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RECOVERED MEMORY AND THE DAUBERT CRITERIA

Recovered Memory as Professionally Tested, Peer Reviewed, and Accepted in the Relevant Scientific Community

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Research during the past two decades has firmly established the reliability of the phenomenon of recovered memory. This review first highlights the strongest evidence for the phenomenon itself and discusses the survey, experimental, and biological evidence for the varying mechanisms that may underlie the phenomenon. Routes to traumatic amnesia from dissociative detachment (loss of emotional content leading to loss of factual content) and from dissociative compartmentalization (failure in integration) are discussed. Next, an argument is made that false memory is a largely orthogonal concept to recovered memory; the possibility of one phenomena is largely irrelevant to the potential for the other. Furthermore, some aspects of the false memory research offer supportive data for the recovered memory researcher. Finally, the issue of error rates in making the Daubert case is explored. It is concluded that the weight of the evidence should allow the recovered memory victim to come before the court.

Key words: *recovered memory; dissociation; repression; repressed memory; dissociative amnesia; sexual abuse; eyewitness testimony; detachment; state dependent learning; directed forgetting*

IN THE RECENT DECADE, the concept of *traumatic amnesia* has come under attack, apparently because of the entry of recovered memory victims of trauma into the courtroom. The most recent form of attack has been the Daubert (*Daubert v. Merrell Dow Pharmaceuticals*, 1993) challenge, in which experts are placed on the stand to argue that the concept of *recovered memory* is not an accepted scientific phenomenon. If the challenge is successful, the alleged victim is prevented from coming forward and presenting his or her factual case so that it might be judged on its merits. This document presents an answer to the *Daubert* challenge, evaluating

the evidence for recovered memory and for the most common purported mechanisms of recovered memory. A brief historical review is presented, followed by an introduction to the *Daubert* criteria. The evidence for the phenomenon of recovered memory and the mechanisms for it are then reviewed.

HISTORICAL FOUNDATIONS FOR TRAUMATIC AMNESIA

For a long and noncontroversial period extending from the birth of modern psychology, therapists involved in the treatment of trauma

KEY POINTS OF THE RESEARCH REVIEW

- Researchers who have directly interviewed adults or children after trauma have consistently noted amnesia for trauma in a subset of survivors.
- A large body of research with animal and human participants has documented impairment of memory after periods of great stress or fear.
- Less than 10% of experimental psychologists and less than 5% of clinical psychologists hold the point of view that accurate recovered memory is not possible.
- Dozens of major psychological organizations through the country and across the globe have acknowledged the phenomenon of recovered memory.
- Arguments against recovered memory tend to involve hypercriticism of individual recovered memory studies, the incorrect assumption that false memory possibility refutes recovered memory possibility, and faulty interpretation of and small number of small-n research projects.
- Consensual acceptance of mechanisms for recovered memory are found in the experimental literature, including research on directed forgetting, forgetting after emotional constriction, and state dependent learning research.
- False memory research is not a counterpoint to recovered memory research, and in fact may be used to illustrate the recovered memory phenomenon.
- The issue of error rates can be addressed by the accuracy data provided by Williams (1995) and Dalenberg (1996), by the reliability of tests of the underlying mechanisms or stable characteristics of the phenomenon, and by the reliability of diagnostic tests for dissociative disorders.
- Review of the weight of the evidence for the phenomenon of recovered memory by the fair-minded scientist would allow the sexual abuse victim and those who are accused to come before the court for a just evaluation.

and researchers involved in understanding trauma have noted the phenomenon of short-term or long-term amnesia for aversive negative events. As early as 1920, Thom and Fenton described loss of memory for combat trauma, noting that memory often returned with psychotherapy. The phenomenon was again documented in World War II, when Sargant and Slater (1941) conducted an extensive review of amnesia for war trauma, examining 1,000 serial admissions to a military hospital. Of those who had experienced trifling stress, such as ordinary

training for war, 6% qualified for a psychogenic amnesia syndrome diagnosis. For those with severe stress (e.g., the soldiers engaged in prolonged fighting in the battle of Dunkirk), 35% experienced amnesia. Psychologists working with World War II Holocaust survivors preparing for testimony in a war crime trial in the mid-1980s also noted traumatic amnesia for names or faces of perpetrators, even for events as extreme as concentration camp experiences (Wagenaar & Groenweg, 1990). Kuch and Cox's (1992) Holocaust sample, screened for organicity, found a 3.8% rate of psychogenic amnesia in general concentration camp survivors and a 10% rate in the tattooed survivors of Auschwitz. In describing examples of amnesia for traumatic events and reliving without conscious awareness in Holocaust survivors, Jaffe (1968) concludes "that the dissociative phenomena described here turn out not to be rare, once one is on the lookout for them" (p. 312).

Amnesia for unpleasant experiences also has been well studied in experimental cognitive and physiologically based paradigms. As early as the 1920s, Ziegarnik (1927) published a replicable exception to her well-known Zeigarnik Effect (that noncompleted tasks are remembered better than completed tasks). The exception was that if the noncompleted tasks were perceived by the research participants as failures, or if the participant was made to feel incompetent or inferior about the incomplete task, the tasks were less likely (rather than more likely) to be remembered. Zeigarnik called these *repressed tasks*. The word *repression*, linked as it is to a Freudian base, still landed the issue in the middle of the century old battle between behaviorists and psychoanalysts for the hearts and minds (and behaviors) of clinical psychologists, but the issue of inaccessible thoughts and memories was accepted. Even Bandura (1969), writer of one of the classic texts on behavior modification, took the position that there was no doubt that such processes existed but thought they were better explained by thought inhibition and avoidance conditioning. Similarly, behaviorists Dollard and Miller (1950) pointed out that the technique of stopping thought could become anticipatory similar to any other process that helps to avoid pain.

Therefore the patient should tend to stop thinking, or veer off onto a different line of thought, before he reaches the memory of the traumatic event. He should learn to avoid not only thoughts about the fear-provoking incident but also the associations leading to those thoughts. (p. 202)

It also has long been known that a number of neurotransmitters and neuropeptides are released during periods of stress and fear, and that these chemicals have an effect on learning and memory. An inverted U-shape curve relating stress levels to memory and learning is a frequent finding in such research since the 1990s (i.e., memory and learning is better under moderate stress than low or high stress), although sophisticated studies of the biological foundations for these effects are more recent. Glucocorticoids, norepinephrine, epinephrine, adrenocorticotrophic hormone (ACTH), opioid peptides, and dopamine are among those substances that have been studied. For example, retention is better at moderate doses and worse at high and low doses of circulating glucocorticoids (Conrad & Roy, 1996; Luine, Villegas, Martinez, & McEwan, 1994; Vaheer, Luine, Gould, & McEwan, 1994). Effects of cortisol on memory impairment appear with greater magnitude in delayed rather than in immediate tests, suggesting interference of stress with encoding of trauma material (Elzinga, Bakker, & Bremner, 2005). Similarly, low dose epinephrine injected directly into the amygdala of animals facilitates memory function, whereas higher doses impair memory for the same task (Basden, Basden, Coe, Decker, & Crutcher, 1994). Importantly, Harris and Westbrook's (1998) study on amnesia for a painful shock produced by benzodiazepine (in rats) showed that memory could be reinstated (recovered) by placement in another noxious context.

Using paradigms involving inescapable shock, forced swimming, etc. experimenters have repeatedly illustrated impaired memory in trauma-exposed rats (Drugan, 1999). Exposure of rats to stressful conditions also produces impaired memory for events occurring at the time of the stressor on the previous day for some animal subsets (Healy & Drugan, 1996). Research associating forms of amnesia in animals to prolonged or repeated stress include

Conrad, Gales, Kuroda, and McEwan (1996); Diamond, Fleschnew, and Rose (1994); Pavlides, Nivon, and McEwan (2002); and Pham, Nacher, Hof, and McEwan (2003).

Hippocampal mediation of this stress-induced memory disturbance (Joseph, 1999) also has been extensively studied (The hippocampus is involved in a significant way in consolidating and storing long-term memory). Schore's (2001) review of the neurobiology of dissociative defenses (including impaired memory and impaired emotional access) and Joseph's (1999) review of the neurology of dissociative amnesia (reviewing the stress-memory relationship) are relevant here. The conclusion that neurochemicals released during stress can either enhance or impair memory is well-supported.

Finally, the thousands of clinical examples of recovered memory in therapy should not be discounted merely because long-term psychotherapy is difficult to reproduce in the laboratory. Clinicians are typically dismissive of experimental colleagues who claim that repressed memories cannot exist, given the compelling testimonies that they face in their daily practice. This attitude is not confined to the large group of clinicians who practice psychodynamically and for whom repression is "the foundation-stone on which the whole structure of psychoanalysis rests" (Freud, 1914, p. 16). Karon and Widener (1998), for instance, write,

In January of 1998, a rape victim whose initial treatment had not been helpful was seen for consultation and referral (to more helpful treatment, it was hoped). She reported having been raped by a man she admired and trusted. She reported initially remembering all the events that occurred the day of the rape, both before and after the rape, but not the rape itself. Rather, for a week after the rape, although she did have symptoms of distress, she did not remember being raped and got angry at anyone who made negative statements about the perpetrator. When she finally remembered the rape, she reported it, and the perpetrator later admitted the crime. Would any serious clinician tell her she is lying because there is no such thing as repression? (p. 482)

The survey results to be reported in later sections thus join a long tradition of reports of clinical emergence of recovered memory, bolstered

by longstanding experimental and biological evidence and a consensus crossing theoretical boundaries.

THE CONTROVERSY OVER RECOVERED MEMORY

It is exceedingly odd, then, that we now speak of a controversy over traumatic amnesia and recovered memory, but it is true that this word is often used. The attacks on recovered memory began in the 1980s and 1990s, clearly in response to the need for a legal strategy to defend accused molesters but building on existing ambivalence about psychoanalytic theory. Unlike the war trauma victims (where amnesia as a phenomenon has not historically been doubted), survivors of rape and child molestation at times behaved punitively toward their perpetrators, including filing suits against them and drawing the attention of highly biased experts on both sides of the issue. Best-selling lay books on dealing with abuse (e.g., *The Courage to Heal*, published in 1988 by Bass and Davis) urged the victims to uncritically accept their memories and to confront their perpetrators. A small group of theorists, largely lay authors, argued that the recovered memory of trauma was more likely to be accurate than was the continuous memory, claiming that the formerly repressed memories were essentially immune from distortion and underemphasizing the reconstructive nature of all long-term memories. Brown et al. (1998) refer to this position as the extreme trauma accuracy position. In direct contrast, other popular books on false memory—such as those published by professional expert witnesses Richard Ofshe (Ofshe & Watters, 1994), Ralph Underwager (Wakefield & Underwager, 1994), and Elizabeth Loftus (Loftus & Ketcham, 1994)—argued that the recovered memory was virtually never true. The latter group also championed the view that child sexual abuse was oversold as a cause of distress by therapists, some critics going so far as to agree with a controversial conclusion by Bruce Rind and colleagues (Rind, Tromovitch, & Bauserman, 1998) that sexual contact between adults and children should no longer be called abuse. Brown et al. (1998) refer to this view as the extreme false memory position. Neither extremist point of

view ever captured the scientific community, but the opinion-dominated fights between such witnesses drew attention away from the science of this issue. The moderate trauma accuracy and moderate false memory positions, to which the vast majority of psychologists subscribe (see the Professional Acceptance section further on), disagree as Dawkins and Gould disagree about evolution. They concede recovered memory and false memory are possible, but differ as to prevalence of the two phenomena, likely mechanisms for recovered memory or false memory, and other details.

The science of memory has always supported the existence of impaired memory and recovery of memory for aversive or traumatic events. If memory can be undermined and rendered less available by high stress (as it clearly can), and if important facets of a trauma memory can be lost (in animals and humans) even days after the event, it follows that a portion of child sexual abuse survivors would have poor memory for their childhood traumas, particularly years later. Less rehearsal and avoidance will produce poorer memory. Furthermore, because it is completely accepted that memory is associative (thinking about your teacher in third grade might bring back other associated memories from that period, etc.), a memory weakened by high stress—whether it is poorly encoded or cut off from other memories in the neural network—might still return with a powerful reminder. In animals, fear memories are particularly responsive to reinstatement by context, even after they have been extinguished (Harris & Westbrook, 1998; D. Johnson, Baker, & Azorlosa, 2000).

It should be noted, however, that although there was no progress made by those from the extreme false memory position in developing supporting science for their argument, they did make a great deal of progress in the media war. By the 1990s, it became quite common for textbooks in introductory psychology to claim that false memory of sexual abuse is ubiquitous (with no citation of evidence) and to give reduced attention to recovered or continuous cases of true sexual abuse (Letourneau & Lewis, 1999). The newly formed False Memory Syndrome Foundation, which identified media coverage as its most important objective, was

successful in shifting more than 50% of the coverage of sexual abuse to alleged false claims (Beckett, 1996). Such coverage had a strong impact on those not well-read on the science of trauma and memory.

