that were never experienced are easier to “remember” than things that were. *Psychological Science*, *9*, 484–489.
- Bransford, J. D., & Franks, J. J. (1972). The abstraction of linguistic ideas: A review. *Cognition*, *1*, 211–249.
- Bremner, J. D., Steinberg, M., Southwick, S. M., Johnson, D. R., & Charney, D. S. (1993). Use of the Structured Clinical Interview for DSM-IV-Dissociative Disorders for systematic assessment of dissociative symptoms in posttraumatic stress disorder. *American Journal of Psychiatry*, *150*, 1011–1014.
- Brewer, W. F., & Treyens, J. C. (1981). Role of schemata in memory for places. *Cognitive Psychology*, *13*, 207–230.
- Brewin, C. R. (1996). Scientific status of recovered memories. *British Journal of Psychiatry*, *169*, 131–134.
- Briere, J., & Conte, J. (1993). Self-reported amnesia for abuse in adults molested as children. *Journal of Traumatic Stress*, *6*, 21–31.
- Brown, A. S. (1976). Spontaneous recovery in human learning. *Psychological Bulletin*, *83*, 321–338.
- Brown, A. S. (1991). A review of the tip-of-the-tongue experience: A review and evaluation. *Psychological Bulletin*, *109*, 204–223.
- Brown, A. S., & Murphy, D. R. (1989). Cryptomnesia: Delineating inadvertent plagiarism. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *15*, 432–442.
- Brown, D. (1995). Pseudomemories: The standard of science and the standard of care in trauma treatment. *American Journal of Clinical Hypnosis*, *3*, 1–24.
- Brown, D., Schefflin, A. W., & Whitfield, C. L. (1999). Recovered memories: The current weight of the evidence in science and in the courts. *Journal of Psychiatry & Law*, *27*, 5–156.
- Brown, J. M., & Smith, S. M. (1992, April). *Recovery from partial cuing inhibition*. Paper presented at the meeting of the Midwestern Psychological Association, Chicago, IL.
- Brown, R., & McNeil, D. (1966). The tip-of-the-tongue phenomenon. *Journal of Verbal Learning and Verbal Behavior*, *5*, 325–337.
- Bull, D. L. (1999). A verified case of recovered memories of sexual abuse. *American Journal of Psychotherapy*, *53*, 221–224.
- Burke, D. M., MacKay, D. G., Worthley, J. S., & Wade, E. (1991). On the tip of the tongue: What causes word finding failures in young and older adults? *Journal of Memory & Language*, *30*, 542–579.
- Butler, L. D., Duran, R. E. F., Jasiukaitus, P., Koopman, C., & Spiegel, D. (1996). Hypnotizability and traumatic experience: A diathesis-stress model of dissociative symptomatology. *American Journal of Psychiatry*, *153*(7, suppl.), 42–63.
- Butler, L. D., & Spiegel, D. (1997). Trauma and memory. In L. J. Dickstein, M. B. Riba, & J. M. Oldham (Eds.), *Review of Psychiatry* (Vol. 16, pp. II-13–II-53). Washington, DC: American Psychiatric Press.
- Campbell, D. T., & Stanley, J. C. (1967). *Experimental and quasi-experimental designs for research*. Chicago: Rand McNally.
- Carstensen, L., Gabrieli, J., Shepard, R., Levenson, R., Mason, M., Goodman, G., et al. (1993, March). Repressed objectivity. *APS Observer*, p. 23.
- Cheit, R. E. (1998). Consider this, skeptics of recovered memory. *Ethics & Behavior*, *8*, 141–160.
- Christianson, S., & Nilsson, L. (1984). Functional amnesia as induced by a psychological trauma. *Memory & Cognition*, *12*, 142–155.
- Clancy, S. A., Schacter, D. L., McNally, R. J., & Pitman, R. K. (2000). False recognition in women reporting recovered memories of sexual abuse. *Psychological Science*, *11*, 26–31.
- Clemes, S. (1964). Repression and hypnotic amnesia. *Journal of Abnormal and Social Psychology*, *69*, 62–69.
- Cloitre, M. (1992). Avoidance of emotional processing: A cognitive science perspective. In D. J. Stein & J. E. Young (Eds.), *Cognitive Science & Clinical Disorders* (pp. 19–41). San Diego: Academic Press.
- Coe, W. C. (1978). The credibility of posthypnotic amnesia: A contextualist’s view. *International Journal of Clinical and Experimental Hypnosis*, *26*, 218–245.
