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## MEMORY, REMEMBERING, AND MISREMEMBERING

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This article provides a brief introduction to recent research on human memory, focusing on findings and theories relevant to the ongoing debate about recovered memories of childhood sexual abuse. The article does not provide a complete discussion of this complex and emotionally charged debate (for our efforts at such a discussion, see Lindsay & Read, 1994, 1995; Read & Lindsay, 1994). Instead, we offer an introduction to some of the theories and findings that have led many cognitive psychologists to believe that well-intentioned efforts to help clients recover suspected hidden memories of childhood trauma put some non-abused clients at risk of coming to believe that they were abused.

**Memory Metaphors.** Until recently, the dominant metaphor for autobiographical memory was of a vast filing system, with each file containing representations of a particular past experience. In this file-storage metaphor, remembering consists of searching for a particular file and, if it is located, reading out its contents (akin to playing back a Sensurround video). Cognitive psychologists have long studied forgetting and memory errors (e.g., remembering some aspects of a past event but forgetting others, or misremembering a past event in ways that fit one's expectations), but such phenomena did not lead them to reject the filing-system metaphor. Instead, they proposed that memory records can become incomplete or lost over time, and that general knowledge and expectations sometimes fill in gaps in retrieved records (thereby sometimes producing memory errors).

Two recent developments have led most memory theorists to abandon the filing-system metaphor. First, research on "implicit" memory indicates that remembering involves more than retrieving and replaying records of past events. People can retrieve and use memory information from a specific past experience without being aware that they are doing so, as in involuntary plagiarism, and can have the subjective feeling of remembering events that never occurred in their pasts, as in *deja vu* (see Roediger & McDermott). Such findings show that the experience of remembering does not arise from locating and reading off memory records. Second, connectionist models (aka "parallel distributed processing" or "neural networks") offered an alternative to file-storage metaphors (see Rumelhart &

McClelland, 1986).

In file-storage models of memory, each past thought, perception, or feeling is represented by an internal code that is stored in some location in memory (just as a word-processing file is stored in a specific location on a computer hard drive). In connectionist models, in contrast, information in memory is not stored in any one location, but rather distributed across a network. By analogy, imagine a spider web composed of millions of fibers, with some fibers anchored on input units (e.g., sensory receptors) and others anchored on output units (e.g., motor-control enactors). Sensory stimulation causes fibers connected to the receptors to vibrate, with the amount of vibration of each fiber corresponding to an aspect or feature of the stimulus (e.g., for visual stimuli, some input fibers vibrate a lot if the stimulus is red, others if it is blue, others if it has a curved edge, etc.). A pattern of vibration would propagate throughout the web, from fiber to fiber, with the amount of vibration in different parts of the web determined by the pattern of input vibration and the nature of the connections between fibers. Any particular pattern of input vibrations would ultimately be transformed into a corresponding (but different) pattern of output vibrations. Connectionist networks can modify the connections between fibers (tightening or loosening connections so that transmission of vibrations is amplified or muted) to learn new input-output relations while maintaining previously learned ones. Thus the network learns to produce particular patterns of vibration in response to particular stimulus events; the memory of the event is represented in the pattern of connections between fibers in the entire network, and "thinking" about that event is represented by a particular pattern of vibration throughout the network. If given input about some aspects of a past

This issue of the *PTSD Research Quarterly* is the first of a two-part series devoted to the topic of memory and trauma. The first part contains a review by Drs. Lindsay and Read of literature on basic memory processes and the relevance of the literature to various aspects of the controversy about the veracity of recovered traumatic memories. The second part of our series will contain a review by Dr. Richard McNally of literature on information processing in PTSD. In our opinion, whatever one's personal beliefs about recovered memories, it is essential to be familiar with literature that is relevant to those beliefs.

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stimulus, such networks naturally “retrieve” a close approximation of the response to the complete stimulus (analogous to cued recall).

As a metaphor for memory, such networks have many advantages over the file-storage metaphor. They capture, in an elegant and natural manner, the way memories of similar events can interfere with one another, cue one another, or become blended together (depending on specifics of the memories and the cues). They also fit nicely with the observation that people often remember some aspects of a past event without remembering other aspects, or remember different aspects of an event with varying degrees of clarity or in response to different cues. Most important in the current context, the connectionist metaphor is consistent with research indicating that remembering is not a process of retrieving records from a special library where they have been stored separate from the rest of mental life. In the connectionist metaphor memory is a byproduct of the processes that give rise to and constitute ongoing experience, and memories are represented in subtle and complex changes in those processes. Thus memory is not neatly separated from thinking, perceiving, imagining, and other aspects of mental life, and the experience of remembering does not reduce to locating and reading off an encapsulated record of a past experience but rather involves partially recreating a prior pattern of activation across an entire network. This metaphor fits well with the findings and theories described below.