A NOTE ON DEFINITIONS

The phenomenon being discussed in this document has been studied under a variety of names. Earlier literature typically refers to repressed memory, whereas more recent literature uses the term *recovered memory*. The latter term does not assume that a particular mechanism underlies the phenomena. Similarly, amnesia for abuse that has not been recovered is variously termed *dissociative amnesia*, *psychogenic amnesia*, or *traumatic amnesia*, the former being favored in the diagnostic literature (because it is the term used in the diagnostic and statistical manuals), and the latter more often used in the research literature.

The recovered memory phenomenon thus is studied within a theoretical framework and outside that framework, often with animal studies. This bifurcated study of a given phenomenon occurs throughout the sciences—that is, one could be a believer in the disease epilepsy and study epileptic seizures, or one could be agnostic regarding belief in the disease epilepsy and simply study clonic movements. In both cases, the scientists are admitting the phenomena exist, but the latter group may study spasmodic movements without commitment to the broader theoretical understanding of epilepsy. Similarly, some researchers study dissociation or repression, whereas others simply study one or more of the phenomena described earlier in an atheoretical manner. For our purposes here, the findings of both the theoretically driven and the a theoretical group are relevant because both study the possibility and meaning of recovered memory.

One strategy to oppose recovered memory possibility, then, is to choose the mechanism that is most difficult to prove (in this case, repression) and pretend that evidence against the mechanism is evidence against the phenomena. As an analogy, some researchers believe that viruses play a role in schizophrenia. If this hypothesis proves to be false, it does not then follow that

schizophrenia does not exist. To avoid confusion, the term *recovered memory* (rather than *repressed memory*) will be used for the phenomenon of lost and recovered trauma memory. Lost memory without recovery will be termed *traumatic amnesia*. Dissociative amnesia will be used to identify instances of traumatic amnesia that appear to meet DSM-IV criteria. Evidence will be reviewed both for the phenomenon of recovered memory and for the theoretical and a-theoretical mechanisms for the phenomenon.

THE DAUBERT CHALLENGE

The structure of the presentation of evidence herein is largely organized in line with categories relevant to the admissibility of scientific evidence under *Daubert v. Merrell Dow Pharmaceuticals, Inc.* (1993). In *Daubert*, the Supreme Court was asked to decide if the Federal Rules of Evidence, enacted in 1973, superceded the Frye test (*Frye v. United States*, 1923) for determining acceptable scientific testimony. Frye allowed evidence to be submitted only if the principles on which it was based had gained general acceptance in the relevant scientific community. The Federal Rules of Evidence, however, don't mention general acceptance, but do require that the testimony assist the trier of fact (judge and jury) to understand the evidence or issues and that the expert be qualified to provide the opinion. Writing for the majority, Judge Blackmun argued that the Rules of Evidence did supercede Frye. Although refusing to come up with a definitive checklist or test for reliability of such testimony, the Court did list several themes that it deemed relevant. Generally these factors are

1. that the theories or techniques had been tested.
2. that the tests had been subjected to peer review and published.
3. that the theories or techniques employed by the expert had widespread acceptance in the scientific community.
4. that there were standards (e.g., norms or cutoffs) for application and known or potential error rates for the techniques used.

The *Daubert* decision explicitly warns that these factors are not exhaustive and not definitive and that testimony may be admissible if one or more of the factors are not satisfied. General

acceptance, for instance, is explicitly argued not to be an absolute precondition to admissibility but rather one sign of scientific reliability. The themes throughout this document will thus center on the following:

1. Recovered memory studies, using a wide variety of scientifically reputable methodologies, have been tested, peer reviewed and published.
2. The phenomenon of recovered memory has acceptance in the relevant scientific community.
3. The statistically accepted error rates have been met in a variety of tests of the phenomenon of recovered memory and its mechanisms. Norms, cutoffs, and error rates have been published for diagnostic tests of the associated diagnosis of dissociative amnesia.

PUBLISHED AND PEER-REVIEWED SURVEY EVIDENCE FOR THE PHENOMENON OF RECOVERED MEMORY IN SEXUAL ABUSE

Since the mid-1900s, dozens of studies have documented the phenomenon of traumatic amnesia and traumatic memory recovery across a wide variety of experiences. Amnesia for trauma has been discussed in samples of adult rape victims (Elliott & Briere, 1995), child physical abuse victims (Elliott & Fox, 1994; Melchert, 1999), incest survivors (Wilsnack, Wonderlich, Kristjanson, Vogelanz-Hom, & Wilsnack, 2002), car accident victims (Elliott & Briere, 1995), survivors of natural disasters (Cardena & Spiegel, 1993), resettled refugees of war-torn countries (Carlson & Rosser-Hogan, 1993), victims of traumatic loss (Dalenberg, 1996), child sexual abuse victims (Brewerton, Dansky, Kilpatrick & O'Neil, 1999; Dorado, 1999; Williams, 1994, 1995), and many other groups (Brown et al., 1998).

In the 1980s and 1990s, psychological research on amnesia began to center on the victims of child trauma (reacting to the influx of cases consequent to the state child abuse reporting acts passed by all American states in the 1970s and 1980s). By 1999, more than 60 studies had been published that reported dissociative amnesia related to childhood sexual abuse (Brown, Schefflin, & Whitfield, 1999), the same phenomenon that the early researchers of war neurosis had noted. In fact, Brown et al. conclude that it is difficult to locate a study in which a large sample was asked about symptoms of dissociation

and amnesia that did not find such evidence. Among the recovered memory samples, choosing a variety of studies with differing strengths, are the following.

Feldman-Summers & Pope (1994)

In this sample, 330 randomly chosen psychologists were asked if there was a time in which they could not remember some or all of the abuse they had experienced. Of the 79 abuse victims in the study, 32 (40.5%) stated that they had a period of lack of access to some or all abuse memories. Half of the subjects claimed some available confirmation for the memories (including admission by the perpetrator in 5 cases.) Recovered memory was more likely in those reporting more severe (multiple-type) abuse history. A strength of the study is the greater likelihood that the subjects (given their graduate training) understood the distinction between not remembering and simply avoiding thought.

Williams (1995)

Williams followed up 129 child sexual abuse victims who had been identified in a 1970 study based on emergency room admissions. Of the sample who did recall the abuse at the time of the second interview, 16% reported that there was a prior period in which they did not recall the abuse. The women in the recovered memory sample were more likely to have known perpetrators and were younger at the time of the assault. Checking back to the documented facts of the abuse in hospital records, there was no difference in accuracy of the descriptions of the assaults when women with recovered memory were compared to those with continuous memories. The prospective design and checks for accuracy are among the strengths of this study.

Dalenberg (1996)

Dalenberg studied 17 patients who reported both continuous and recovered memories for abuse in therapy. Interviews, court records, contemporaneous diaries, and medical records provided sources of evidence for validity of

memories. Details of continuous and recovered memories were equally accurate, and more than 1/3 of the alleged perpetrators confessed to at least one act of abuse that was contained within a recovered memory. Strengths of the study include the comparison of recovered and continuous memories within the same individuals, and interviewing of the alleged perpetrators as part of the gathering of information regarding accuracy.

Elliott (1997)

Elliott collected one of the first national stratified recovered memory samples—526 adults who completed an extensive trauma history questionnaire including questions on rape, child abuse, combat, natural disaster, and motor vehicle accidents. Participants were asked if there had been a time when they had less memory of the event than they had at the time of the survey and if there was ever a period of time in which they had no memory. Every trauma, with the exception of death of a child, was lost and recovered by some proportion of the respondents. The figures for child sexual abuse and child physical abuse were 20% and 9%, respectively. Recovered memory was more common if the trauma was interpersonal, if the trauma occurred at an earlier age, and if the individual had multiple traumas. The breadth of traumas studied, size of the sample, and the stratification procedure are strengths of the study.

Mechanic, Resick, and Griffin (1998)

In Mechanic et al.'s work, 92 rape victims were assessed within 2 weeks of the attack, and 62 were reinterviewed 3 months later. Approximately 37% of the subjects reported memory deficits 2 weeks postassault; 90 days postassault, 16% remained at least partially amnesic. Three women reported complete inability to recall the documented event at 3 months, despite the reminders of the research and the police investigation. Dissociative survivors (as measured by the Dissociative Experiences Scale) were more amnesic. The strength of the study was the prospective design, allowing course of amnesia to be tracked.

Melchert (1999)

Melchert's sample were 560 undergraduates from a research university who were questioned about recovered memory of emotional, physical and sexual abuse. The recovered memory figure was 32% for sexual abuse and 12% for physical abuse. Recovered memory was not related to the general quality of childhood memory or to a measure of repression but was related to severity of abuse and a measure of dissociation. Participants were asked for clarification of their perceptions of the reasons for memory loss and recovery. No subject believed that she imagined the abuse, but 29% believed their failure to recall was intentional avoidance rather than actual memory loss; 26% believed the mechanism was total forgetting followed by a reminder; 21% believed the mechanism was reinterpretation of the meaning of the event (not seeing the act as abuse until they were older); and 16% believed that the mechanism was repression and that they would not have been able to recall the abuse earlier even if reminded. A strength of the Melchert study was the follow-up questioning regarding memory loss and subsequent recall.

Wilsnack et al. (2002)

Wilsnack presented data from the National Study of Health and Life Experiences of Women ($n = 711$). In a detailed interview, 26.5% of the women reporting abuse by a family member and 31.2% of the women reporting extrafamilial abuse stated that they had experienced a period in which they "forgot the abuse for a while, but began to remember it on [their] own, without information or help from family, friends, or professionals." An additional 1.8% recovered a memory in therapy. The sampling method is a strength here.

Yovell, Bannett, and Shalev (2003)

Research by Israel's top posttraumatic stress disorder (PTSD) specialist extends this finding. Here again subjects were followed prospectively and interviewed 7, 30, and 120 days following a traumatic event, and recollections of the day of

the trauma were recorded in detail. Six of seven trauma patients showed "brief, stable, and persistent memory gaps that coincided with the moment of greatest emotional intensity" and two of the subjects developed "longer, progressive and unstable memory gaps" (p. 676). The researchers found support both for "brief, irreversible memory gaps" and "longer, progressive, and potentially reversible amnesia" (p. 676). The detail of the trauma interview (i.e., the recording of a full narrative in time sequence) is a strength here because both type of material lost and remembered and timing of loss (when it occurred) could be assessed.

Case Histories

Finally, a few exceptional scientists have gone public with their own recovered memories. Ross Cheit, a professor of Political Science at Brown University, recovered a memory of abuse by an administrator of a boy's camp that occurred 30 years earlier (with a recovery in May of 1992, before the spate of public arguments about false memories.) With the help of an investigator, Cheit located five other victims, and tape-recorded a confession by the perpetrator. His story is outlined in Freyd's (1996) book (a review of cognitive research supporting recovered memory, together with a theory of recovered memory, published by Harvard Press).

PROFESSIONAL ACCEPTANCE OF ACCURATE RECOVERED MEMORY

At the present point in time, in keeping with the many surveys on recovered memory and the hundreds of supporting empirical studies on stress, trauma and memory, the concept of *recovered memory* is generally accepted in the relevant scientific community. In a survey of psychologists by Pope and Tabachnick (1995), 73% stated that they had personally seen a case that they classified as a recovered memory. In a survey of both American and British professionals, Poole, Lindsay, Memon, and Bull (1995) found a similar high rate of experience with the phenomena. Polusny and Follette (1996) found that 28% of psychologists reported that they had seen a case of repressed memory in the past year. In

Dammeyer, Nightingale, and McCoy's (1997) more recent survey, only 7% of experimental psychologists, 3% of clinical psychologists with research involvement, and 2% of clinicians with no research involvement reported that they held the view that accurate recovered memories of trauma are not possible (rating the possibility of loss and recovery of a trauma memory as 1 or 2 on a 1 to 10 point scale of validity). The majority of all groups view the current evidence as supporting a more probable than not decision (6 to 8 on a 10-point scale) or are certain of the validity of the phenomenon (9 to 10). The relevant percentages for experimentalists, clinical researchers and PhD clinicians who rated their belief in the validity of recovered memory at or more than 6 were 70%, 88%, and 93% respectively. If asked for their belief in repressed memory, the number dropped slightly, but the majority of each group still fell in the more probable than not category. Fourteen percent of experimentalists, 2% of clinical researchers, and 1% of nonresearcher clinicians take the position of the extreme false memory advocates and reject the concept (rating belief as 1 or 2).