- Corwin, D. L., & Olafson, E. (1997). Videotaped discovery of a reportedly unrecalable memory of child sexual abuse: Comparison with a childhood interview videotaped 11 years before. *Child Maltreatment*, *2*, 91–112.

- Dalenberg, C. J. (1996). Accuracy, timing and circumstances of disclosure in therapy of recovered and continuous memories of abuse. *Journal of Psychiatry and Law*, *24*, 229–276.
- Dalenberg, C. J. (1997). The prediction of accurate recollections of trauma. In J. D. Read & D. S. Lindsay (Eds.), *Recollections of trauma—Scientific evidence and clinical practice* (pp. 449–453). New York: Plenum Press.
- Dallam, S. J. (2001). Crisis or creation? A systematic examination of “false memory syndrome.” *Journal of Child Sexual Abuse*, *9*, 9–36.
- de Rivera, J. (1997). The construction of False Memory Syndrome: The experience of retractors. *Psychological Inquiry*, *8*, 271–292.
- de Rivera, J. (2000). Understanding persons who repudiate memories recovered in therapy. *Professional Psychology: Research and Practice*, *31*, 378–386.
- Dollard, J., & Miller, N. E. (1950). *Personality and psychotherapy*. New York: McGraw-Hill.
- Duggal, S., & Sroufe, L. A. (1998). Recovered memory of childhood sexual trauma: A documented case from a longitudinal study. *Journal of Traumatic Stress*, *11*, 301–321.
- Dywan, J., & Bowers, K. (1983). The use of hypnosis to enhance recall. *Science*, *222*, 184–185.
- Ekman, P. (1997). Expressive behavior and the recovery of a traumatic memory: Comments on the videotapes of Jane Doe. *Child Maltreatment*, *2*, 113–116.
- Eich, E. (1989). Theoretical issues in state-dependent memory. In H. L. Roediger and F. I. M. Craik (Eds.), *Varieties of memory and consciousness: Essays in honour of Endel Tulving* (pp. 331–354). Hillsdale, NJ: Erlbaum.
- Eich, E. (1995). Mood as a mediator of place-dependent memory. *Journal of Experimental Psychology: General*, *124*, 293–308.
- Erdelyi, M. H., & Goldberg, B. (1979). Let’s not sweep repression under the rug: Towards a cognitive psychology of repression. In J. F. Kihlstrom & F. J. Evans (Eds.), *Functional disorders of memory* (pp. 355–402). Hillsdale, NJ: Erlbaum.
- Erdelyi, M. H., & Kleinbard, J. (1978). Has Ebbinghaus decayed with time? The growth of recall (hypermnnesia) over days. *Journal of Experimental Psychology: Human Learning and Memory*, *4*, 275–289.
- Estes, W. K. (1955). Statistical theory of spontaneous recovery and regression. *Psychological Review*, *62*, 369–377.
- Estes, W. K. (1997). Processes of memory loss, recovery, and distortion. *Psychological Review*, *104*, 148–169.
- Evans, F. J. (1988). Posthypnotic amnesia: Dissociation of content and context. In H. M. Pettinati (Ed.), *Hypnosis and memory* (pp. 157–192). New York: Guilford.
- False Memory Syndrome Foundation. (n.d.). Frequently asked questions: What is False Memory Syndrome (FMS)? Retrieved from <http://fmsfonline.org/fmsfaq.html#WhatIsFMS>
- Feldman-Summers, S., & Pope, K. S. (1994). The experience of “forgetting” childhood abuse: A national survey of psychologists. *Journal of Consulting & Clinical Psychology*, *62*, 636–639.
- Freud, S. (1955). Notes upon a case of obsessional neurosis. In J. Strachey (Ed. & Trans.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 10, pp. 153–249). London: Hogarth Press (original work published 1909).
- Freud, S. (1962). The aetiology of hysteria. In J. Strachey (Ed. & Trans.), *The standard edition of the complete psychological works of Sigmund Freud* (Vol. 3, pp. 191–221). London: Hogarth Press. (Original work published 1896).
- Freyd, J. J. (1996). *Betrayal trauma: The logic of forgetting childhood abuse*. Cambridge, MA: Harvard University Press.
- Freyd, J. J., & Gleaves, D. H. (1996). Remembering words not presented in lists: Relevance to the current recovered/false memory controversy. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*, 811–813.
- Freyd, P. (1999). About the False Memory Syndrome Foundation. In S. Taub (Ed.), *Recovered memories of child sexual abuse—Psychological, social, and legal perspectives on a contemporary mental health controversy* (pp. 17–39). Springfield, IL: Charles C. Thomas.