**Reconstructive and Attribution-Making Processes in Remembering.** As noted above, people can retrieve and use memory information about a specific past event without having the feeling of remembering, and can have the feeling of remembering events that never occurred in their pasts. These and related findings led Jacoby (e.g., Jacoby et al., 1989) and Johnson (e.g., Johnson et al., 1993) to argue that people have the experience of remembering when they attribute aspects of current mental events to the past. Several factors are thought to be involved in determining whether a mental event is experienced as a memory. For example, because using memory typically facilitates processing (e.g., it is easier to form an image of a face by remembering a face than by using imagination to construct an image of a never-seen face), people have a bias to attribute fluent images to memory. Current orientation and expectations also matter: People are more likely to experience an image or idea as a memory if they are trying to remember something when it comes to mind than if they are otherwise oriented. Thus a vivid image that is fluently generated during an attempt to remember is likely to be experienced as a memory (e.g., Whittlesea, 1993).

The constraints of the cognitive system are such that most of the time fluently produced images and ideas that come to mind during attempts to remember are based largely on memory. But beliefs and expectations and memories from sources other than the to-be-remembered event can also provide for quick and easy generation of ideas and images, and these may blend together with products of memories of the to-be-remembered event, filling in miss-

ing details or distorting recollection of poorly remembered events or details. Jacoby et al. (1989) provide an excellent introduction to these ideas, and Ross (1989) elaborates similar ideas and evidence regarding people's tendency to misremember their personal past.

**Source Monitoring.** Most people are occasionally aware of uncertainty about the sources of their recollections (e.g., “Did I really say that, or did I just think about saying it, or is it just something that I now wish I had said?”). A substantial body of evidence indicates that even when we are not consciously aware of making such “source monitoring” decisions, remembering always involves these sorts of attributions. That is, most of the time we identify the sources of our thoughts and images (to some level of specificity, with the level largely determined by our current goals) without conscious deliberation—thoughts and images come to mind, and we “just know” that they are memories, or “just know” that they are fantasies, etc. Research indicates that even in such cases rapid, unconscious decision processes underlie identification of the sources of mental events. Again, the constraints of the cognitive system are such that most of the time we do not err in such attributions. Sometimes, however, conditions conspire to lead us to believe that an idea that is really based on a memory of something a colleague once said is a brilliant new idea that we have just come up with, or that a memory of something Liz said is a memory of Kathy's words, or that a memory of a past fantasy is a memory of an actual past event. (Johnson et al., 1993, reviewed research and theory on source monitoring, and Johnson, 1988, offers a discussion framed for clinical psychologists.)

**Suggestibility.** Memory-source monitoring errors are dramatically demonstrated in studies of eyewitness suggestibility. Most of the many dozens of studies published in the past two decades used variants of Loftus's three-phase procedure (e.g., Loftus et al., 1978), in which people view or experience an event, receive verbal misinformation concerning aspects of that event, and are later asked to remember the event. Depending on specifics of the procedure, some, many, or most people in such studies falsely claim to have witnessed things that were merely suggested to them. Recent studies have shown that a substantial percentage of people who make such errors are confident that their erroneous reports are accurate memories of the to-be-remembered event. For example, immediately before the memory test Lindsay (1990) correctly informed people that the verbal information presented in Phase 2 included misleading suggestions, and that they should NOT report anything they remembered from Phase 2 as an answer on the test because all of that information was wrong. Nonetheless, 27% of the time people “recalled” having seen things in the to-be-remembered Phase 1 event that really had only been suggested to them in Phase 2.

Two major categories of factors appear to determine the likelihood that people who receive misleading suggestions will later falsely believe that they had witnessed or experienced what was suggested. First, numerous factors contribute to the overall strength of suggestions, including the