Given the involvement of the legal system in this issue, it is perhaps unsurprising that a few expert witnesses or lay authors continued to champion the idea that recovered memories were always true or always false, despite the scientific evidence that recovered memories were equal in accuracy to other memories. Aware of the dangers of such antiscientific and extremist viewpoints, dozens of major organizations in the United States and throughout the world have placed on record their statements that (a) recovered memory of abuse is possible and (b) that these memories do not have a protected truth status (i.e., may in some cases be false). As examples, the American Psychological Association's (1996) Working Group on Investigation of Memories of Childhood Abuse, despite the many disagreements on less major points by its members, agreed that "it is possible for memories of abuse that have been forgotten for a long time to be remembered" (p. 933). The American Medical Society's Report on Memories of Childhood Abuse in 1994 concluded that "research indicates that some survivors of abuse do not remember, at least temporarily, having

been abused" (p. 1) and considered the view that recovered memories were always inaccurate to be extreme. The Statement on Memories of Sexual Abuse issued by the American Psychiatric Society in 1993 notes that

children and adolescents who have been abused cope with the trauma by using a variety of psychological mechanisms. In some instances, these supporting mechanisms result in a lack of conscious awareness of the abuse for varying periods of time. Conscious thoughts and feelings stemming from the abuse may emerge at a later date. (p. 262)

The same organizations have warned that recovered memories are not inherently or especially valid when compared to continuous memories. These statements have been necessary because very early theoreticians, such as Freud, believed that a memory in the unconscious was immune to the normal processes of decay and distortion. In contrast, both Williams (1995) and Dalenberg (1996) have found that recovered memory for trauma has virtually exactly the same level of accuracy as continuous memory for trauma. Thus, professional organizations rightly provided a corrective to the bias that recovered memories are more valid than continuous memories, while strongly affirming the validity of recovered memory as a phenomenon. No empirical studies have appeared to counter the position that recovered and continuous abuse memories are equal in accuracy. Schefflin and Brown (1996), reviewing the evidence on recovered memory to date, concluded that

Courts holding a *Frye* or *Daubert* evidentiary hearing involving expert or lay testimony on the issue of whether 'repressed' memories are reliable must, consistent with the science, hold either that such memories are reliable or that all memory, repressed or otherwise, is unreliable (p. 183).

Similarly, the International Society for Traumatic Stress Studies (1998), the most central group of scientific experts on trauma, stated in their report on recovered memories that there was a consensus across the scientists of North America, Europe, Australia, and New Zealand that "(1) traumatic events are usually remembered in part or in whole; (2) traumatic memories may be forgotten, then remembered at some

later time; and (3) illusory memories can also occur" (p. 15). Mechanisms presented as possible explanations of the phenomena included repression, dissociation, state dependent learning, cellular suppression of transmission of neural information, and the fading of (particularly non-traumatic) memory over time.

In the mid-1990s, at the time of or immediately after a consensus meeting on trauma and memory sponsored by NATO (bringing together clinical researchers and pure experimentalists), a dozen papers by prominent NATO scientists urged an acknowledgment of the middle road in the debate. John Briere, a clinical trauma researcher (and former president of the International Society of Traumatic Stress Studies) and Stephen Lindsay, a respected experimentalist and organizer of the NATO conference, coauthored a paper in 1997 (Lindsay & Briere, 1997) attempting to explain the extremism in the debate, agreeing that "the quick and easy dissemination of biased and distorted claims [via the World Wide Web] has contributed to the heat of this debate" (p. 633). Lindsay and Briere also agreed that

there is no doubt that people can and do experience the recovery of memories of previously nonremembered childhood sexual abuse. It is likely that in some such cases the recollections are essentially veridical and that in some cases they are essentially false, and both of us agree that, barring exposure to suggestive influences, the former are probably much more common. (p. 639)

Indeed, Lindsay and Read (1994), two cognitive scientists, had earlier reviewed the evidence and stated,

Although cognitive researchers have differing views about the mechanisms underlying loss of memory (e.g. repression, dissociation, or normal forgetting), all would agree that it is possible that some adult survivors of childhood abuse would not remember the abusive events, and that memories might be recovered given appropriate cues. Thus we accept that some clients may recover accurate memories of childhood sexual abuse during careful, nonleading, nonsuggestive therapies. (p. 281)

The chapter on recovered memories on the Encyclopedia of the Human Brain (Sivers, Schooler, & Freyd, 2002) states that

in the new millennium, we can be hopeful that the old polemics regarding whether recovered memories are false or authentic will increasingly be replaced by a more nuanced understanding of the issue. It will be understood that recovered memories may vary in their degree of accuracy, ranging from largely accurate to entirely false, with many gradations of gray in between. (p. 183)

The authors conclude that the issue of whether a memory is recovered or continuous may have no bearing at all on its accuracy, and the two issues must be separated.

ARGUMENTS AGAINST ACCURATE RECOVERED MEMORY

With the issues of the possibility of recovered memory and false memory essentially settled, it might be expected that the field would move forward to explore the mechanisms behind these processes, rendering *Daubert* briefs unnecessary. For the most part, this has occurred, as will be documented in the following sections of this document. Unfortunately, the correctives provided by professional organizations (warning individuals not to assume truth or falsity) have been distorted by a small group of individuals who take a pseudoscientific approach to the literature on traumatic amnesia, attacking it in much the same way that cigarette companies once argued against the evidence for the link between smoking and cancer.

Serious scientists who still wish to argue against the possibility of accurate recovered memory are not able to cite contrary survey evidence in which amnesia was assessed (in opposition to the half dozen surveys earlier described) or evidence that recovered memory of abuse is less likely to be true than is continuous memory. They therefore tend to fall back on 6 unconvincing arguments, to be reviewed briefly.

Evidence for False Memory in One Case is Evidence Against Recovered Memory in Another

In a given case in which a person reports recovered memory, the statement could be an

accurate reflection of the individual's experience, could be a false statement or lie, or could be a false belief. The possibility that some individuals can lie or be mistaken about abuse, or that false memories can occur, obviously does not negate the fact that others may have a true experience. The false memory literature is discussed later.

The Pope Psychiatric Survey

A few authors refer to the survey by Harrison Pope and colleagues (Pope, Oliva, Hudson, Bodkin, & Gruber, 1999) in which psychiatrists are asked about their opinions of the diagnoses of dissociative amnesia and dissociative identity disorder. In this survey, forensic professionals disagreed as to the strength of the evidence for dissociative amnesia (19% believed there was little or no evidence for validity, 23% believed the evidence was strong, and most rated themselves between the two extremes). Only 9% of the respondents believed that dissociative amnesia should not be included in DSM-V, but many psychiatrists had reservations or believed the diagnosis should be provisional. This is an interesting finding, but professional disagreement about the proper criteria for the diagnosis of dissociative amnesia does not equate to professional disagreement over the theory of recovered memory or disagreement with the position that accurate recovered memory is possible (The present author, for instance, is a critic of the diagnosis of dissociative amnesia as defined by DSM-IV). First, the diagnosis of dissociative amnesia can be made in the absence of memory recovery, and the diagnosis is typically made before memory is recovered (if amnesia is not permanent). Second, the diagnosis of dissociative amnesia requires not only that the client be amnesic for one or more important events, but also that the amnesia (not the trauma) causes significant distress. Therefore, fully corroborated recovered memory victims may or may not qualify for a diagnosis of dissociative amnesia. Furthermore, dissociative amnesia is at the present time still a bona fide and accepted category in the DSM-IV and the majority of psychiatrists in Pope's survey agreed that it should remain so.

Recovered Memory Studies are Imperfect

Another strategy is to be hypercritical of articles concluding that accurate recovered memory is possible and at the same time to suggest uncritical acceptance of the few articles (largely opinion papers) suggesting otherwise. For instance, Pope, Hudson, Bodkin, and Oliva (1998), in an effort to discredit all evidence for dissociative amnesia, are quite critical of the Williams (1994) recovered memory study. As will be shown later, the standards set for recovered memory studies are unlike those for false memory studies or those outside of the debate. The Williams study and its critics will be examined as a case study in a later section. A slightly different version of hypercriticism is to select one mechanism for recovered memory (typically repression) and claim that evidence against that mechanism is evidence against the phenomenon. As argued earlier, evidence for and against repression and dissociation as mechanisms, although clearly relevant to this discussion, cannot be used to fully negate or confirm recovered memory. There is clear evidence for recovered memory, and clear evidence for the role of dissociation in memory impairment, but these are two separable scientific issues.

Given the pattern within this small group of theorists to attempt to discredit any evidence for dissociative amnesia or recovered memory, the author should also briefly address his criticisms of her own study (in Piper, Pope, & Browiecki, 2000). There appear to be three. First, Piper et al. (2000) criticizes Dalenberg for asking her clients (and their relatives) to gather evidence for and against their memories before they had completed therapy. Answer? They were not in therapy at the time, and the article clearly says so. Second, they believe the raters (for accuracy of the abuse memories) might have been biased, and chide Dalenberg for not stating how she protected the raters from being influenced by her own ratings. Answer? As stated in the article, the raters spanned a range of prior belief in recovered memory accuracy, and none saw Dalenberg's ratings at any time. They could not have been biased by them. Furthermore, the

criteria that they used were in the article for the reader to make his or her own judgment. Finally, Piper et al. (2000) assume that the daughter conveyed to Dalenberg the evidence for and against their memories presented by their fathers, despite the fact that they acknowledge that the author "spoke personally with each alleged witness" (p. 244). Answer? No daughter was asked to convey the evidence provided by her father. Father and daughter were interviewed separately.

These criticisms illustrate the difficulty here. Yes, any study is imperfect. But these criticisms, leading Piper et al. (2000) to doubt the value of the study, are based entirely on invention. They invented a new timeline for the study, invented a few sources of bias, and criticized Dalenberg for not protecting the study from them. These are not fair-minded criticisms.

Misuse of Femina, Yeager, and Lewis (1990)

Because the support for amnesia of sexual abuse is so universal, a small group of critics have attempted to counter by locating an exceptional study dealing with memory for other trauma that does not appear to support amnesia—typically a highly flawed study with small sample size. Because there are so few counter-examples from which to choose, most critics offer Femina et al. (1990). This study will be reviewed separately further on. Here it need only be said (a) that the total sample was 8 young adults who had been incarcerated in adolescence and who changed their story of abuse across interviews (not a reasonable sample size or a generalizable sample) and (b) that the research has many limitations (see later sections) that are never mentioned by recovered memory critics.

Misuse of the McNally Studies

The only experimental work directly on recovered memory samples by the false memory theorists appear to be those from the laboratory of Richard McNally (McNally, Clancy, Pitman, & Schachter, 2000a, 2000b; McNally, Clancy, & Schachter, 2001; McNally, Ristuccia, & Perlman,

2004). McNally uses tiny samples (with typical *n*'s from 7 to 15) of individuals that he considered repressed memory victims. Repressed memory victims are defined by McNally as those who have no memories of abuse but believe that they have been abused. No evidence is provided by McNally that the individuals have indeed been abused or that they eventually recover a memory. Virtually all prominent false memory theorists, in rare agreement with theorists on recovered memory, are on record with the statement that the belief that one has been abused is not enough to define an individual as repressing a memory. Therefore, comparing this group to continuous memory survivors is of limited value.

Nonetheless, some McNally et al. (2000a, 2000b, 2001, 2004) findings actually support the recovered memory position (e.g., greater interference with memory by trauma symbols in a recovered memory group and greater dissociation in a recovered memory group). By falsely claiming that recovered memory perspective is that anyone who believes they have been abused is repressing a memory, McNally et al. interpret their data as refuting dissociation or recovered memory theory. The author has been able to find no theorists on either side of the debate who take the straw man position (any suspicion of past abuse without memory = repression) that McNally debunks.

Misleading Review of Amnesia Studies

Perhaps the least convincing of the false memory theorist offerings is the didn't ask-didn't tell argument against traumatic amnesia (Pope et al., 1998). Here, the authors typically point to studies that have been conducted on longitudinal reactions to trauma that do not focus on (and often do not mention) traumatic amnesia. These studies certainly exist. In a typical cited study, participants are contacted immediately after a trauma (e.g., a hurricane) and followed up months or years later. Authors of these studies typically do not measure memory for the trauma and do not ask about current or prior memory loss. Participants in these studies typically do not spontaneously mention to the researchers that they did have (or did not have) periods of

memory loss. The conclusion of the critic is that this proves that no memory loss occurred. Beyond the obvious methodological problems (e.g., the inclusion of studies on earthquakes or hurricanes in which there is visual evidence, consensual discussion, and public attention), there is a clear problem in the inference of lack of memory impairment when memory impairment is not measured. The equivalent pseudoscientific argument on the physical effects of the hurricane would be as follows:

- Participants in Study A were asked about damage to their homes in a hurricane.
- They were not asked about damage to their cars.
- No one spontaneously mentioned their cars in the interview about their homes.
- Therefore, it is impossible for hurricanes to damage cars.