- Garry, M., Manning, C. G., Loftus, E. F., & Sherman, S. J. (1996). Imagination inflation: Imagining a childhood event inflates confidence that it occurred. *Psychonomic Bulletin & Review*, *3*, 208–214.
- Garry, M., & Polaschek, D. L. L. (2000). Imagination and memory. *Current Directions in Psychological Science*, *9*, 6–10.
- Gavigan, M. (1992). False memories of childhood sexual abuse: A personal account. *Issues in Child Abuse Accusations*, *4*, 246–247.
- Geiselman, R. E., Mackinnon, D. P., Fishman, D. L., Jaenicke, C., Larner, B. R., Schoenberg, S., et al. (1983). Mechanisms of hypnotic and nonhypnotic forgetting. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *9*, 626–635.
- Gleaves, D. H. (1994). On the reality of repressed memories. *American Psychologist*, *49*, 440–441.
- Gleaves, D. H. (1996). The evidence for “repression”: An examination of Holmes (1990) and the implications for the recovered memory controversy. *Journal of Child Sexual Abuse*, *5*, 1–19.
- Gleaves, D. H., & Freyd, J. J. (1997). Questioning additional claims about the “false memory syndrome” epidemic. *American Psychologist*, *52*, 993–994.

- Glenberg, A. M. (1979). Component-levels theory of the effects of spacing of repetitions on recall and recognition. *Memory & Cognition*, 7, 95–112.
- Goldstein, E., & Farmer, K. (1992). *Confabulations: Creating false memories, destroying families*. Boca Raton, Florida: SIRS.
- Grainger, J. (1990). Word frequency and neighborhood frequency effects in lexical decision and naming. *Journal of Memory and Language*, 29, 228–244.
- Grinker, R. R., & Spiegel, J. P. (1945). *War neuroses*. Philadelphia: Blakiston.
- Haber, R. N., & Haber, L. (1996). *Antecedent conditions and operational definitions for recovered memory effects*. Paper presented at the meeting of the Psychonomic Society, Chicago, IL.
- Herman, J. L., & Harvey, M. R. (1997). Adult memories of childhood trauma: A naturalistic study. *Journal of Traumatic Stress*, 10, 557–571.
- Herman, J. L., & Schatzow, E. (1987). Recovery & verification of memories of childhood sexual trauma. *Psychoanalytic Psychology*, 4, 1–14.
- Holmes, D. S. (1990). The evidence for repression: An examination of sixty years of research. In J. L. Singer (Ed.), *Repression and dissociation: Implications for personality theory, psychopathology, and health* (pp. 85–102). Chicago: University of Chicago Press.
- Holmes, D. S. (1994). Is there evidence for repression? Doubtful. *The Harvard Mental Health Newsletter*, June, 4–6.
- Horowitz, M. J. (1986). *Stress response syndromes*. New York: Aronson.
- Hovdestad, W. E., & Kristiansen, C. M. (1996). A field study of false memory syndrome: Construct validity and incidence. *Journal of Psychiatry & Law*, 24, 299–338.
- Hyman, I. E., & Billings, F. J. (1998). Individual differences and the creation of false childhood memories. *Memory*, 6, 1–20.
- Hyman, I. E., Gilstrap, L. L., Decker, K. L., & Wilkinson, C. L. (1998). Manipulating remember versus know judgments in autobiographical memories. *Applied Cognitive Psychology*, 12, 371–386.
- Hyman, I. E., Husband, T. H., & Billings, J. F. (1995). False memories of childhood experiences. *Applied Cognitive Psychology*, 9, 181–197.
- Hyman, I. E., & Loftus, E. F. (1998). Errors in autobiographical memory. *Clinical Psychology Review*, 18, 933–947.
- Hyman, I. E., & Pentland, J. (1996). The role of mental imagery in the creation of false childhood memories. *Journal of Memory and Language*, 35, 101–117.
- Jacoby, L. L. (1991). A process dissociation framework: Separating automatic from intentional uses of memory. *Journal of Memory & Language*, 30, 513–541.
- Johnson, M. K., Foley, M. A., Suengas, A. G., & Raye, C. L. (1988). Phenomenal characteristics of memories for perceived and imagined autobiographical events. *Journal of Experimental Psychology: General*, 117, 371–376.
- Johnson, M. K., Hashtroudi, S., & Lindsay, D. S. (1993). Source monitoring. *Psychological Bulletin*, 114, 3–28.
- Johnson, M. K., & Raye, C. L. (1981). Reality monitoring. *Psychological Review*, 88, 67–85.