perceived authority and trustworthiness of the source, the perceived plausibility of the suggestions, repetition of suggestions, factors that enhance imagery, and factors that lower people's memory-monitoring criteria. Second, all else being equal, people are more likely to fall prey to suggestions about non-memorable details than to suggestions regarding memorable autobiographical experiences. Thus a single passing suggestion can lead most people to later claim to remember a minor detail in a slide show (e.g., Loftus et al., 1978), but stronger suggestive influences are required to lead people falsely to remember a dramatic life experience that had not really occurred (e.g., Hyman et al., in press). Several recent studies of children (some of which are reviewed by Ceci & Bruck, 1993, 1994), and of adults (Hyman et al., in press; Loftus & Coan, in press) have demonstrated false memories of non-experienced dramatic life events. For example, Hyman et al. asked undergraduates to try to remember childhood events that they were led to believe their parents had reported. In fact, one or more of the alleged events (e.g., going to the hospital at age 5 years with a possible earache and having to stay overnight) had not really occurred. Subjects attempted to remember the events during two sessions; few reported false memories in the first session, but by the second session 20-25% of subjects (depending on the study) reported remembering the suggested non-event. Recent experimental research such as Hyman et al.'s and sociological research on innocent people who falsely confess to crimes (e.g., Gudjonsson, 1992) indicate that the factors that increase suggestibility in laboratory studies (such as authority and trustworthiness, repetition, plausibility) play the same roles in creating false memories or beliefs of dramatic life experiences.

***Discriminating Between Accurate and Inaccurate Memories.*** Few studies have tested observers' ability to distinguish reports based on accurate recollections from reports that are products of suggestion. Those that have indicate that such discriminations are difficult. For example, Schooler et al. (1986) found that although people's descriptions of their memories of a witnessed event tended to differ more often when those memories were based on what had truly been witnessed than when they were products of suggestions, in many cases reports based on suggestions were not discriminable from those based on accurate memories. Similarly, Ceci and Bruck (1994) reported that experts performed very poorly when shown video tapes of children being interviewed and asked to discriminate between accurate reports and those that were products of suggestion. Ceci and Bruck noted that real-world cases provide converging evidence for this claim, in that experts often disagree about which parts of a child's accusations can confidently be accepted as accurate and which cannot.

***Insensitivity to Social Influence.*** Research on persuasion and expectancy effects, decision biases and heuristics, and interviewing all indicate that authority figures often influence those with whom they interact, and often fail to perceive that they influence others. Rosenthal (1994) reviewed 30 years of research on expectancy effects, and

argued that the research demonstrates that the beliefs and expectations of teachers, caregivers, and other authorities often have dramatic influences on those with whom they interact. Moreover, Rosenthal argued that these effects are mediated by quite subtle behaviors. Similarly, Ceci et al. (in press) reported a study in which adults were given false expectations regarding an event that young children had experienced, and then interviewed the children about the event; interviewers often asked leading questions, and children often responded to their leading probes, producing inaccurate reports that were the product of unintentional suggestive influences. (Lindsay & Read, 1994, 1995, provide a more extensive discussion of evidence that it is often difficult accurately to assess the extent to which one has influenced another person.)

***Generalizability of Memory Research to Memory Work in Psychotherapy.*** Critics of memory work have argued that findings such as those described above justify concern about the safety of approaches to psychotherapy that include searches for suspected hidden memories of childhood trauma. The critics' claim is not that all memories of childhood sexual abuse recovered via memory work are false, but rather that some likely are. Defenders of memory work have responded by challenging the generalizability of the research to therapy situations. On the one hand, the suggested non-events in even the most naturalistic of laboratory studies of suggestibility (e.g., being lost in a mall or going to the hospital at 5 years of age) are not as traumatic as childhood sexual abuse often is. As mentioned above, evidence indicates that the more memorable an event would have been, the harder it is to create false memories of that event via suggestions. On the other hand, adults' memory of childhood is often spotty, and the suggestive influences in laboratory studies are trivially weak compared to those exerted by the small minority of therapists who favor prolonged, multifaceted searches for suspected hidden memories (see Poole et al., in press, for survey data on therapists' use of memory recovery techniques). Indeed, as Lindsay and Read (1994) argued, some approaches combine all of the factors known to increase suggestibility: A trusted authority provides a rationale for the plausibility of hidden memories of long-ago childhood trauma, and motivation for trying to recover such memories; the client is repeatedly exposed to suggestive information from multiple sources (leading questions, comments, and interpretations offered by the therapist, anecdotes in popular books, other survivors' stories, etc.); and techniques that enhance imagery and lower source-monitoring criterion (e.g., hypnosis, guided imagery) are used. As noted above, sociological studies of people who falsely confess to crimes indicate that these sorts of influences contribute to false confessions (Gudjonsson, 1992), and anecdotal reports of clients who report demonstrably false memories provide converging support for this claim. (Read & Lindsay, 1994, listed examples of demonstrably false memories and provided a more extensive discussion of the issue of generalizability.)