The major superordinate flaw in the attacks on recovered memory that will be documented herein is thus that they are examples of motivated skepticism (Dalenberg, 1994; Ditto, Munro, Apanovitch, Scepansky, & Lockhart, 2003), the form of skepticism that looks minutely and closely at all research that disagrees with one's point of view and accepts without question all research (or more commonly, simple opinion statements) that agrees with it. Such argument again calls to mind the fight by cigarette manufacturers to ignore the evidence for smoking and cancer, with heads of companies citing problems with the hundreds of studies linking smoking and illness, while accepting without question anecdote ("My grandmother smoked and lived to be 90"), personal speculation ("I just don't believe this!"), and a few exceptional studies interpreted as unresponsive of the link (no matter how poorly designed) to prove their point. Parallel to the situation here, the cigarette manufacturers had a Scientific Advisory Board, similar to the False Memory Scientific Advisory Board, referred constantly to a controversy that was self-created, and quite successfully publicized their position (for instance, in the Frank Statement to Cigarette Smokers published in 448 newspapers in January of 1954) that there was "no *proof* that cigarette smoking is one of the causes [of cancer]" (Cummings, Morley, &

Hyland, 2000, p. 115). One example of this approach to science will be explored in depth—the critique of the Williams (1994) study and the championing of the Femina et al. (1990) study as a counterexample.

A CASE STUDY OF MOTIVATED SKEPTICISM: THE CRITIQUE OF WILLIAMS (1994)

Williams (1994) studied a sample of 129 women, mostly African American, who had been brought (as children) to a hospital emergency room for treatment or for the collection of forensic evidence after assault. Seventeen years later, 38% of these women claimed not to recall this incident in an interview regarding abuse and trauma. In Williams (1995), 16% were reported to have recovered a memory. Williams carefully considered alternative hypotheses for the finding of traumatic amnesia.

Some children, she notes, were quite young at the time of the trauma. Researchers tend to find that adults recall little about events occurring before age 3 (Winograd & Killinger, 1983). However, age-based failure to encode is unlikely to be the explanation of the results, because amnesia rate for those who were abused at ages 11 and 12 still topped 25%.

Some could be deliberately withholding the abuse, but there for no tendency for the women who claimed not to recall abuse to withhold other embarrassing details or assaults on other parts of the interview, as would be expected if results were because of shyness, tendency toward secrecy, or shame-proneness. Some reported the perpetrator as abusing someone else.

Perhaps, for some, the abuse did not occur. In fact, 3% of Williams' sample report that they had lied in the childhood interview. This figure fits with the known child false allegations rates (Everson & Boat, 1989, review this phenomenon). No research supports a 38% false allegation rate.

Even Elizabeth Loftus, one of the most extreme critics, stated that "the Williams data are clear in showing that women often forget a single incident of sexual abuse" (meaning the index event, although it should be clarified that women were not labeled as amnesic if they recalled any abuse by the perpetrator; Loftus, Garry, & Feldman, 1994, p. 1179).

How then do the more zealous critics debunk this study? Most commonly, one or more of three types of arguments are used.

Argument 1. Sexual Abuse is Unimportant

One argument is that sexual abuse may not be important or memorable to a child, and thus forgetting the episode of abuse in the Williams (1994) study could be akin to forgetting to buy aspirin at a grocery store (Loftus et al., 1994). Among the forgotten episodes of abuse in the Williams study were rapes by the child's fathers and abuse by an uncle with the reporting leading to his violent death at the hands of a parent of another victim. Given the accepted and growing literature on the effects of child sexual abuse (too vast to be reviewed here, but see Kendall-Tackett, Williams, & Finkelhor, 1993; West, Williams, & Siegel, 2000; Ullman & Brecklin, 2003), the burden to show that all such events are simply unimportant to children would clearly be on the critics.

Argument 2. Medical Evidence is Virtually Always Present When Abuse has Occurred; therefore, Cases Without Such Evidence are Suspect

A second argument is to require a level of proof for child sexual abuse that is required in no other area of psychology. When false memory extremist Harrison Pope explores the effects of early onset marijuana use, contributing valuable data to our knowledge of longstanding effects of drugs, he does not require that medical evidence exists that verifies the subjects' claim that she or he started use at age 15 or 22. The vast majority of social science research—on AIDS transmission for example—uses subject self-report, verifying the plausibility of that report by animal studies (as reported herein), replications of study findings (as reported herein), occasional in-depth verification or proof of individual cases (as reported herein) and theoretical documents that show how patterns of evidence fit together (as reported herein).

Pope, Oliva, and Hudson (2002) suggest that a physical examination yielding clear medical

evidence should be a requirement for a supported recovered memory case. Admitting that the Williams (1994) study "would initially seem to meet our first requirement of adequate documentation of the traumatic event," they then state that questions are raised by the fact that only 28% of the women displayed medical evidence. "By contrast," they continue, "gynecological studies have shown that as many as 96% of young girls subjected to genitogenital contact display genital tract abnormalities, even on an unaided medical examination" (p. 353).

The situation described earlier is a rather shocking combination of slippery use of language and outright falsehood. On its face, most knowledgeable legal and forensic authorities would recognize this statement as a likely falsehood or distortion. How wonderful it would be for all of us in the field if there were truly a method of medically detecting a child abuse history (here, genital penetration) with nearly perfect accuracy. Pope's statement is false and misleading in a number of ways.

First, the majority of large-scale studies of child sexual abuse show that most genital examinations of children, similar to Williams' sample, result in findings of no genital trauma, even if very careful controls are used. In a review by Heger, Ticson, Velasquez, and Bernier (2002), including 7 large-scale studies published since 1990 of children referred for sexual abuse (including 3 with more than 300 victims studied), 62% to 97% of the children had normal or nonspecific findings. Williams does not break down her medical findings into specific and nonspecific groupings, but it is clear that her high level of normal genital examinations is in fact in keeping with the literature.

In the one example, Pope et al. (2002) choose to support his unlikely conclusion, a study from 1989, the actual figures were that 32% of the children had normal findings, 22% had nonspecific findings, and 46% had findings considered specific to sexual abuse. This is despite the fact that the children were chosen because they had a prior validation of sexual abuse, including a prior positive medical evaluation in many cases. In fact, Muram's (1989a) abstract states that his study "highlights the limitations of the medical

evaluation in validating sexual abuse" (p. 328). So where does Pope get 96%? First, choose the Muram (1989a, 1989b) studies instead of a general sample (biasing the sample toward children who have genital findings), then restrict to a subsample claiming rape to get higher injury rates (Williams [1994] does not report her rape injury data, only an overall figure), then combine nonspecific and specific injuries, explicitly against Muram's recommendations. In fact, Pope does not mention that the American Academy of Pediatrics has issued a statement disagreeing with his position, stating that "physical examination alone is infrequently diagnostic" and that "physical findings are often absent even when the perpetrator admits to penetration of the child's genitalia" (p. 188). Physicians are warned in the American Academy of Pediatrics Guidelines (1991, 1999) that "many types of abuse leave no physical findings and mucosal injuries often heal rapidly" (p. 188). Finally, Williams herself controls for medical findings, reporting that for those with evidence of genital injury, rates of amnesia are higher than is true in the full sample.

Argument 3. Clarification Interviews are Needed in Amnesia Studies

Pope et al. (2002) also claim that the Williams (1994) study fails as proof because the clients were not confronted with the facts of their abuse and asked why they did not recall it. Thus, Pope et al. (2002) are suggesting that we tell a young woman (whom we believe does not recall it) that she was raped by a family member. We should take this action so that we may ask her to report on her unconscious processes and tell us if she used repression (despite the fact that detailed report on mental process is theoretically impossible: Wilson, 2002). This recommendation is made despite warnings from both the false memory theorists and the dissociation theorists, who, for different reasons, believe this to be a dangerous action. For false memory theorists, the forgetting may be because the abuse did not occur, and the claims of the investigator may induce a painful and unnecessary state (the new belief, for instance, that your parent did not

protect you, or the feeling that you are contaminated). For traumatic amnesia theorists, the reason for the undermining of the original recall was that the information was horrifying or terrifying—a threat to the child's integrity, attachment, or psychic health. It is clearly unethical to force the information on the research subject to ask for a report on an allegedly unconscious process.

The limited usefulness of such clarification interviews is illustrated by Pope's report of Melchert and Parker (1996), who did attempt to clarify. When asked the question "Why do you think you couldn't remember it?" subjects gave answers such as "If I remembered, I would feel terrible, so I pushed it out" and "Because I didn't want to think about it." These answers, to Pope et al. (2002), can't be repression and dissociation. Repressing subjects, they state, should have chosen the option "because I simply had no memories of it ever happening" (which no one chose). They do not mention that Melchert and Parker themselves state that some of their respondents gave reasons that seemed compatible with repression, whereas some did not, thus disagreeing with Pope et al. regarding the meaning of the clarification. One third of the sample said "I don't know why," which seems quite compatible with a process that is often unconscious. Also, when given the option (in Melchert, 1999), equal numbers of subjects choose the nonintentional amnesia options (forgetting that was remediated by a reminder or repression that would not have yielded to a reminder at the time) and the intentional avoidance item (intentionally avoided thinking about it); thus, subjects do clarify that they dissociated and repressed. In Melchert (1999), those with recovered memories scored higher on the Dissociative Experiences Scale than those who did not. Clearly, there is much room for disagreement as to which choices indicate repression (because Pope et al. and the authors they are citing themselves disagree). More importantly, however, there is a very large literature on the inability of individuals to accurately report on their unconscious processes. Wilson (2002), for instance, reviews more than 50 such studies.

THE OFFER OF FEMINA ET AL. (1990) AS A COUNTER-EXAMPLE

When critics offer a study that allegedly refutes traumatic amnesia or repressed memory, scientific standards disappear. This biased review of research has been studied as a phenomenon in other contentious areas and has been documented as particularly strong in those labeling themselves as the hard-nosed scientists or skeptics (Koehler, 1993; McHoskey, 1995; Miller, McHoskey, Bane, & Dowd, 1993). Here, for instance, are the steps in Pope et al.'s (2002) presentation of Femina et al., who engaged in clarification interviews with 8 young adults.

Femina et al. (1990) studied 69 adolescents, 18 of whom denied abuse at 24 that they admitted at 15 (8 of whom were interviewed). Femina et al. establish the original abuse through interviews and reports that are not described. Pope simply reports the abuse as confirmed and makes no criticisms at all of the criteria. The medical evidence so important for sexual abuse in the Williams (1994) study is not mentioned as a criterion here.

Pope et al. (2002) state that "Femina and colleagues contacted and reinterviewed 8 of these 18 nondisclosers" (p. 355). In fact, Femina et al. (1990) contacted all 18 of the nondisclosers and asked to reinterview them. Eleven refused. The more avoidant and dissociative victims reasonably could be in the refusal subsample. Femina et al. did not hide the refusal rate, and it is clearly important to the evaluation of the study.

Pope et al. (2002) state that Femina et al. (1990) found that the eight young people had merely chosen not to reveal the abuse in the initial interview, concluding that "in no case, however, did these authors find that nondisclosure was attributable to repression of the memory" (p. 355). In contrast, Femina et al. state that an *n* of 8 is too small to generalize, but their data are compatible with many explanations, including "an effort to use 'selective inattention' by suppressing awareness of abuse and attending only to positive aspects of an experience" (p. 230). The victims themselves are quoted as saying that they want to forget. It is not clear that

there is a meaningful distinction between repressing a memory and suppressing awareness of abuse. Freud himself used the terms *repression* and *suppression* interchangeably in much of his work.

The obvious caveats for this study in applying to the question at issue are never mentioned by Pope et al. (2002). For instance, Femina et al. (1990) do not differentiate between denying abuse and minimizing it, reporting vaguely that the 18 original subjects fit somehow into the category of denying or minimizing.

Femina et al.'s (1990) subjects (a) are boys and girls, with rates of denial and minimization not separately reported; (b) are children in the system, who might have had reason to exaggerate their abuse history at some points and deny it at others (to influence parental access, for instance); and (c) are young people who may have been multiply interviewed (presumably providing reminders). The living circumstances of the subjects is not reported. Furthermore, physical abuse has lower rates of amnesia than does sexual abuse (Elliott, 1997), rates that would not suggest a high number of cases within a small sample. Femina et al.'s sample may have had lasting physical scars from their trauma, described as including burning, stabbing, attempted drowning, and broken limbs. Finally, Femina et al. did not look at the question of whether abuse in the childhood record was missing from the accounts of the victims on both interviews, as Williams did. Rather, the issue was whether abuse recalled at 15 was denied at 24. This is clearly a different question. It is indeed likely that abuse occurring in childhood that can be articulated at age 15 will be again recalled for the most part in young adulthood.