- Jones, G. V. (1989). Back to Woodworth: The role of interlopers in the tip of the tongue phenomenon. *Memory & Cognition*, 17, 69–76.
- Jones, G. V., & Langford, S. (1987). Phonological blocking in the tip of the tongue state. *Cognition*, 26, 115–122.
- Kardiner, A., & Spiegel, H. (1947). *War stress and neurotic illness*. New York: Hoeber.
- Kassin, S. M. (1997). The psychology of confession evidence. *American Psychologist*, 52, 221–233.
- Kasznik, A. W., Nussbaum, P. D., Berren, M. R., & Santiago, J. (1988). Amnesia as a consequence of male rape: A case report. *Journal of Abnormal Psychology*, 97, 100–104.
- Kihlstrom, J. F. (1979). Hypnosis and psychopathology: Retrospect and prospect. *Journal of Abnormal Psychology*, 88, 459–473.
- Kihlstrom, J. F. (1983). Instructed forgetting: Hypnotic and nonhypnotic. *Journal of Experimental Psychology: General*, 112, 73–79.
- Kihlstrom, J. F. (1987). The cognitive unconscious. *Science*, 237, 1445–1452.
- Kihlstrom, J. F. (1997). Memory, abuse, and science. *American Psychologist*, 52, 994–995.
- Kihlstrom, J. F. (1998). Exhumed memory. In S. J. Lynn & K. M. McConkey (Eds.), *Truth in memory* (pp. 3–31). New York: Guilford.
- Kihlstrom, J. F., & Barnhardt, T. M. (1993). The self-regulation of memory, for better and for worse, with and without hypnosis. In D. B. Wegner & J. J. Pennebaker (Eds.), *Handbook of mental control* (pp. 88–125). Englewood Cliffs, NJ: Prentice-Hall.
- Kihlstrom, J. F., & Evans, F. J. (1979). Memory retrieval processes during post-hypnotic amnesia. In J. F. Kihlstrom & F. J. Evans (Eds.), *Functional disorders of memory* (pp. 179–218). Hillsdale, NJ: Erlbaum.
- Kirkpatrick, E. A. (1894). An experimental study of memory. *Psychological Review*, 1, 602–609.
- Kluft, R. P. (1998). Reflections on the traumatic memories of dissociative identity disorder patients. In S. J. Lynn & K. M. McConkey (Eds.), *Truth in memory* (pp. 304–322). New York: Guilford.

- Knapp, S., & VandeCreek, L. (2000). Recovered memories of childhood abuse: Is there an underlying professional consensus? *Professional Psychology: Research and Practice*, *31*, 365–371.
- Kolb, L. C. (1988). Recovery of memory and repressed fantasy in combat-induced post-traumatic stress disorder of Vietnam veterans. In H. M. Pettinati (Ed.), *Hypnosis and memory* (pp. 265–274). New York: Guilford.
- Koutstaal, W., & Schacter, D. L. (1997). Intentional forgetting and voluntary thought suppression: Two potential methods for coping with childhood trauma. In L. J. Dickstein, M. B. Riba, & J. M. Oldham (Eds.), *Review of psychiatry* (Vol. 16, pp. II-55–II-78). Washington, DC: American Psychiatric Press.
- Laurence, J. R., & Perry, C. (1983). Hypnotically created memory among highly hypnotizable subjects. *Science*, *222*, 523–524.
- Leavitt, F. (1997). False attribution of suggestibility to explain recovered memory of childhood sexual abuse following extended amnesia. *Child Abuse & Neglect*, *21*, 265–272.
- Lief, H. I., & Fetkewicz, J. M. (1995). Retractors of false memories: The evolution of pseudomemories. *Journal of Psychiatry & Law*, *23*, 411–435.
- Lindsay, D. S., & Read, J. D. (1994). Psychotherapy and memories of childhood sexual abuse: A cognitive perspective. *Applied Cognitive Psychology*, *8*, 281–338.
- Lindsay, D. S., Read, J. D., & Sharma, K. (1998). Accuracy and confidence in person identification: The relationship is strong when witnessing conditions vary widely. *Psychological Science*, *9*, 215–218.
- Lipton, A. (1999). Recovered memories in the courts. In S. Taub (Ed.), *Recovered memories of child sexual abuse—Psychological, social, and legal perspectives on a contemporary mental health controversy* (pp. 165–210). Springfield, IL: Charles C. Thomas.