Experimental research testing the hypothesis that exten-

sive programs of memory work can lead clients to develop false memories or beliefs of childhood trauma will likely never be conducted because such studies would violate research ethics. Thus decisions can only be based on reasonable inferences. In our view, the available research indicates that there is little reason to fear that people are likely to develop illusory memories or false beliefs regarding childhood traumas solely in response to a few suggestive questions, but there are solid grounds for concern that prolonged and multifaceted suggestive influences may lead some people to develop illusory memories or beliefs.

**Summary and Conclusion.** Many people have been deeply harmed by childhood sexual abuse, and we must not let the debate about recovered memories sidetrack our culture's dawning appreciation of the importance of this terrible problem. At the same time, we see little room for doubt that some people who were not abused as children have inadvertently been led to believe that they were. Professionals must work together to develop approaches that maximize sensitivity to and support for survivors of abuse while simultaneously minimizing the risk of harming people by fostering illusory memories and false beliefs. Several prominent clinical psychologists and practitioners whose approaches to therapy include an emphasis on childhood trauma have recently made similar arguments (e.g., Brown, in press; Enns et al., in press). We hope that the brief introduction to memory research and theory provided here will contribute to further communication between researchers and practitioners, and to the development of approaches that support survivors of abuse without endangering other clients.

#### Further Readings About Recovered Memories

LOFTUS, E.F. & KETCHAM, K. (1994). **The myth of repressed memory: False memories and allegations of sexual abuse.** New York: St. Martin's Press.

PENDERGRAST, M. (1995). **Victims of memory: Incest accusations and shattered lives.** Hinesburg, VT: Upper Access.

YAPKO, M. (1994). **Suggestions of abuse: Real and imagined memories.** New York: Simon & Schuster.

Special issues of journals: *Applied Cognitive Psychology*, 8(4), 1994; *Consciousness and Cognition*, 3(3 & 4), 1994; *Family Therapy Networker*, 17(5), September/October, 1993; *American Journal of Clinical Hypnosis*, 36(2), 1994; *International Journal of Clinical and Experimental Hypnosis*, 42(4), 1994; *Journal of Traumatic Stress*, 8(4), 1995.

### SELECTED ABSTRACTS

BROWN, D. (in press). **Pseudomemories: The standard of science and the standard of care in trauma treatment.** *American Journal of Clinical Hypnosis*. The pseudomemory (PM) debate has focused on individuals who do not remember sexual abuse and later recover these memories, often in therapy. This paper critically reviews experimental research on stress and memory and on suggestibility and memory in terms of its applicability to PM production in therapy. Three different kinds of suggestibility are identified - hypnotizability, postevent misinformation suggest-

ibility, and interrogatory suggestibility. It is hypothesized that interrogatory suggestibility alone or the interaction of all three pose significant risk for PM production. It is argued that a better standard of science is needed before claims can be made about PM production in therapy, since no experimental studies have been conducted on memory performance or suggestibility effects in therapy. However, the findings derived from memory research on other populations nevertheless are useful to inform the standard of care in treating recovered memory patients.

CECI, S.J. & BRUCK, M. (1993). **Suggestibility of the child witness: A historical review and synthesis.** *Psychological Bulletin*, 113, 403-439. The field of children's testimony is in turmoil, but a resolution to seemingly intractable debates now appears attainable. In this review, we place the current disagreement in historical context and describe psychological and legal views of child witnesses held by scholars since the turn of the 20th century. Although there has been consistent interest in children's suggestibility over the past century, the past 15 years have been the most active in terms of the number of published studies and novel theorizing about the causal mechanisms that underpin the observed findings. A synthesis of this research posits three "families" of factors - cognitive, social, and biological - that must be considered if one is to understand seemingly contradictory interpretations of the findings. We conclude that there are reliable age differences in suggestibility but that even very young children are capable of recalling much that is forensically relevant. Findings are discussed in terms of the role of expert witnesses.