The presentation of Femina et al. (1990) also reflects the shifting criteria for defining accurate memory. In virtually every false memory study, the authors find that a subset of the true memories are initially denied—that is, subjects initially say that they do not recall an event that did occur when they were young. In later interviews, when the subjects claim to remember, the authors (who do not wish to count this as recovery because it would be evidence for accurate recovered memory) state that agreement with a historical item after confrontation may not be memory

at all. Perhaps the subjects are responding to demand, they argue, and there is no way of ascertaining if a memory elicited after the interviewer discloses the history is a memory or a creation (Hyman & Billings, 1998). But in Femina et al. (1990), when subjects who are confronted give socially appropriate answers (such as stating that they denied the abuse to an earlier interviewer because they didn't like the interviewer as well or because they were trying to protect parents), these are presented as memories without caveat.

The overall point here is not to nitpick the Femina et al. (1990) report or deny its contribution. Femina et al. make no grand claims for the relevance of their work to recovered memory (which they do not mention) and offer excellent advice about eliciting honest answers from delinquent respondents. Rather, the point is that Femina et al. have never presented their study as an opposition to the views of Williams (1994), much less a strong opposition, and a great deal of distortion is necessary to make it appear to be so.

SCIENTIFIC CONSENSUS FOR THE MECHANISMS FOR TEMPORARILY UNAVAILABLE MEMORIES FOR TRAUMA

Categories of Relevant Research

Given the prominence of Freud's influence on those arguing for the power of unconscious influences in the 1920s to 1950s, the early literature on recovered memory tended to use the term *repressed memory*, implying the mechanism of repression. Repression is a mechanism occurring after a trauma, often beginning with conscious expulsion and then progressing to unconscious action, whereby the memory is pushed out of the conscious mind and held away from consciousness by the victim's fear and anxiety about confronting the memory. Repression theory postulates that a psychological force keeps the material in the unconscious, and a counter-force pushes the material back toward consciousness. The strength of the force and counter-force is dependent on the conflicts inherent in the memories. It should be noted that although the distinction between suppression (conscious exclusion) and repression (unconscious exclusion) is frequently made, Freud

used the two terms interchangeably from his earliest writings (e.g., Freud, 1892-1893) to his final works (e.g., Freud, 1940), even warning his readers that the process does not always "operate from the direction of the conscious" (Freud, 1915, p. 148). Freud historian Matthew Erdelyi writes that "until past 1915, and then arguably, there is no coherent position that repression needed to be unconscious, even if it often was unconscious" (Erdelyi, 1990, p. 13). Over time, however, Freud argued (and modern cognitive psychologists agree) that initially conscious processes can become unconscious.

Dissociation is the current mechanism most commonly used to explain traumatic amnesia followed by recovered memory. Theoretically, dissociation occurs at that time of the trauma, may include conscious or unconscious motivated avoidance and leads to a fragmentation of the memory. The memory fragmentation then leads to the individual's difficulties in retrieval at later dates. Once the dissociation process occurs and the memories are fragmented, severed, or rendered less accessible, no natural force is postulated as necessary to keep the memory out of awareness (although dissociative tendencies toward avoidance will in fact do so). Rather, the dissociation typically continues unless some set of circumstances creates an especially propitious opportunity for memory to resurface (e.g., a very similar emotional state or a very similar set of physical circumstances).

To add a further linguistic complication, Freudians generally refer to dissociation as a repressive defense. DSM-IV (American Psychiatric Association, 1994) asserts that dissociation is normal, particularly in highly traumatic circumstances, and defines dissociation as "a disruption of the usually integrated functions of consciousness, memory, identity or perception of the environment." In practice, loss of total memory for a traumatic event is termed *traumatic amnesia* or *delayed memory* or (if one wishes to commit to a mechanism) dissociated memory or repressed memory. Loss of emotion only, or loss of the integration of memory processes, is generally referred to as dissociative detachment, isolation, emotional constriction, or numbing.

The theory of dissociation provides at least three routes to loss and recovery of trauma

memory. Each will be described briefly. Evidence is then presented for each route.

Dissociative Detachment and Memory Loss

Here, dissociative processes prevent or distort the emotional processing of an event and prevent the integration of the normal experience of emotion into memory. The dissociative detachment then renders the memory more subject to forgetting because it is the enhancement of memory by emotion by the amygdala that produces lasting trauma memories. Forms of detachment includes depersonalization, derealization, and isolation. Here, the failure to integrate is the integration of emotion, sensory experience, and memory, and facets of the memory are temporarily lost. Normal associative processing at times produce recovery.

Directed Forgetting

Dissociative tendencies render the person particularly likely to avoid unpleasant memories and particularly capable of avoidant processing. Whenever the trauma comes to mind, it is rejected (consciously or unconsciously) and the individual tries to forget. The repeated rejection occurs very early in the process of exposure to a reminder, and reminder rejection eventually becomes automatic. Eventually, without the repetition that sustains the neural representation of an event, the event is lost to conscious memory. Retrieval-induced forgetting (the repeated accessing of a competing memory) also leads to suppression of the trauma memory. Return is based on exposure to strong associations or similar emotional states, particularly if the individual has become more able to tolerate the anxiety-provoking knowledge (and therefore becomes less avoidant).

State Dependency

Dissociative capacities render the person particularly state dependent. Information gained while in a specific physiological state (such as fear) are less accessible when the individual is not in this state. Dissociation serves to render

the states less permeable, so that the state dependency is more profound. This dissociative compartmentalization (Holmes et al., 2005) produces memories that are not accessible except in emotionally similar circumstances. The compartmentalization may or may not be defensive or motivated.

Furthermore, dissociation theory suggests that these tendencies (detachment, avoidance processing, compartmentalization) increase with the exposure to trauma and persist after the trauma. Finally, dissociation theory predicts the interrelationship of detachment, amnesia, and fragmentation (or compartmentalization).

PROFESSIONAL INTEREST IN DISSOCIATION

For many years, the theoretical arguments between behaviorists (largely experimental psychologists) and psychoanalytic theorists (usually clinical psychologists or psychiatrists) drew the scientific community away from the black box of the mind and unconscious processes. Today, the explosion of interest in unconscious processes is led by the very experimentalists who once rejected the concept of the unconscious when it was linked more strongly to repression. Literally thousands of articles document the new unconscious (Hassin, 2004) or the adaptive unconscious (Wilson, 2002), a large percentage of which were published in the past 10 years. Hassin's book on the *New Unconscious*, for instance, is the book chosen to initiate the new Oxford University series on Social Cognition and Social Neurosciences.

Interest in dissociation has been spurred both by the rapid development of neuroscience and by the related explosion in research on PTSD. Dissociation, as measured by most self-report instruments, is a powerful predictor of later PTSD, theoretically because of the contribution of poorly processed memory to the maintenance of flashbacks and unexplained arousal (Brewin, Dagleish, & Joseph, 1996; Brewin & Holmes, 2003; Ehlers & Clark, 2000). In a recent meta-analysis, peritraumatic dissociation (dissociation during the trauma) was the strongest predictor of subsequent PTSD (Ozer, Best, Lipsey, & Weiss, 2003). Specific to dissociation, and restricting the issue to studies related to

PTSD, one can clearly see the increase in interest in the PILOTS database offered by the National Center for PTSD. A search of this online database reveals 64 studies published on trauma that mentioning dissociation in 1985 to 1989, 236 studies mentioning dissociation published in 1990 to 1994, 426 published in 1995 to 1999, and 477 in the past 5-year block (2000 to 2004). A bibliography is available from the author listing research on dissociation as it relates to a wide variety of other pathologies, including depression, anxiety, somatization, health concerns, eating disorders, self-mutilation, alexithymia, schizophrenia, addictive gambling, substance abuse, memory functioning and general neurological issues (Ames, Sussman, Dent, & Stacy, 2005; Maarenen et al., 1995; Nijenhuis, 2000; Nixon & Bryant, 2003; Prohl, Resch, Parzer, & Brunner, 2001; Putnam, 1997; Ross & Keyes, 2004; Zanarini, Ruser, Frankenburg, & Hennen, 2000). The relatively new research area of the cross-cultural relevance of psychiatric disorder also has produced articles specific to dissociation, such as van Duijl, Cardena, and DeJong's (2005) study of the relevance of the dissociative disorders in Uganda and Palesh and Dalenberg's (2006) study of recovered memory in Russia. Clearly scientists now view dissociation as an important dimension.

The extensive literature on the neurobiology of dissociation and amnesia cannot be reviewed in detail here. Reviews by Schore (2001), Scaer (2001), and Joseph (1999) have been referenced earlier. Also important is Lanius et al.'s (2002) study on the functional MRI results of inducing dissociative responses in traumatized individuals with use of imagery and a follow up MRI study (Lanius, Hopper, & Menon, 2003) comparing a dissociative and nondissociative subject with PTSD. Anderson et al.'s (2004) article on the neural systems underlying suppression of unwanted memories, Perry's (1999) review of the biology of memories of fear, Bremner's (1999) chapter on the biology of trauma and memory and Bremner, Southwick, and Charney's (1991) article on the neurobiology of trauma are additional relevant reviews.

It should be briefly noted that the same group of researchers who attack dissociative amnesia have published a report that scientists have lost

interest in dissociation and recovered memory (Pope, Barry, Bodkin, & Hudson, 2006). They make this argument by showing a bubble of publications in the 1990s, meaning that publications on the topic increased and then decreased radically during a short span of time. Legitimate phenomena, they state, do not show this pattern. Furthermore, they could find only one reported case of recovered memory or dissociative amnesia in an exhaustive search of the 2003 literature. Although the answer to the puzzle of the bubble of interest in dissociation is fairly obvious, it is reasonable to point out (a) that the bubble is largely due a surge in comments made by early critics that has disappeared given the overwhelming data, (b) that empirical research shows no bubble but only increasing interest, (c) that false memory research shows the same bubble for the same reason, (d) that many other phenomena show this bubble when interest increases for some reason, and (e) that the choice of the search term *repressed memory* rather than *recovered memory* influenced the results. Although a reanalysis of the Pope et al. (2006) graphs is beyond the scope of this article, it can be noted that although Pope's exhaustive search located one published case in 2003, a Trauma Research Institute research assistant in a few hours on the computer located more than 100 (list available on request).

EVIDENCE FOR THE INTERRELATIONSHIP OF THE TYPES OF DISSOCIATION

In the study of dissociation by self-report instruments, the majority of studies have used the Dissociative Experiences Scale, a measure developed in 1986 by Eve Carlson (then Bernstein) and Frank Putnam (Bernstein & Putnam, 1986). More than 2,000 published articles have appeared on the DES across the globe. Translations and research publications are available, for example, in Spanish, Hebrew, Italian, Dutch, Japanese, Turkish, Russian, Portuguese, German, Czech, and French. Constructed by means of expert opinion in its original form, the scale has since been subjected to multiple factor analyses (Carlson et al., 1991; Goldberg, 1999; Ray & Faith, 1995; Ross, Joshi, & Currie, 1991; Stockdale, Gridley, Balough, & Holgraves,

2002). Three primary factors typically replicate throughout most of the analyses: Detachment (failure of integration among processes of the mind), compartmentalization (lack of conscious awareness of ongoing processes and memories that would ordinarily be conscious) and absorption (ability to immerse oneself in one state to an extent to which information from another state is lost). Virtually all authors agree that absorption correlates highly with the other two forms of dissociation (Kunzendorf, Hulihan, Simpson, Pritykina, & Williams, 1997; Levin & Spei, 2003).

EVIDENCE FOR THE CONNECTION OF DISSOCIATION TO TRAUMA

Each of the forms of dissociation are highly related to trauma. Each of the dissociative disorders has been shown to include higher than expected base rates of patients with abuse histories. Similarly, DES scores correlate with abuse history across dozens of studies (e.g., Briere, 2006; Chu & Dill, 1990; Ogawa, Sroufe, Weingield, Carlson, & Egeland, 1997; Putnam, 1997; Simeon, Greenberg, Nelson, Schmeidler, & Hollander, 2005). A bibliography of more than 100 studies supporting the conclusion that dissociation increases or dissociative disorders develop in response to trauma is available from the author. Most research on the DES, however, similar to most research on topics outside of the abuse field, do not include investigations of the veracity of the participants (i.e., were they truly abused). Research on longitudinal samples, therefore, following children predicted to be at high risk for the development of dissociative disorders (e.g., because of known maltreatment history), is particularly important.