- Loewenstein, R. J. (1991). Psychogenic amnesia and fugue: A comprehensive review. In D. Spiegel (Ed.), *Dissociative disorders: A clinical review* (pp. 45–78). Lutherville, MD: Sidran Press.
- Loftus, E. F. (1993). The reality of repressed memories. *American Psychologist*, *48*, 518–537.
- Loftus, E. F., & Burns, T. E. (1982). Mental shock can produce retrograde amnesia. *Memory & Cognition*, *10*, 318–323.
- Loftus, E. F., & Hoffman, H. G. (1989). Misinformation and memory: The creation of new memories. *Journal of Experimental Psychology: General*, *118*, 100–104.
- Loftus, E. F., & Ketcham, K. (1994). *The myth of repressed memory: False memories and allegations of sexual abuse*. New York: St. Martin's Press.
- Loftus, E. F., & Mazzoni, G. A. L. (1998). Using imagination and personalized suggestion to change people. *Behavior Therapy*, *29*, 691–706.
- Loftus, E. F., Miller, D. G., & Burns, H. J. (1978). Semantic integration of verbal information into a visual memory. *Journal of Experimental Psychology: Human Learning and Memory*, *4*, 19–31.
- Loftus, E. F., & Palmer, J. C. (1974). Reconstruction of automobile destruction: An example of the interaction between language and memory. *Journal of Verbal Learning and Verbal Behavior*, *13*, 585–589.
- Loftus, E. F., Polonsky, S., & Fullilove, M. T. (1994). Memories of childhood sexual abuse: Remembering & repressing. *Psychology of Women Quarterly*, *18*, 67–84.
- Lustig, C., & Hasher, L. (2001). Implicit memory is vulnerable to proactive interference. *Psychological Bulletin*, *127*, 618–628.
- Lynn, S. J., Weekes, J. R., & Milano, M. J. (1989). Reality versus suggestion: Pseudomemory in hypnotizable and simulating subjects. *Journal of Abnormal Psychology*, *98*, 137–144.
- MacLeod, C. M. (1991). Half a century of research on the Stroop effect: An integrative review. *Psychological Bulletin*, *109*, 163–203.
- Martin, E. (1971). Verbal learning theory and independent retrieval phenomena. *Psychological Review*, *78*, 314–332.
- McDermott, K. B. (1996). The persistence of false memories in list recall. *Journal of Memory & Language*, *35*, 212–230.
- McElroy, S. L., & Keck, P. E., Jr. (1995). The formation of false memories. *Psychiatric Annals*, *25*, 720–725.
- McGeoch, J. A. (1933). Studies in retroactive inhibition: The temporal course of the inhibitory effects of interpolated learning. *Journal of General Psychology*, *9*, 24–43.
- McGeoch, J. A. (1942). *The psychology of human learning*. New York: Longmans, Green.
- Melton, A. W., & Irwin, J. (1940). The influence of interpolated learning on retroactive inhibition and the overt transfer of specific responses. *American Journal of Psychology*, *53*, 175–203.
- Mensink, G.-J., & Raaijmakers, J. G. (1988). A model of interference and forgetting. *Psychological Review*, *95*, 434–455.
- Meyer, A. S., & Bock, K. (1992). The tip-of-the-tongue phenomenon: Blocking or partial activation? *Memory & Cognition*, *20*, 715–726.
- Modai, I. (1994). Forgetting childhood: A defense mechanism against psychosis in a Holocaust survivor. *Clinical Gerontology*, *14*(3), 67–71.
- Mook, D. G. (1983). In defense of external invalidity. *American Psychologist*, *38*, 379–387.

- Murrey, G. J., Cros, H. J., & Whipple, J. (1992). Hypnotically created pseudomemories: Further investigation into the "Memory distortion or response bias" question. *Journal of Abnormal Psychology, 101*, 75–77.
- Nelson, E. L., & Simpson, P. (1994). First glimpse: an initial examination of subjects who have rejected their visualizations as false memories. *Issues in Child Abuse Accusations, 6*, 123–133.
- Neisser, U. (1997). Jane Doe's memories: Changing the past to serve the present. *Child Maltreatment, 2*, 123–125.
- Nemiah, J. C. (1979). Dissociative amnesia: A clinical and theoretical reconsideration. In J. F. Kihlstrom & F. J. Evans (Eds.), *Functional disorders of memory* (pp. 303–324). Hillsdale, NJ: Erlbaum Associates.
- Nickerson, R. S. (1984). Retrieval inhibition from part-set cuing: A persisting enigma in memory research. *Memory & Cognition, 12*, 531–552.