CECI, S.J. & BRUCK, M. (1994). **How reliable are children's statements?... It depends.** *Family Relations*, 43, 255-257. Each year, tens of thousands of children enter America's courtrooms to testify about their recollections of events. What can research tell us about children's recollections in such cases? Fincham, Beach, Moore, and Diener (1994) have provided a provocative and thoughtful approach to answer these questions. In our commentary, we shall address the reliability risks raised by Fincham et al. about interviewer's confirmatory bias, the use of anatomical dolls, and the ability of clinicians and other professionals to discriminate between accurate and inaccurate statements of children. [Adapted from Text]

CECI, S.J., LEICHTMAN, M.D. & WHITE, T. (in press). **Interviewing pre-schoolers: Remembrance of things planted.** In D.P. Peters (Ed.), *The child witness: Cognitive, social, and legal issues*. Netherlands: Kluwer. This chapter describes several recent experiments conducted by Ceci and associates, and argues that these and related findings reveal the complex interactions between cognitive and social factors that guide interviews of young children, sometimes with positive effects and other times with negative effects on children's accuracy. [DSL]

ENNS, C.Z., MCNEILLY, C., CORKERY, J. & GILBERT, M. (in press). **The debate about delayed memories of child sexual abuse: A feminist perspective.** *The Counseling Psychologist*. The debate about delayed memories of child sexual abuse has generated strong emotions and has polarized many psychologists and members of the public. At times, individuals have adopted absolute positions without adequate knowledge of the complex issues involved. This article provides information about the current debate regarding the veracity of delayed memories of child sexual abuse, describes the historical context in which this controversy occurs, discusses the growth and development of psychotherapy for trauma survivors, and reviews the theoretical and empirical literature relevant to abuse memories. The article

also outlines recommendations about foundations of knowledge and interventions that will help psychologists engage in competent and ethical practices with clients, and generates an initial set of recommendations for future research, training, and social change.

GUDJONSSON, G.H. (1992). **The psychology of interrogations, confessions and testimony.** Chichester, England: Wiley. The purpose of the book is to examine in detail the various aspects of investigative interviewing and to highlight the factors that influence the accuracy and completeness of the information collected. The emphasis is on the application of psychological knowledge and principles to investigative interviewing. The literature and review studies on false confession are discussed within the broader framework of the miscarriage of justice. Theoretical approaches to false confession are reviewed in detail and the implications of the different types of false confession are discussed. The psychological mechanisms and processes that are thought to facilitate false confession are highlighted. [Adapted from Text]

HYMAN, I.E., HUSBAND, T.H. & BILLINGS, F.J. (in press). **False memories of childhood experiences.** *Applied Cognitive Psychology.* We conducted two experiments to investigate if college students would create false memories of childhood experiences in response to misleading information and repeated interviews. In both experiments we contacted parents to obtain information about events that happened to the students during childhood. In a series of interviews we asked the students to recall the parent-reported events and one experimenter-created false event. In the second experiment we varied the age at which we claimed the false event occurred. In both experiments we found that some individuals created false memories in these circumstances and in the second experiment we found no effect of age of attempted incorporation. In the second experiment we also found that those who discussed related background knowledge during the early interviews were more likely to create a false recall. Generalizations to therapy contexts are discussed.

JACOBY, L.L., KELLEY, C.M. & DYWAN, J. (1989). **Memory attributions.** In H.L. Roediger & F.I.M. Craik (Eds.), *Varieties of memory and consciousness: Essays in honour of Endel Tulving* (pp. 391-422). Hillsdale, NJ: Erlbaum. First, we argue for the necessity of an attributional analysis of remembering, and then provide a general framework for that approach. We have argued that awareness of the past is not to be found in a memory trace. Rather, the feeling of familiarity is best treated as being similar to other affective reactions in its reliance on an attribution process. When the situation directs subjects to a task other than remembering, fluency resulting from prior experience is misattributed to contemporary causes. Having – and even using – a memory representation of a prior event is not sufficient to insure the subjective experience of remembering. Next, we considered the opposite case, in which subjects falsely attribute current experience to the past, and so "remember" without a memory representation. In remembering, even more analytic judgments rest on familiarity and are open to misattributions. Vividness and distinctiveness may be two qualities of thought that produce an inference of remembering, rather than imagining or guessing. We have been struck by the similarities among the problems of explaining perceptual experience, awareness of the past, the experience of affect, and the attribution of responsibility in social settings. [Adapted from Text]

JOHNSON, M.K. (1988). **Discriminating the origin of information.** In T.F. Oltmanns & B.A. Maher (Eds.), *Delusional beliefs* (pp. 34-65). New York: Wiley. Reality is not given by experience, but by judgment processes. The characteristics of mental experience that provide it with the quality of reality are similar for perception, event memories, and belief. I will briefly consider false perceptions, false event memories, and false beliefs separately, and then turn to some general issues. The major theme of the chapter is that, in all these cases, discriminating the origin of information is a judgment process, and like all judgments, it is limited by both the quality of the evidence and by characteristics of the judgment process. [Adapted from Text]