An extraordinary example of such a study provided by Ogawa et al. (1997). The participants were 168 young adults are part of the Minnesota Mother-Child Project. The original sample were chosen at birth as part of a high-risk group of children (defined so by poverty, single-parent upbringing, poor education of the parent or parents, youth of the mother, etc.) and has been studied across the span of 19 years. Traumatic life events were conceptualized as "the occurrence of near-catastrophic events"—death of an immediate family

member, life-threatening hospitalization, separation from mother lasting a month or longer, etc. Child maltreatment information was gathered through interview and confirmed through observation and child protection records. Measurements were collected in infancy, preschool, elementary school, adolescence, and young adulthood. The most consistent predictors of dissociation across time periods were disorganized attachment (the form of attachment most associated with maltreatment) and maltreatment itself (sexual or physical abuse). This is one of the clearest demonstrations that maltreatment and abuse do produce dissociation.

Jennifer Freyd's (1996) theory of betrayal trauma also predicts which types of trauma will be most associated with amnesia. In a series of experiments and analyses of survey data, Freyd (1996) has supported the hypothesis that forgetting occurs in part to protect the individual from the knowledge of the betrayal by a trusted figure, allowing the child to continue to identify with the abusive parent. Consistent with this theory, greater betrayal (e.g., abuse by a family member rather than a stranger) appears to lead to greater betrayal and more forgetting. Feldman-Summers and Pope (1994) found a 53% amnesia or partial amnesia rate for those abused by family members and a 30% rate for those abused by nonfamily members. Cameron (1996), analyzed in Freyd (1996), found a 72% rate for victims of abuse by parents and a 19% rate of forgetting by victims of abuse by others. The amnesia experienced by trauma survivors, as noted earlier, has been related to dissociation (Prohl et al., 2001).

EVIDENCE FOR DISSOCIATIVE DETACHMENT AND MEMORY LOSS

In Type 1 dissociation (dissociative detachment in Holmes et al.'s 2005 scheme), the affected individual first shows a loss of emotional awareness. Knowledge of factual events may be fully or partially retained, but memory loss is a common ultimate associate of the detachment. The research support for this phenomena is as follows. Again, evidence exists both for the existence of a state of loss of emotional awareness or emotion access after trauma, and for the link

between lack of emotional expressivity and memory.

The temporary suspension of the conscious sensation of fear or pain during a traumatic event is well known phenomenologically to a great many people; many recall, for instance, a near-miss accident in which the driver swerves out of danger or spins (luckily) to a safe spot and then, in safety, suddenly feels the rush of fear. The detachment itself—loss of the ability to define, identify or express feelings, either permanently or temporarily—is given the label of alexithymia in the atheoretical literature (Greek for *no words*, *alexis*, for *emotion*, *thymos*) and has been studied fairly extensively by neurologists since the 1970s. Protected by a Greek name and infrequent references to psychoanalytic authors, neurologists studying alexithymia rediscovered each of the links that had been established with dissociative detachment—that functional alexithymia could occur with trauma (Berenbaum, 1996; Cloitre, Scarvalone, & Difede, 1997; Shipko, Alvarez, & Noviello, 1983; Zeitlin, McNally, & Cassiday, 1993); that alexithymia was related to (and may be a risk factor for) other psychiatric disorders, such as depression (Honkalampi, Saarinen, Hintikka, Virtanen, & Vinamaki, 1999) and PTSD (Fukinishi, Tsuruta, Hirabayashi, & Asukai, 2001; Sondergaard & Theorell, 2004; Yehuda et al., 1997); that alexithymia relates to general parental treatment (Kench & Irwin, 2000); that the inaccessibility of emotions lead alexithymics to be unsuccessful in many types of treatment for other disorders (Krystal, 1982; Ogrodniczuk, Piper, & Joyce, 2005; McCallum, Piper, Ogrodniczuk, & Joyce, 2003); and that alexithymics were over-represented in populations with unexplained medical problems (Flannery, 1978; Sifneos, Apfel-Savitz, & Frankel, 1977). Not surprisingly, the neurological alexithymia researchers and the psychiatric dissociation researchers eventually found each other, and research established that the two concepts were highly related in many populations (Irwin & Melbin-Helberg, 1997; Maaranen et al., 2005; Modestin, Lotscher, & Erni, 2002). Maarenen et al. (2005), for instance, together found a 7-fold increase in dissociative disorder prevalence among alexithymics.

Associated neurobiological studies were done to show that alexithymic individuals

were manifesting a condition that had a brain state referent (and, similar to dissociation, can be caused by brain pathology or neurochemical changes). Most of this research was founded on data showing a split between verbal and nonverbal processing, supporting the existence of emotional processing without emotional awareness. One large body of neuropsychological data that (for most people) conscious verbal processing takes place largely in the left hemisphere, whereas unconscious nonverbal processing, particularly of negative emotions, is more directed by the right (Gazzaniga, 1989; Tucker, 1981). A second line of neuropsychiatric reasoning was based on another well-established finding—that fear travels two pathways in that brain (LeDoux, 1996, 2002). To use the most classic example in the literature, the slithering shape and the rattling sound to your left as you walk in the forest is sent up the high road in rich detail to the cortex, where it is integrated with your knowledge of snakes, your ability to verbalize about them, and your childhood memories of other experiences with them. At the same time, the sensory images are blasted via a low road to the amygdala in a degraded and nonverbal image. The second road, although less rich in detail, allows responding in a fraction of a second. In the interpretation of neurobiologists, the fear memories are being captured by the nonconscious amygdala, not because the conscious mind refuses it (as in the Freudian version), but because the amygdala's nonconscious memories are more tenacious, and fade less quickly, than do the conscious memories. Thus, nonconscious fear memories, leading to fear reactions, may be present when conscious fear memories are not present. Long and enduring memories for fear episodes, mediated by the nonconscious amygdala, are to the advantage of the organism and have been established across many species (Bechara et al., 1995; Izquierdo & Murray, 2004; LaBar, Gatenby, Gore, LeDoux, & Phelps, 1998; Ohman, 2005; Pare & Collins, 2000).

Dissociative depersonalization and derealization are also included under the label of dissociative detachment because the affected individuals report feeling cut off from the world or from the body. As has been presented and will be presented for other forms of dissociation, derealization, and depersonalization have known

neurological correlates, including an emerging defined fMRI pattern (Phillips & Sierra, 2003). Depersonalization, dissociative detachment (as described earlier) and the dissociation of pain are described by Ramachandran, director for the Center for Brain and Cognition at the University of California San Diego in his recent inaugural lecture at the Decade of the Brain Conference held by the National Institute of Mental Health at the Library of Congress. In his book, *A Brief Tour of Human Consciousness*, Ramachandran (2004) writes,

There is a well-known story of the explorer David Livingstone being attacked by a lion. He saw his arm being mauled but felt no pain or even fear. He felt detached from it all, as if he were watching events from a distance. The same thing can happen to soldiers in battle or to a woman being raped. During such dire emergencies, the anterior cingulate in the brain, part of the frontal lobes, becomes extremely active. This inhibits or temporarily shuts down the amygdala and other limbic emotional centers, so temporarily suppressing potentially disabling emotions such as anxiety and fear. But at the same time, the anterior cingulate activation generates extreme alertness and vigilance in preparation for any appropriate defensive reaction that might be required.

In an emergency, this James Bond-like combination of shutting down emotions (nerves of steel) a being hypervigilant is useful, keeping us out of harm's way. . . . A person looks at the world, is intensely alert, hypervigilant, but the world has become completely devoid of emotional meaning because the limbic system has been shut down. There are only two possible ways to interpret this strange predicament, this paradoxical state of mind. Either "the world isn't real"—derealization—or "I am not real"—depersonalization (p. 92-93).

Depersonalization and derealization have been linked to ongoing trauma in multiple research projects (Cardena & Spiegel, 1993; Grigsby & Kaye, 1993; Simeon et al., 1997; Simeon, Guralnik, Schmeidler, Sirof, & Knutelska, 2001).

The vast body of research on multiple pathways for cognitive and emotional processing thus now support neurological foundations for the phenomena that are of most vital interest here: (a) that an individual might have an accurate cognitive memory trace without an emotional memory trace (the Type 1 dissociative and alexithymic) and (b) that an individual might have an accurate emotional memory trace without a

cognitive memory trace (the Type 2 dissociative and dissociative amnesiac discussed in the next section). Research taking advantage of the faster recognition time of the amygdala have established that emotional memories can be tapped without conscious awareness (Morris, Ohman, & Dolan, 1998; Ohman, 2002; Williams & Mattingley, 2004), just as split brain studies taking advantage of the verbal capacities of the left hemisphere have established that memories stored in the right hemisphere can be denied verbally and shown to be present nonverbally (Joseph, 1988; Risse & Gazzaniga, 1978). This research provides a clear foundation for the clinical descriptions of sensory fragments—the smell of alcohol on a perpetrator's breath, the pain of rape—coded and recorded unconsciously by the amygdala, which emerge as memories prior to a narrative story. Sensory memories, divorced from a narrative, are often the initial recovered memories of abuse victims (Dorado, 1996; van der kolk & van der hart, 1991). The understanding of memory for an event as a collection of features—including sensory-perceptual information, temporal-spatial attributes, etc.—features that may or may not be tightly bound to each other, is now the mainstream position of memory researchers (Damascio, 1989; Elin, 1997).

But how then, has it been established that loss of the emotional aspect of a trauma memory might then lead to loss of the trauma memory itself? In a recent series of studies, cognitive psychologists Jane Richards and James Gross (1999) have asked individuals to try to suppress their fear, disgust, or anxiety in an experimental setting (for instance, while watching a video on amputation). Richards and Gross showed that purposeful suppression of negative emotion (to the emotional slides of grave injuries) led to (a) sympathetic activation (i.e., increased blood pressure and decreased finger temperature) and (b) decreased memory for the negative imagery. Thus, the practiced attempt to hide emotion from the other and from the self does itself appear to lead to memory impairment in the laboratory.

EVIDENCE FOR DISSOCIATIVE COMPARTMENTALIZATION

Dissociative compartmentalization includes the processes whereby a memory or an integrated

series of memories are temporarily lost to consciousness in a process that is more direct than loss of memory through emotional detachment. Unlike forgetting, where the specifics of the event are permanently lost, or encoding failure, where the memories were never engraved in long-term storage, dissociative compartmentalization posits the continued existence of the memories. The probability of access is heightened when a particular emotional state (typically one that is being avoided) is re-experienced. Memories thus appear to be encapsulated within a particular mental state. As with dissociative detachment, dissociative compartmentalization appears at times to be motivated (meeting the original Freudian definition of a defense) and at times appears to be a natural psychobiological outgrowth of repeated noxious experience. In experimental psychology, the loss and return of fear-based memories is most commonly studied under the label state dependent memory. The motivated pushing away of memory is studied under the label directed forgetting.

Evidence for Directed Forgetting

Avoidance of trauma memories is another common coping mechanism of survivors, particularly if the emotional constriction described in the previous section proves impossible. In the short term, suppressing negative thoughts of a rape and keeping busy may be associated with lowered distress (Frazier & Burnett, 1994). However, in the long term, avoidance predicts greater distress after sexual assault (Coffey, Leitenberg, Henning, Turner, & Bennett, 1996; Richards & Gross, 1999; Ullmann, 1996). As would be expected, avoidance appears to be greater in more severe trauma instances (McCarroll, Ursano, Fullerton, Liu, & Lundy, 2001). Avoidant coping is associated with higher scores on dissociation scales (Cassano, Petracca, Perugi, Toni, Tundo, & Roth, 1989; Marmar, Weiss, Metzler, & Delucchi, 1996).