- Oakes, M. A., & Hyman, I. E. (2000). The changing face of memory and self. In D. F. Bjorklund (Ed.), *False-memory creation in children and adults* (pp. 45–67). Mahwah, NJ: Erlbaum.
- Ofshe, R. J. (1992). Inadvertent hypnosis during interrogation: False confession due to dissociative state, misidentified multiple personality and the satanic cult hypothesis. *International Journal of Clinical and Experimental Hypnosis, 40*, 125–156.
- Ofshe, R., & Singer, M. T. (1994). Recovered-memory therapy and robust repression: Influence and pseudomemories. *International Journal of Clinical and Experimental Hypnosis, 42*, 391–410.
- Ofshe, R., & Watters, E. (1993, March/April). Making monsters. *Society, 4*–16.
- Olio, K. (1994). Truth in memory. *American Psychologist, 49*, 442–443.
- Olio, K., & Cornell, W. (1994). The Paul Ingram case: Pseudomemory or pseudoscience? *Violence Update, 3*, 4.
- Olio, K. A., & Cornell, W. F. (1998). The façade of scientific documentation. A case study of Richard Ofshe's analysis of the Paul Ingram case. *Psychology, Public Policy, and Law, 4*, 1182–1197.
- Pasley, L. (1994). Misplaced trust: A first-person account of how my therapist created false memories. *Skeptic, 2*, 62–67.
- Payne, D. G. (1987). Hypermnnesia and reminiscence in recall: A historical and empirical review. *Psychological Bulletin, 101*, 5–27.
- Payne, D. G., Elie, C. J., Blackwell, J. M., & Neuschatz, J. S. (1996). Memory illusions: Recalling, recognizing, and recollecting events that never occurred. *Journal of Memory & Language, 35*, 261–285.
- Pendergrast, M. (1995). *Victims of memory: Incest accusations and shattered lives*. Hinesburg, VT: Upper Access.
- Pezdek, K., & Banks, W. P. (Eds.). (1996). *The Recovered memory/false memory debate*. San Diego: Academic Press.
- Pezdek, K., Finger, K., & Hodge, D. (1997). Planting false childhood memories: The role of event plausibility. *Psychological Science, 8*, 437–441.
- Pezdek, K., & Taylor, J. (2000). Discriminating between accounts of true and false events. In D. F. Bjorklund (Ed.), *False-memory creation in children and adults* (pp. 69–91). Mahwah, NJ: Erlbaum.
- Piper, A., Pope, H. G., & Borowiecki, J. J. (2000). Custer's last stand: Brown, Schefflin and Whitfield's latest attempt to salvage "dissociative amnesia." *Journal of Psychiatry & Law, 28*, 149–213.
- Pope, H. G., & Hudson, J. I. (1995). Can memories of childhood sexual abuse be repressed? *Psychological Medicine, 25*, 121–126.
- Pope, H. G., & Hudson, J. I. (1996). "Recovered memory" therapy for eating disorders: Implications of the Ramona verdict. *International Journal of Eating Disorders, 19*, 139–146.
- Pope, H. G., Hudson, J. A., Bodkin, J. A., & Oliva, P. (1998). Questionable validity of 'dissociative amnesia' in trauma victims. *British Journal of Psychiatry, 172*, 210–215.
- Pope, K. S. (1996). Memory, abuse, and science: Questioning claims about the false memory syndrome epidemic. *American Psychologist, 51*, 957–974.
- Pope, K. S. (1997). Science as careful questioning: Are claims of a False Memory Syndrome epidemic based on empirical evidence? *American Psychologist, 52*, 99–1006.
- Postman, L., Stark, K., & Fraser, J. (1968). Temporal changes in interference. *Verbal Learning and Verbal Behavior, 7*, 672–694.
- Postman, L., & Underwood, B. J. (1973). Critical issues in interference theory. *Memory & Cognition, 1*, 19–40.
- Prince, M. (1906). *The dissociation of a personality*. New York: Longmans, Green.
- Putnam, F. W. (1997). Commentary. *Child Maltreatment, 2*, 117–120.
- Rabinowitz, M., & Mandler, J. M. (1983). Organization and information retrieval. *Journal of Experimental Psychology: Learning, Memory & Cognition, 9*, 430–439.
- Read, J. D. (1996). From a passing thought to a false memory in 2 minutes: Confusing real and illusory events. *Psychonomic Bulletin & Review, 3*, 105–111.
- Read, J. D., & Bruce, D. (1982). Longitudinal tracking of difficult memory retrievals. *Cognitive Psychology, 14*, 280–300.