JOHNSON, M.K., HASHTROUDI, S. & LINDSAY, D.S. (1993). **Source monitoring.** *Psychological Bulletin*, 114, 3-28. A framework for understanding source monitoring and relevant empirical evidence is described, and several related phenomena are discussed: old-new recognition, indirect tests, eyewitness testimony, misattributed familiarity, cryptomnesia, and incorporation of fiction into fact. Disruptions in source monitoring (e.g., from confabulation, amnesia, and aging) and the brain regions that are involved are also considered, and source monitoring within a general memory architecture is discussed. It is argued that source monitoring is based on qualities of experience resulting from combinations of perceptual and reflective processes, usually requires relatively differentiated phenomenal experience, and involves attributions varying in deliberateness. These judgments evaluate information according to flexible criteria and are subject to error and disruption. Furthermore, diencephalic and temporal regions may play different roles in source monitoring than do frontal regions of the brain.

LINDSAY, D.S. (1990). **Misleading suggestions can impair eyewitnesses' ability to remember event details.** *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 16, 1077-1083. The hypothesis that misleading suggestions can impair recollection was supported in a study inspired by Jacoby and Kelley's (1988) "logic of opposition" and Lindsay and Johnson's (1989a) hypotheses about source memory. Tendency to report suggested details was set in opposition to ability to remember their source by telling subjects not to report anything from the narrative. Conditions were manipulated so that in the high- but not the low-discriminability condition it was easy to remember the suggestions and their source. At test, subjects were told (truthfully) that information in the narrative relevant to the questions was wrong. Suggested details were more often reported on misled than control items in the low- but not the high-discriminability condition, yet suggestions impaired accurate recall of event details in both conditions.

LINDSAY, D.S. & READ, J.D. (1994). **Psychotherapy and memories of childhood sexual abuse: A cognitive perspective.** *Applied Cognitive Psychology*, 8, 281-338. Cognitive psychological research on the fallibility of human memory is reviewed, focusing on evidence of memory distortions and illusions, with the aim of sharing research on memory with clinical psychologists and practitioners who use memory recovery techniques to help clients recover suspected memories of childhood sexual abuse. The memory literature suggests that incautious use of memory recovery techniques may lead some adult clients who were not abused to come to believe that they were. Considerations relevant to assessing whether or not clients have repressed memories of childhood sexual abuse are discussed, as are suggestions for minimizing the risk of leading clients to create illusory memories or beliefs of childhood sexual abuse.

LINDSAY, D.S. & READ, J.D. (1995). **Recovered memories of childhood sexual abuse: Scientific evidence and public, professional, and personal issues.** *Invited manuscript submitted for publication.* We review and critically evaluate scientific evidence regarding "recovered memories" of childhood sexual abuse, and discuss the implications of this evidence for professional psychology, public policy, and the law. The discussion focuses primarily on memories recovered via memory work in psychotherapy. We argue that memory work can yield both veridical memories and illusory memories or false beliefs, and discuss factors that could be used to weigh the credibility of allegations based on recovered memories. We also offer recommendations regarding public education, training and certification of psychotherapists, standards of care, research initiatives, legislative actions, and legal proceedings.

LOFTUS, E.F. & COAN, D. (in press). **The construction of childhood memories.** In D.P. Peters (Ed.), *The child witness in context: Cognitive, social and legal perspectives.* New York: Kluwer. This chapter reviews evidence of the suggestibility of human memory and reports a pilot study in which five subjects were given suggestions about a mildly traumatic childhood event (being lost in a shopping mall at age 5 years) that had not actually occurred. The authors argue that the same sorts of processes that contribute to false memories in laboratory studies of suggestibility can also lead to false memories of traumatic childhood experiences. [DSL]

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. A total of 1,242 subjects, in five experiments plus a pilot study, saw a series of slides depicting a single auto-pedestrian accident. The purpose of these experiments was to investigate how information supplied after an event influences a witness's memory for that event. Subjects were exposed to either consistent, misleading, or irrelevant information after the accident event. Misleading information produced less accurate responding on both a yes-no and two-alternative forced-choice recognition test. Further, misleading information had a larger impact if introduced just prior to a final test rather than immediately after the initial event. The effects of misleading information cannot be accounted for by a simple demand-characteristics explanation. Overall, the results suggest that information to which a witness is exposed after an event, whether that information is consistent or misleading, is integrated into the witness's memory of the event.

