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VA Medical and Regional
Office Center (116D)
215 North Main Street
White River Junction
Vermont 05009-0001 USA

☎ (802) 296-5132
FAX (802) 296-5135

Email: ptsd@dartmouth.edu
<http://www.ncptsd.org>

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TRAUMA AND MEMORY

Victoria L. Banyard, Ph.D.
Department of Psychology
University of New Hampshire

Understanding the nature of memories for traumatic events has been a major debate in the trauma field over the last decade. While at times divisive in its tone, with trauma survivors and the clinicians who work with them expressing real concerns about the silencing of survivors' experiences in the face of advocates for family members who feel wrongly accused of perpetrating crimes like sexual abuse, it has also been an exciting area of trauma research that seeks to integrate empirical work by clinical, cognitive, physiological, and developmental researchers. Reviews by Enns, McNeilly, Corkery, and Gilbert (1995) and Schooler, Bendiksen, and Ambadar (1997), as well as recent books on the topic such as Williams and Banyard (1999), capture important aspects of this discussion. The current review is an attempt to provide a brief overview of recent studies of trauma and memory, focusing on the last few years of empirical inquiry. During this time there has been a growing acceptance of the existence of both true and false recovered memories, though there remains no clear consensus on which phenomenon represents the larger social problem. Indeed, the task of bringing together the wide variety of information on trauma and memory that originates from very different research traditions has been daunting for the field. The complexity of the issues that have been raised have raised more questions than have been answered. The current review aims to highlight these salient issues to promote the further understanding of trauma and memory.

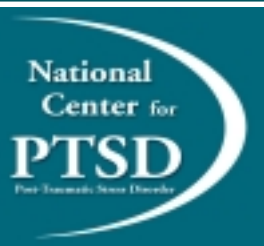
Earlier research on trauma and memory documented the phenomenon of recovered memories for child sexual abuse. Studies such as Williams (1994) provided evidence that some individuals with documented histories of child sexual abuse would not report this experience in follow-up interviews in adulthood, in spite of their willingness to report a variety of other highly personal information about life experiences. A number of more recent studies have sought to replicate and extend descriptions of discontinuous memories for trauma. These researchers have also expanded on previous work by using asking more detailed questions related to the nature of the traumatic memories, seeking corroboration for recovered memories that are reported in research, and expanding their inquiry beyond an exclusive focus on childhood sexual

abuse to an exploration of a variety of types of traumatic stress.

For example, a study by Gold, Hughes, and Swingle (1999) documented the variability in memory quality among a clinical sample of self-identified childhood sexual abuse survivors. A significant number of survivors reported changes in their memory for the abuse over time. This research suggests that memories for child sexual abuse do not appear to be an all or none phenomenon and understanding these gradations are an important next step for researchers. Research also continues in examining correlates of memory disruptions for sexual abuse, such as recent work by Fish and Scott (1999) that examined how greater degrees of secrecy around abuse are related to increased forgetting of childhood maltreatment. Chu et al. (1999) and Herman and Harvey (1997) also collected data on memories for childhood abuse in clinical samples. Their work is notable because many participants who reported prior amnesia for their abuse were able to obtain corroboration of their abuse from other sources, a detail that had been called for in earlier research. Finally, Elliott (1997) used a large community survey to demonstrate reports of delayed recall for a wide variety of traumatic events including witnessing murder or suicide and combat experiences. While this research offers further details about the nature of memories for trauma, most of these recent studies continue to use retrospective, self-report designs. Answering calls for more longitudinal studies grounded in official documentation of abuse to build on the earlier study by Williams (1994), Widom and Morris (1997) conducted one of the only other prospective studies. They found significant numbers of participants did not report their court documented histories of physical or sexual abuse when re-interviewed years later.