- Reason, J. T., & Lucas, D. (1984). Using cognitive diaries to investigate naturally occurring memory blocks. In J. E.

- Harris & P. E. Morris (Eds.), *Everyday memory actions and absentmindedness* (pp. 53–70). London: Academic Press.
- Reyna, V. F., & Brainerd, C. J. (1995). Fuzzy-trace theory: An interim synthesis. *Learning & Individual Differences, 7*, 1–75.
- Robinson, K. J., & Roediger, H. L., III. (1997). Associative processes in false recall and false recognition, *Psychological Science, 8*, 231–237.
- Roediger, H. L., III. (1974). Inhibition in recall from cuing with recall targets. *Journal of Verbal Learning and Verbal Behavior, 12*, 644–657.
- Roediger, H. L., III. (1978). Recall as a self-limiting process. *Memory & Cognition, 6*, 54–63.
- Roediger, H. L., III & McDermott, K. B. (1995). Creating false memories: Remembering words not presented in lists. *Journal of Experimental Psychology: Learning, Memory, & Cognition, 21*, 803–814.
- Roediger, H. L., III & Payne, D. (1985). Recall criterion does not affect recall level or hypermnnesia: A puzzle for generate/recognize theories. *Memory & Cognition, 13*, 1–7.
- Roediger, H. L., III & Thorpe, L. A. (1978). The role of recall time in producing hypermnnesia. *Memory & Cognition, 6*, 296–305.
- Rubin, L. J. (1996). Childhood sexual abuse: False accusations of “False memory”? *Professional Psychology: Research and Practice, 27*, 447–451.
- Rundus, D. (1973). Negative effects of using list items as recall cues. *Journal of Verbal Learning & Verbal Behavior, 12*, 43–50.
- Sargant, W., & Slater, E. (1941). Amnestic syndromes of war. *Proceeding of the Royal Society of Medicine, 34*, 757–764.
- Schefflin, A. W., & Brown, D. (1996). Repressed memory or dissociative amnesia: What the science says. *Journal of Psychiatry & Law, 24*, 143–188.
- Schooler, J. W., & Fiore, S. M. (1995). *Toeing the middle line: Evidence for both recovered and fabricated memories of abuse*. Paper presented at the meeting of the Psychonomic Society, Los Angeles, CA.
- Schooler, J. W., Ambadar, Z., & Bendiksen, M. (1997). A cognitive corroborative case study approach for investigating discovered memories for sexual abuse. In J. D. Read & D. S. Lindsay (Eds.), *Recollections of trauma—Scientific evidence and clinical practice* (pp. 379–387). New York: Plenum Press.
- Schwartz, B. L., Travis, D. M., Castro, A. M., & Smith, S. M. (2000). The phenomenology of real and illusory tip-of-the-tongue states. *Memory & Cognition, 28*, 18–27.
- Smith, S. M. (1979). Remembering in and out of context. *Journal of Experimental Psychology: Human Learning & Memory, 5*, 460–471.
- Smith, S. M. (1988). Environmental context-dependent memory. In G. Davies and D. Thomson (Eds.), *Memory in context: Context in memory* (pp. 13–33). New York: Wiley.
- Smith, S. M. (1994a). Theoretical principles of context-dependent memory. In P. Morris and M. Gruneberg (Eds.) *Aspects of memory: Theoretical aspects* (2nd ed., pp. 168–195). Routledge Press.
- Smith, S. M. (1994b). Frustrated feelings of imminence: On the tip-of-the-tongue. In J. Metcalfe & A. Shimamura (Eds.), *Metacognition: Knowing about knowing* (pp. 27–45). Cambridge, MA: MIT Press.
- Smith, S. M. (1995a). *Recovery from memory blocks: Experimental evidence*. APA Division 3 Invited Address. Presented at the meeting of the American Psychological Association, New York, NY.
- Smith, S. M. (1995b). Fixation, incubation, and insight in memory, problem solving, and creativity. In S. M. Smith, T. B. Ward, & R. A. Finke (Eds.), *The creative cognition approach* (pp. 135–155). Cambridge: MIT Press.
- Smith, S. M. (1995c). Mood is a component of mental context: Comment on Eich (1995). *Journal of Experimental Psychology: General, 124*, 309–310.
- Smith, S. M., Carr, J. A., & Tindell, D. R. (1993). *Fixation and incubation in word fragment completion*. Paper presented at the Midwestern Psychological Association, Chicago, IL.