POOLE, D.A., LINDSAY, D.S., MEMON, A. & BULL, R. (in press). **Psychotherapy and the recovery of memories of childhood sexual abuse: U.S. and British practitioners' opinions, practices, and experiences.** *Journal of Consulting and Clinical Psychology.* Licensed U.S. doctoral therapists randomly sampled from the *National Register of Health Service Providers in Psychology* (Studies 1 and 2,  $n = 145$ ) and British psychologists randomly sampled from *The Register of Chartered Clinical Psychologists* (Study 2,  $n = 57$ ) were surveyed regarding clients' memories of childhood sexual abuse (CSA). The three samples were highly similar on the vast majority of measures. Only a minority of respondents responded in ways that suggested a strong focus on recovering suspected repressed memories of CSA. However, almost all respondents indicated that CSA was an issue dealt with while working with some clients, many listed a wide variety of behavioral symptoms as potential indicators of CSA, and 71% indicated that they had used various techniques (e.g., hypnosis, guided imagery, interpretation of dreams) to help clients recover sus-

pected repressed memories of CSA. There was very little agreement concerning which symptoms are indicators of CSA and which techniques should and should not be used to help clients remember CSA. Most respondents judged that it is possible for clients to develop illusory memories of CSA, but most also indicated that this had rarely or never happened with their own clients. In all three samples, 25% of the respondents reported a constellation of beliefs and practices suggestive of a focus on memory recovery, and these psychologists reported relatively high rates of memory recovery in their clients.

READ, J.D. & LINDSAY, D.S. (1994). **Moving toward a middle ground on the 'false memory debate': Reply to commentaries on Lindsay and Read.** *Applied Cognitive Psychology*, 8, 407-435. This rejoinder to the six commentaries on Lindsay and Read (this issue) focuses primarily on responding to criticisms levelled by some of the commentators. We clarify and elaborate upon the grounds for believing that some mental health practitioners use highly suggestive memory recovery therapies and that such therapies can lead some clients to develop illusory memories or false beliefs about childhood sexual abuse. We also comment on Pezdek's ideas concerning signal detection theory, Morton's application of the Headed Records model to amnesia and Multiple Personality Disorder, and to Sales, Shuman, and O'Connor's discussion of courtroom standards for the admissibility of expert psychological testimony.

ROEDIGER, H.L. & MCDERMOTT, K.B. (1993). **Implicit memory in normal human subjects.** In F. Boller & J. Grafman (Eds.), *Handbook of Neuropsychology, Volume 8* (pp. 63-131). Amsterdam: Elsevier Science Publishers. The purpose of this review is to examine what is known about priming phenomena in normal, young adult subjects under a variety of experimental conditions. We focus primarily on priming tasks involving words and pictures and only occasionally consider research on other phenomena that meet the criteria of implicit memory tests. The main part of the review is devoted to an examination of the primary classes of experimental variables that have been examined for their influence on priming tests in normal subjects. We consider some of the theories that have been proposed to explain dissociations between explicit and implicit memory tests (and between implicit tests themselves). [Adapted from Text]

ROSENTHAL, R. (1994). **Interpersonal expectancy effects: A 30-year perspective.** *Current Directions in Psychological Science*, 3, 176-179. For many years, the central question in the study of interpersonal expectancy effects was whether they existed. The meta-analytic evidence has answered that question sufficiently so that simple replications will add little new knowledge. Today, the central focus in the study of interpersonal expectancy effects has changed to include the isolation of the variables that moderate expectancy effects and mediate expectancy effects. Moderator variables are preexisting variables, such as sex, age, and personality, that influence the magnitude of interpersonal expectancy effects; mediating variables are the behaviors by which expectations are communicated. [Adapted from Text]

ROSS, M. (1989). **Relation of implicit theories to the construction of personal histories.** *Psychological Review*, 96, 341-357. It is hypothesized that people possess implicit theories regarding the inherent consistency of their attributes, as well as a set of principles concerning the conditions that are likely to promote personal change or stability. The nature of these theories is discussed in the context of a study of beliefs about life-span development. It is then suggested that people use their implicit theories of self

to construct their personal histories. This formulation is used to interpret the results of a wide-ranging set of studies of memory of personal attributes. It is concluded that implicit theories of stability and change can lead to biases in recall. The extent and practical implications of these biases are discussed.