The effect of avoidance can be studied experimentally and is studied under the label directed forgetting. The experimental question here is a motivational one—if an individual tries to forget an event, can he or she speed the decay of the memory trace? The evidence is overwhelming that such executive control of forgetting is

possible (Anderson, 2003; Basden et al., 1994; DePrince & Freyd, 2004; Johnson, Baker, & Azorlosa, 2000; McNally et al., 2001; Myers, Brewin, & Power, 1998). Anderson and Green (2001), again publishing in the journal *Nature*, have convincingly extended this finding to reminders of the unwanted memory. In their research, they asked research participants to learn word pairs (such as *ordeal-roach*) so that they could state the word on the right when given the word on the left. Next, the participants were asked to exert executive control over the retrieval process—that is, when *ordeal* was presented, the participant was asked either to recall and say the paired word or to actively try to prevent the paired word from entering consciousness (suppression). The suppression effect led to impaired recall for the memory at a later time, and the impairment effect became stronger as more opportunities for suppression were given. Explicitly arguing for the viability of repression as a biological process, Anderson and Green state that their findings show that executive control processes

can be recruited to prevent unwanted declarative memories from entering awareness, and that this cognitive act has enduring consequences for the rejected memories. When people encounter cues that remind them of an unwanted memory and they consistently try to prevent awareness of it, the later recall of the rejected memory becomes more difficult. (p. 366)

Anderson and Green's (2001) more controlled experimental results, linked to a neural mechanism, continue a long line of research on the negative effects on memory of cognitive avoidance. One of the founders of memory research, Hermann Ebbinghaus, published an intentional forgetting demonstration in 1885, described by Erdelyi (1990) as a study of "repression and the psychogenic amnesia it can produce" (p. 4). Repeated avoidance of thought of a memorized list of words (or, in later studies, a set of pictures or a story) led Ebbinghaus to show less and less conscious recall of material. When he stopped the process of active avoidance and tried to remember the material 7 days later, he found himself to be highly amnesic. However, in follow-up studies of this simple paradigm, researchers have found that reversal of the demand (asking

the person to think about the lost material and try to retrieve it) led to increase in memory (e.g., Erdelyi and Halberstam as cited in Erdelyi, 1990). Thus, the memory was not lost but merely more difficult to retrieve. Summarizing his series of studies and analyses, Erdelyi (1990) writes that "the essential point is that not-thinking/repression/dissociating/cognitively avoiding/leaving to itself/warding off some to-be-remembered material for whatever reason—psychological poverty, defense, experiential exigencies, or what have you—can result in amnesia" (p. 11).

In the case of shameful events such as child sexual abuse, the actions and descriptions of the perpetrators after the fact can enhance the forgetting effect described earlier. Wright, Loftus, and Hall (2001) and Williams, Wright, and Freeman (2002) have shown that repeating a story of an event and leaving out a key feature (such as telling the story of an outing without including a sexual advance toward a child) has a marked effect on the memory of the event. Both studies showed that the omission of an event in the retelling of a scripted interaction (using adults in the Wright et al.'s 2001 work and children in the Williams et al.'s 2002 study) led the participants to be less likely to freely recall the event in later open questioning. Williams et al. (2002) state that "if a perpetrator of abuse continues to talk to a child about events surrounding the abuse, but omits the abusive event, than this [abuse] memory may become less likely to be reported when children are asked directly about it [at a later point]" (p. 661). The comparison to abuse was made stronger by the use of omitted information that including forms of touch (in this case, the fact that the adult had helped wash the target child's hands), events that are typically very reliably reported.

Evidence for State Dependency

State dependency in memory is defined as the relative inaccessibility of information learned in one state while the individual is in a different state. With most findings crossing human and animal samples, state dependency has been demonstrated with a vast array of manipulations, including morphine (Zarrindast, Noorbakhshnia, Motamedi, Haeri-Rohani, &

Rezayof, 2005), caffeine (Keleman & Creeley, 2003), ACTH, beta-endorphins, and adrenaline (Izquierdo & Dias, 1983), nicotine (Warburton, Esnes, Shengold, & James, 1986), music-induced mood (De L'Etoile, 2002), exercise (Miles & Hardman, 1998), and, importantly for this document, brain states associated with fear. In Lang, Craske, Brown, and Ghaneian (2001), memories learned and reproduced in fear states were recalled best, followed by those learned and recalled in relaxed states. Memories learned in fear and retrieved in relaxation (or vice versa) were decidedly less accessible.

A number of the early dissociation theorists (e.g., Hilgard, 1977) referred to the divided consciousness seen in dissociative compartmentalization as a form of state dependent learning or note the strong state dependency of dissociative clients (Putnam, 1997). The connection of the two concepts is also explored by van der Kolk and van der Hart (1989), two important current dissociation theorists. In addition to research on neurochemical state dependency as well as fear-induced amnesia (some forms of which appear even in rats: Woodson, Macintosh, Fleshner, & Diamond, 2003), a dissertation by Duvenage (1992), recently replicated in our laboratory, has established a relationship between strong fear state-dependency and dissociation.

THE FALSE MEMORY ARGUMENT IN CONTEXT

Thus, reviewing the argument, we know the following.

1. No matter how the sentence is worded or what population is asked, a significant minority of individual exposed to trauma claim not to remember it. More than 60 studies have been reviewed by Brown et al. (1998) on this point. The question has been asked prospectively and retrospectively, with lay populations and experts as subjects, and the conclusion remains.
2. Compelling single accounts with confessions by the perpetrators themselves have gone to trial (e.g., the Ross Cheit case earlier described) or have been documented in extraordinary detail by professionals (Dalenberg, 1996; Freyd, 1996). The form and process of the single accounts fits the theory and the survey data.
3. Hundreds of studies document the noncontroversial conclusions that the attempt to forget can hasten forgetting, that fear can temporarily disrupt

memory, and that trauma victims, particularly sexual abuse victims, try to avoid thinking about their experiences.

4. Hundreds of studies document the relationship between trauma and dissociation, a process linked to disturbances in memory, testable with reliability in the laboratory and clinic, and affirmed by the psychological and psychiatric community in its official diagnostic manual.
5. Dozens of professional organizations have officially endorsed the concept to protect victims from those who would automatically reject the recovered memory narrative.

This pattern of evidence would convince the unbiased scientist.

The standard argument against this mountain of data is that false memory is also possible and that false memory is a more plausible explanation for sexual abuse memory. The organizations cited earlier who support accurate recovered memory also clearly state that false memory is possible, although again the base rate is controversial. Yet none of these organizations state that the issue is one of choosing between the scientific possibility of false memory or accurate recovered memory. The existence (or nonexistence) of false traumatic memory is almost entirely irrelevant to the question of the possibility of accurate recovered memory. One does not support the premise that polio does not exist by showing that there are other reasons for muscle weakness, and one does not support the hypothesis that accurate recovered memories do not exist by showing that experimenters can convince students in experiments to lie (or be mistaken) about their pasts. But we have compelling survey evidence that recovered memory occurs across all traumas and that those who have had the most opportunity to observe these individuals, and look at their evidence, come to believe that most are true. Do we have compelling evidence of the prominence of false memories?

An examination of the false memory study evidence does not show this compelling pattern of evidence. In the typical false memory experiment, the experimenter claims to have evidence for negative events happening when the participants were very young and asks the participants to try to remember the events. Often, the participant is told that his or her mother claims

that the event did occur. Loftus and Pickrell (1995), for instance, use this methodology. In this type of circumstance, a minority of participants (25% is common) claim that they do remember the event. Critically for the issue in question, though, the number of false memories appears to fall to zero if the event does not seem plausible (that is, if the experimenter claims that the mother acted in a way that the participant believes is contrary to her character: Pezdek, Finger, & Hodge, 1997; Pezdek & Hodge, 1999). The application of these studies is to situations with a forceful therapist or parent who claims to know that the individual was abused, bullying the individual into accepting this response, not to the individual who, after a reminder, suddenly recalls abuse by a trusted adult. There is no empirical evidence that the majority, or even a substantial minority, of recovered memory victims fall in the forceful implantation subgroup rather than the independent memory retrieval group. All surveys that ask the question (Elliott, 1997; Feldman-Summers & Pope, 1994; Melchert, 1999) find that the majority of recovered memory patients independently recall the event. Thus, the typical false memory research subject (and retractor) is an individual who has been repeatedly pressed by a credible source, whereas the typical recovered memory research or clinical subject is an individual who comes across a potent reminder and recalls a long-forgotten event. Importantly, critics who minutely examine the dozens of large samples of victims, looking carefully for flaws, do not mention that such representative samples are entirely absent in false memory research. If indeed large numbers of false memory sexual abuse clients exist, why are they not appearing in the research literature?

Although again the word *proof* could be batted about in a discussion of this topic, the false memory literature does appear to strongly support (in the sense of what a scientist would accept as extremely likely) that postevent information can influence what people say that they remember. This has been shown in studies using language manipulations (e.g., Loftus and Palmer's (1974) finding that a car describing as crashing into another will be recalled as moving faster than one described as having bumped

into another), and time-lagged studies of memory for action (e.g., Abelson, Loftus, & Greenwald's 1992 study showing that people will claim that they voted in an election when they actually had not). Clearly these projects may be relevant to later distortions in testimony by a patient who is subjected to repeated exaggerations and relabelling of parental misdeeds (from another parent or a trusted therapist). Experimental studies have not shown greater suggestibility among recovered memory survivors than other survivors or nonabused individuals (Leavitt, 1997, 1999).

Just as it has been confusing and misleading to equate repressed memory and recovered memory, the literature on false memory has been plagued by slippery use of language. The term *false memory* is often used for any false statement that is made by a participant in a research study, even if there was intense social demand to make the statement in question. There is a great deal of evidence that people make false statements about child sexual abuse and other crimes; there is much less compelling evidence that false memories of long-term sexual abuse occur with any substantial frequency (see DePrince, Allard, Oh, & Freyd, 2004, for an excellent discussion of the overuse of the false memory label).

A word should also be said regarding the robust repression phenomenon referenced by some false memory critics (Ofshe & Watters, 1994). Here, critics make the perfectly reasonable claim that it should be much more difficult to forget, by whatever mechanism, a 10-year history of rapes by a father than 5 or 6 highly spaced sexual experiences with the neighborhood priest, and the base rates of forgetting the latter should be greater than the base rates of forgetting the former. This conclusion is typically supported by citations to the general findings of more accurate memory with greater repetition and more accurate memory of more salient and emotionally meaningful material than less salient or meaningful events (Anderson, 1999). But this problem is double-edged. Most theorists across disciplines would also agree that it would be easier to convince a person of the false statement that they were once hospitalized at age 3 but do not remember than to convince them that they were hospitalized repeatedly from age 3 to

17 and do not remember. This is the criticism often made of the Loftus and Pickrell (1995) or Hyman studies (Hyman & Billings, 1998; Hyman & Pentland, 1996)—that is, the finding that one can lead research participants to verbally agree with their mothers that they were once lost in a mall is not easily extended to the conclusion that one can implant memories of salient and repeated sexual abuse. Thus, we can no doubt agree that cases involving repeated and extreme abuse extending into adolescence might not be either false memories or recovered memories (although there appear to be exceptions) and might more often be true and continuous memories or knowingly false statements. The needy victim who exaggerates abuse to attract the attention of her therapist, or the aggressive therapist who convinces a disordered client that an undisclosed abuse history must exist are real and important, but most are unlikely to be either false memory or recovered memory survivors.

Looking at the false memory studies more closely, evidence emerges again that supports both recovered and false memory plausibility. Hyman and Billings (1998), for instance, asked 66 participants about 218 true events and 66 false events (claiming to the participants that both false and true events were true and provided by the students' parents). The events allegedly occurred when the students were 2 to 10 years old. In the first interview, 2 students claimed to remember the false event, and 161 (73.9%) of the true events were recalled. The students were then sent home to think, after being informed that recovered memories were quite common. Potentially, 64 initially denied false events and 57 initially denied true events could have been reported. If the clients were simply complying to experimenter demand, and accurate recovered memory is not possible (as some extremists claim), then we would expect equal numbers of recoveries in the true and false categories in the second interview (or perhaps more false recoveries, because there were more false memories left to recover). However, 1 to 2 days later, Hyman and Billings report that their participants recovered (their word) 25% of the possible false memories and almost twice as many (44%) of the possible true memories. In Hyman and Pentland (1996), the participants recovered 65% of the initially denied true memories and 26% of the initially denied

true memories. Again, if true recovered memory is impossible and subjects were simply going along to please the experimenter, why is true memory so much more likely to be recovered? This pattern is found in most false memory experiments, but the greater recovery pattern for true memories (if recovery of true memories is impossible) is not noted or explained.

It should be added that both directed memory experiments and false memory experiments, although used by proponents of opposite sides of this argument, share a methodological weakness that is inherent to these subfields. False memory researchers cannot ethically try to implant child abuse memories, and directed memory researchers cannot ethically provide a motivation to forget that matches the intensity of the shame and pain of abuse. Therefore, it is difficult to interpret the findings that measures of dissociation or repression at times correlate with capacity to forget (DePrince & Freyd, 2004; Myers et al., 1998; Myers & Derakshan, 2004), although not all studies find this effect (McNally et al., 2004), or that dissociation is uncorrelated with false memory in some studies (Drivdahl & Zaragoza, 2001; Eisen, Qin, Goodman, & Davis, 2002; Polczyk, 2005) and correlated (albeit not strongly) in others (Eisen, Morgan, & Mickes, 2002; Shapiro & Purdy, 2005).