- Smith, S. M., & Choi, H. (2001, August). *Incubation in memory, problem solving, and idea generation: Autonomous unconscious processing vs. contextually influenced restructuring*. Presented at the Third International Conference on Memory, Valencia, Spain.
- Smith, S. M, Gleaves, D. H., Pierce, B. H., Williams, T. L., Gilliland, T. & Gerkins, D. R. (2003). Eliciting and comparing false and recovered memories: An experimental approach. *Applied Cognitive Psychology, 17*, 251–279.
- Smith, S. M., & Tindell, D. R. (1997). Memory blocks in word fragment completion caused by involuntary retrieval of orthographically similar primes. *Journal of Experimental Psychology: Learning, Memory and Cognition, 23*, 355–370.
- Smith, S. M., Tindell, D. R., & Balfour, S. P. (1995). *Blocking, tip-of-the-tongue reports, & incubation in word retrieval*. Paper presented at the meeting of the Midwestern Psychological Association, Chicago, IL.
- Smith, S. M., & Vela, E. (1991). Incubated reminiscence effects. *Memory and Cognition, 19*, 168–176.
- Smith, S. M., Ward, T. B., Sifonis, C. M., Tindell, D. R., Wilkenfeld, M. J., & Pierce, B. H. (1996). *Priming and category structure in created memories*. Paper presented at the meeting of the Psychonomic Society, Chicago, IL.

- Spanos, N. P. (1986). Hypnotic behavior: A social psychological interpretation of amnesia, analgesia, and "trance logic." *Behavioral and Brain Sciences*, *93*, 449–467.
- Spanos, N. P., & McLean, J. (1985–1986). Hypnotically created pseudomemories: Memory distortions or reporting bias? *British Journal of Experimental & Clinical Hypnosis*, *3*, 155–159.
- Spiegel, D. (1997). Trauma, dissociation, and memory. In R. Yehuda & A. McFarlane (Eds.), *Psychobiology of post-traumatic stress disorder* (pp. 225–237). New York: New York Academy of Sciences.
- Tipper, S. P. (1985). The negative priming effect: Inhibitory priming by ignored objects. *Quarterly Journal of Experimental Psychology: Human Experimental Psychology*, *37A*, 571–590.
- Tulving, E., & Pearlstone, Z. (1966). Availability versus accessibility of information in memory for words. *Journal of Verbal Learning and Verbal Behavior*, *5*, 381–391.
- Tulving, E., Schacter, D. L., & Stark, H. A. (1982). Priming effects in word-fragment completion are independent of recognition memory. *Journal of Experimental Psychology: Learning, Memory, & Cognition*, *8*(4), 336–342.
- Van der Hart, O., & Nijenhuis, E. (1995). Amnesia for traumatic experiences. *Hypnosis*, *22*, 73–86.
- Wakefield, H., & Underwager, R. (1994). *Return of the furies: An investigation into recovered memory therapy*. Chicago: Open Court.
- Wegner, D. M. (1989). *White bears and other unwanted thoughts*. New York: Viking.
- Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review*, *101*, 34–52.
- Wells, G. L., & Loftus, E. F. (1984). *Eyewitness testimony: Psychological perspectives*. Cambridge, England: Cambridge University Press.
- Wheeler, M. A. (1995). Improvement in recall overtime without repeated testing: Spontaneous recovery revisited. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *10*, 733–744.
- Widiger, T. A., & Sankis, L. M. (2000). Adult psychopathology: Issues and controversies. *Annual Review of Psychology*, *51*, 377–404.
- Williams, L. M. (1994). Recall of childhood trauma: A prospective study of women's memories of child sexual abuse. *Journal of Consulting and Clinical Psychology*, *52*, 1167–1176.
- Williams, L. M. (1995). Recovered memories of abuse in women with documented child sexual victimization histories. *Journal of Traumatic Stress*, *8*, 649–674.
- Williams, M. R. (1996). Suits by adults for childhood sexual abuse: Legal origins of the "repressed memory" controversy. *Journal of Psychiatry & Law*, *24*, 207–228.
- Wylie, M. S. (1993). The shadow of a doubt. *Family Therapy Networker*, *17*, 18–29, 70–73.
- Zaragoza, M. S., & Koshmider, J. W., III. (1989). Mised subjects may know more than their performance implies. *Journal of Experimental Psychology: Learning, Memory and Cognition*, *15*, 246–255.
- Zaragoza, M. D., & Mitchell, K. J. (1996). Repeated exposure to suggestion and the creation of false memories. *Psychological Science*, *7*, 294–300.

Received February 6, 2002; revised January 31, 2003; accepted April 28, 2003.