RUMELHART, D.E., MCCLELLAND, J.L. & THE PDP RESEARCH GROUP (1986). **Parallel distributed processing: Explorations in the microstructure of cognition** (Vol. 1: Foundations). Cambridge, MA: MIT Press. Our book consists of six parts. Part I provides an overview. The remaining parts of the book present different facets of our explorations in parallel distributed processing. The chapters in Part II address central theoretical problems in the development of models of parallel distributed processing, focusing for the most part on fundamental problems in learning. The chapters in Part III describe various mathematical and computational tools that have been important in the development and analysis of PDP models. [Adapted from Text]

SCHOOLER, J.W., GERHARD, D. & LOFTUS, E.F. (1986). **Qualities of the unreal.** *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12, 171-181. Witnesses to complex events often recall nonexistent objects after being exposed to misleading postevent information. The present series of experiments investigated whether descriptions of these "unreal" memories differ from those of memories based on perception. In Experiment 1 subjects viewed a slide sequence depicting a traffic accident. In one condition, the sequences included a slide involving a yield sign. In a second condition, subjects did not see the sign but merely had its existence suggested. Many subjects in both groups later reported seeing the sign, and these subjects provided verbal descriptions. Descriptions that resulted from suggestion were longer and contained more hedges, more reference to cognitive operations, and fewer sensory details. Experiment 2 replicated these findings with a different object. Experiment 3 investigated judges' ability to discriminate the source of the descriptions based on perception and suggestion. Although judges often employed the appropriate criteria, their performance was only slightly above chance. Experiments 4 and 5 revealed that providing judges with clues regarding differences between perceived and suggested memories facilitated discrimination. The results of these experiments indicate that subtle differences exist between perceived and suggested memories, that people have a minimal ability to detect these differences, and that instructions can improve that ability.

WHITTLESEA, B.W.A. (1993). **Illusions of familiarity.** *Journal of Experimental Psychology: Learning, Memory & Cognition*, 19, 1235-1253. Feelings of familiarity are not direct products of memory. Although prior experience of a stimulus can produce a feeling of familiarity, that feeling can also be aroused in the absence of prior experience if perceptual processing of the stimulus is fluent (e.g., Whittlesea, Jacoby, & Girard, 1990). This suggests that feelings of familiarity arise through an unconscious inference about the source of processing fluency. The present experiments extend that conclusions. First, they show that a wide variety of feelings about the past are controlled by a fluency heuristic, including feelings about the meaning, pleasantness, duration, and recency of past events. Second, they demonstrate that the attribution process does not rely only on perceptual fluency, but can be influenced even more by the fluency of conceptual processing. Third, they show that although the fluency heuristic itself is simple, people's use of it is highly sophisticated and makes them robustly sensitive to the actual historical status of current events.

## PILOTS UPDATE

The new *PILOTS Database User's Guide* has just been published by the U.S. Government Printing Office. This second edition is a much more substantial book than its predecessor. Its 252 pages cover

- access to the database
- developing your search strategy
- the mechanics of searching
- what's in a PILOTS record
- modifying your search strategy
- displaying your search results
- how to obtain copies of materials found in PILOTS

Sample searches are provided to help explain these points.

The bulk of the *User's Guide* is devoted to the PILOTS Thesaurus, the controlled vocabulary that we use to indicate the subject matter of the publications indexed in the database. This vocabulary is presented in two forms. A hierarchical table shows the eight general categories of descriptors (stressors, affected persons, effects, assessment, treatment, scientific research, policy issues, and literary formats). An alphabetical index includes not only the 800-odd PILOTS descriptors but also a large number of other words and phrases that database users might have in mind. The PILOTS Thesaurus makes searching more effective by taking advantage of the intellectual effort of the National Center's indexing staff.

We have sent a copy of the *User's Guide* to each medical library, Vietnam Veterans' Center, and specialized inpatient treatment unit in the VA system. Copies are available for purchase from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 371954, Pittsburgh PA 15250-7954. You may order by telephone (202-512-1800) or fax (202-512-2250) using a credit card (Visa or MasterCard). The stock number of the *PILOTS Database User's Guide* is 051-000-00204-1; the price is \$19.00 including postage to American addresses, and \$23.75 to foreign addresses.

The *User's Guide* is also available free of charge in electronic form, either as a Postscript document or an ASCII text file. Other National Center publications, including the *PILOTS Database Instruments Authority List* (a list of all assessment instruments used in work indexed in PILOTS) and back issues of the *PTSD Research Quarterly*, are also available electronically. To obtain these documents either

- ftp to ftp.dartmouth.edu  
log in as anonymous  
go to directory/pub/PTSD
- gopher to gopher.dartmouth.edu  
go to "Research Resources/Biological Sciences"  
find the PTSD directory.

In either case, be sure to look at the README file first. We hope to have this material available via a World Wide Web home page in the near future.