Finally, it is worth going back to the argument that recovered memory research that does not include clarification interviews (interviews asking the individual why they do not recall or claim not to recall their traumas) is fatally flawed. As noted earlier, such questions are in fact often asked in recovered memory research (e.g., Melchart, 1999), although it is also argued that asking an individual to report on the why of an unconscious process is not likely to yield much more than the individual's conscious theories (Nisbett & Wilson, 1977, were among the first social psychologists to recommend that psychologists stop relying on such judgments, a view now held by the majority). Nonetheless, it is striking that none of the mainstream false memory literature provides a clarification interview for an allegedly false report—that is, when the student in a Loftus or Hyman study claims to remember that a pet died when they were young or that they were lost in a mall, Loftus/Hyman rely on the previous parental statement that this

was false and label the memory accordingly. I could locate only one study, a dissertation by Karen Hyland in 2000 in our laboratory, in which the parents were recontacted and read the story of the alleged false event. In many cases, on hearing the details of the false memory, the parents apologetically admitted that the event had indeed occurred, but they had forgotten. Once reminded, they were able to provide details of their own that matched their children's recovered memories. Clarification should not be reserved solely for recovered memory research.

The earlier critiques are not meant to counter the extremists who reject all recovered memory with an argument that rejects all false memory examples. The extant research does suggest that most traumatic memory will be remembered, some memories will be permanently lost, some memories will be lost and recovered, and some reports will be found to be false statements of abuse that never occurred.

THE ISSUE OF ERROR RATES IN DAUBERT CHALLENGES

It is beyond doubt, given the hundreds of studies thus far referenced, that recovered memory is based on several scientifically tested theories, that these theories have been peer reviewed, and that the concept of *recovered memory* itself is consensually accepted. The *Daubert*-related issue of error rates, however, is a complicated and ambiguous concept when applied to evaluation of recovered memory.

First, *Daubert* refers to the standards and controls (and error rate) for a particular technique (e.g., fingerprinting, blood spatter analysis). The procedures for evaluating the error rate of a technique generally involve use of the technique (compared to others) in a controlled setting, leading to agreement as to the standards for varying decisions (e.g., the decision on number of ridge comparisons that must be identical in a fingerprint before it is called a match). The error rate of a phenomenon is a bit harder to conceptualize. How, for instance, would we establish an error rate for continuous memory? We can show that people do claim to recall their pasts, and we can show that they are often right and sometimes wrong. But the error rate for continuous memory for one's past depends on thousands of

factors, many of which would be brought into a given legal case in a given instance (e.g., time since the event, knowledge of the alleged perpetrator, duration of the assault, reality testing capacity of the accuser, physical disabilities [e.g., eyesight] of the accuser, age of the accuser, etc.). One cannot reasonably condense these factors into one error rate for memory for trauma, whether that memory is continuous or recovered. I would argue that the error rate for the phenomena of recovered memory is not fairly addressed by the requirement that recovered memory need always be accurate or that the evaluator must be able to prove the legal case in advance of the trial to introduce the memory. Rather, I would suggest five relevant arguments bearing on the error rate criterion.

The Statistical Argument for Equal Accuracy

First, it is statistically possible to derive the mathematical likelihood of error for the conclusion in the Williams (1995) and the Dalenberg (1996) studies that recovered and continuous memory is equally likely to be valid (the probability that a difference between recovered and continuous memory exists but neither study found it). In both cases, there is a probability of lower than 5% , given study sample sizes, that there actually exists a large (consensually defined in science as magnitude of 15%) difference between the two types of memory. Therefore, recovered memory should be treated as any other memory in terms of likely accuracy.

More specifically, Williams (1995) compared nine descriptive features of the abuse from the hospital record to accounts 17 years later and found a mean of 2.00 inconsistencies in the recovered memory group (78% accuracy). Dalenberg's figure was 75% accuracy. The comparable figures for nonrecovered or continuous trauma memory were 75% accuracy in Dalenberg (1996) and 79% accuracy in Williams. The comparable figures from the false memory studies may be less reliable, given that some of the false memories may have been true, and no clarification interview was conducted.

Nonetheless, similar figures often are found. In the Hyman and Pentland (1996) study, 77% of the recovered memories were categorized as

true. These studies confirm the commonly believed fact that all memory, recovered or continuous, is subject to distortion, but that our best estimates are that 70% to 80% of the details of the accounts will be accurate. These ranges conform to the range for continuous memories.

The Statistical Argument for Reliable Mechanisms

Error rates could also be used from studies of the mechanisms underlying recovered memory. Here, we apply the standard .05 cutoff for significance of a research project. At the .05 level or better, dozens of reviewed studies have established that

- A. motivated avoidance of a memory can reduce accessibility of that memory.
- B. differences in brain states (e.g., fear vs. nonfear states) can influence accessibility of a memory.
- C. avoidance of emotion associated with painful experiences can both harm memory for that experience and lead to increased levels of painful affect.

The statistical significance criteria met here appear to be used to meet Daubert (*Daubert v. Merrell Dow Pharmaceuticals*, 1993) error rate criteria in many other areas (see, for example, Thatcher, Biver, & North, 2003). Relying on briefs by the American Association for the Advancement of Science, *Daubert* refers to specific statistical standards to reject hypotheses (e.g., the standard $p < .05$ cutoff used in research cited here) but allows the individual expert to set these alpha levels.

The Statistical Argument for Reliable Constellations of Symptoms

The reliability of disease phenomena are often first established by the constellation of predictors (e.g., Disease X is typically seen after Experience Y). An error rate of less than .05 has been established in earlier sections for the contentions that lessened experience of emotion, whether it is termed *alexithymia* or *dissociated emotional memory*, is related to trauma, as are depersonalization, dissociative amnesia, and dissociative disorders. It was further established that alexithymia, emotional constriction, reduced memory after trauma, depersonalization, compartmentalized memory (memory available in one state and not

another) all have received the label of dissociation, all are measured by dissociation scales, and all correlate with each other with an error rate less than .05.

Furthermore, it is reliably demonstrated that recovered memory is typically associated with a state-dependency or context-dependency clue, as would be predicted from theoretical mechanisms proposed. Recovered memory with no known cue was experienced by only 18% of Melchart's (1999) participants and 9% Feldman-Summers and Pope's (1994) participants. Furthermore, the cues often were specific to the trauma type. In the Elliott (1997) sample, no respondents recalled a nonsexual trauma after a sexual trigger, whereas 35% of the sexual assault victims recovered their memories following a personal sexual experience. In animals, this facet of the phenomena is established by showing that memories in animals that are lost (because of drugs or other manipulations) can be reaccessed by exposure to other noxious stimuli.

The Logical Argument

As stated, however, it is difficult to use the logic of error rate for a technique and apply it to an internal phenomenon.

Proving that an internal experience exists is typically established through testimony and the matching of testimony and behavior through external evidence. We cannot yet prove that anyone believes in a God, but we can state that many say that they do in convincing manners and that church-going behavior and the building of synagogues suggests this belief. The simple fact of the ubiquity of the phenomena of recovered memory is one type of proof because it is difficult to argue that all should be dismissed as mistaken or lying. Thomas Jefferson (Consolmagno, 2001) is said to have commented that it was easier for him to believe that two Yankee professors would lie (who claimed to have witnessed a meteor explode over Weston, Connecticut) than to believe that a stone could fall from heaven. Similarly, false memory theorists would say that it is easier (for them) to believe that millions of victims are lying or mistaken about recovering a memory than to believe that such memories could occur. It has been established earlier that these theorists are in the minority of scientists.

Here, one would argue that the error rate criteria has been met in using the recovered memory theory to make, accept, and reject hypotheses but that it is being misapplied when it is used to argue that recovered memory testimony (unlike continuous memory testimony) must have a specific known rate of error independent of the reliability of the individual plaintiff.

The Diagnostic Reliability and Validity Argument

A number of instruments now exist to measure depersonalization, emotional constriction, detachment, and memory disturbance. The Multiscale Dissociation Inventory, for instance, published by Psychological Assessment Resources (Briere, 2002), was normed on a large general population sample, a clinical sample, and a trauma-exposed community sample—the first such measure with published probability statistics for the individual's match to clinical populations. The Multiscale Dissociation Inventory yields separate scores for depersonalization, emotional construction, derealization disengagement, identity disturbance, and memory disturbance together with *t* score conversions that allow practitioners to use a cutoff identifying the test-takers scoring in the most dissociative 5% or 1% of the population. Each of these subscales are related to trauma history with an Type 1 error rate less than 5%, each are related to the development of PTSD with a Type 1 error rate less than 5%, each are more elevated in samples of clients diagnosed with dissociative identify disorder with a Type 1 error rate less than 1%, and each are related to dissociation as measured by four other common measures (the Dissociative Experiences Scale, Trauma Symptom Inventory, Detailed Assessment of Posttraumatic States, and Peritraumatic Dissociative Experiences Questionnaire) with error rates less than 1%. Furthermore, the test's authors have confirmed to me that these subtests correlate highly.

A subset of those high on dissociation may also have a dissociative disorder. The Structured Clinical Interview for DSM-IV Dissociative Disorders (SCID-D) is one instrument designed to measure presence of dissociative disorder. As noted in Steinberg (2000), blind raters show

excellent agreement as to the presence and severity of a dissociative disorder using the SCID-D (agreement figures range from .77 to .86, comparable to other DSM-IV diagnoses), and the test-retest reliability of the instrument was excellent (.88).

CONCLUSIONS

The phenomenon of recovered memory is difficult to understand and, on its surface, difficult to believe, perhaps as difficult as it once was to believe that stones might fall from heaven. Some of the heat of the debate among the non-scientific combatants simply focuses on this gut reaction. Some (typically nonclinicians) find it difficult to believe that anyone could forget a trauma, and others (typically clinicians) find it difficult to believe that anyone could false recall a rape that did not occur. Most readers can sympathize with these initial reactions—it is hard to believe that you could forget an important negative event that you now remember clearly and probably just as hard to believe that the negative event that you do remember could be a false memory. Among the extremists, the battle typically moves along in a manner remarkably free from data, with each group simply ridiculing the other's credulity in believing in false or recovered memory. (Again, as Jefferson writes about the meteor showers, "It may be very difficult to explain how the stone you possess came into the position in which it was found. But is it easier to explain how it got into the clouds from whence it is supposed to have fallen?" [Jefferson, 1903-1904, p. 440]). The motivated skepticism referenced earlier—an unwillingness to critique one's own side—also has slowed acceptance of recovered memory science.

As this skepticism occurs in the fringes of the field, mainstream scientists have quietly established that the phenomena can be replicated in laboratory experiments. For the recovered memory side of the fence, animal studies of state dependency and traumatic amnesia have been conducted, effectively undercutting the "maybe they're lying to get attention" argument. Dozens of surveys have been conducted, addressing each new wave of criticism. The neurobiology of dissociation is advancing, and clever experiments

show unconscious recognition of fear stimuli. The full weight of the evidence for the recovered memory phenomena is massive.

The words *dissociation* and *repression*, carrying as they do a long psychoanalytic history, have no doubt interfered with the process of accepting the new unconscious. However, it has been clearly shown that (a) that in individual cases, trauma can be blocked from memory through motivated or automatic processes, (b) that this lost memory can re-emerge with reminders, and (c) that the cognitive or emotional aspects of the memory can be independently present or absent. Thus, the phenomena have been shown to exist, with statistical tests using known error rates and thousands of supporting publications crossing

dozens of subareas of study. A consensus that the phenomena exist has been published using the relevant clinical experts. Reliable measures of dissociation exist, a process that correlates with phenomenological experience of depersonalization, alexithymia, and loss of emotional memory, capacity and tendency to avoid, and physiological and neurological patterns. Recovered memories themselves appear to be largely accurate, even after long time spans but, similar to any memory, deserve to be considered in the light of the full contextual evidence for the event. Acknowledgment of the weight of this evidence would allow the recovered memory victim and those who are accused to come before the court for a fair evaluation.

IMPLICATIONS FOR PRACTICE, POLICY AND RESEARCH

Practice

- There is no reason to doubt the trauma narrative of the recovered memory survivor more than that of the continuous memory survivor. However, the former may have less capacity to confront her trauma and may have experienced less support from her primary caregivers. As such, the compassion of the clinician in these cases and the openness to allowing the victim to find her own way is paramount.

Research

- The biological foundations of dissociation should be further explored.
- Further prospective explorations of memory after trauma cannot ethically confront those alleging lost memory. However, such projects could assess

mechanisms such as avoidance, directed forgetting capacity, or dissociation.

- Further retrospective and prospective studies on the precursors of dissociative pathology are needed.
- We have little data on the prevalence of false memories of sexual abuse. Future surveys assessing recovered memories should also explicitly address the subject of recantation and rejection of memory.

Policy

- The phenomenon of recovered memory does meet the *Daubert* standard.
- There should be no negative assumption as to the accuracy of the recovered memory victim (as compared to the alleged continuous memory victim) in courts of law. Both should be subject to the same standards of proof for their allegations.

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