Another line of inquiry into trauma and memory has focused on explaining how people might forget a traumatic event and remember it at a later time. That our understanding of the causes of changes in memories for trauma has become more complex can be seen in changes in language in the field. There has been a shift from using the term "repressed memories", that seems to imply the use of a specific defense mechanism around which the empirical literature is mixed, to the use of more general terms such as "delayed," "recovered," or "discontinuous" memory. Recent research shows us that explanations for why some people forget traumatic experiences need to be complex and are not yet complete.

Address for Dr. Banyard: Department of Psychology, University of New Hampshire, Conant Hall, 10 Library Way, Durham, NH 03824. Email: vlb@cisunix.unh.edu.



One area of research provides evidence that human memory is by nature imperfect, constructive, and subject to change over time. Schacter (1999) and Hyman and Loftus (1998) provide useful reviews of recent work on memory errors. This work is used to cast doubt on the veracity of recovered memories of trauma, suggesting that some may reflect memory errors rather than historical truth. Much of this work comes from laboratory studies by cognitive and developmental scientists and has been critiqued within the trauma field as not being ecologically valid (it is difficult to draw comparisons between memory errors for details of a film watched in the lab and disruptions in memory for overwhelming traumatic autobiographical events). In response, recent research on the creation of "false memories" has used different experimental designs. For example, Hyman and Billings (1998) obtained autobiographical information from the parents of college students. They then interviewed the students about their memories for actual events their parents described, and false events created by the researchers but attributed to parental reports. Very few gave a false recall when first re-interviewed though the number increased when students were interviewed again. This is an improvement on earlier research because the memories assessed were for actual unique and salient experiences rather than more removed stimuli such as remembering information from a film. Similarly, Bruck and Ceci (1999) have conducted a variety of recent studies examining children's susceptibility to false memories when questioned about the children's actual experiences in different situations in the laboratory. They examined important variables such as age of the child and the nature of the questioning in whether or not children report false information. Furthermore, Quas et al. (1999) studied children who had experienced a painful medical procedure, an experience even closer to traumatic events such as physical and sexual abuse (though the authors caution that there remain important differences between what these children experienced and child maltreatment). They found interesting variability in children's memories for the procedure. They also questioned children about their experience of an additional procedure that none of them had experienced to investigate susceptibility to false memory creation. They found support for a variety of individual differences in the quality of memories for the experienced procedure and a number of children who agreed to false information about the procedure that was not experienced.

In attempts to further bridge the work of trauma specialists and cognitive scientists, still other researchers have begun to investigate memory errors among groups of child sexual abuse survivors. The findings here are mixed. Clancy, Schacter, McNally, and Pitman (1999) found that female survivors of child sexual abuse who reported recovered memories were more likely than others, including survivors with continuous recall of abuse, to falsely recognize words that were semantically associated with words in a list but that had not previously been presented. However, in another study, Clancy, McNally, and Schacter (1999) did

not find that women reporting recovered memories of sexual abuse were more likely to express confidence in having experienced unusual childhood events following guided imagery. In this study, trauma survivors with recovered memories did not seem more susceptible to memory errors. This area of research is in a very early stage and much more work remains to be done.

Still other recent research aims to explain the notion of recovered memories by unpacking what research participants mean when they say there was a period of time when they did not remember their trauma. For example, Read and Lindsey's (2000) study of adults examined how the process of retrospective recall often used in studies of trauma and memory itself may make participants more likely to report previous periods of partial amnesia for autobiographical events. Additionally, Melchert (1999) asked participants who had reported previous amnesia for abuse, why they felt they could not remember. He obtained responses that included both subconscious and conscious processes. Most participants, however, said that they could have remembered the abuse if they were reminded or if they wanted to. Melchert raises questions about the extent to which delayed memories for traumatic events were completely inaccessible to the survivor. Again, this research is in its early stages. Read and Lindsey's study had a small sample and did not assess memories for traumatic events. Melchert mainly used college student samples. Replication is needed in samples of survivors from other populations given that college student samples overall often represent survivors who have experience less severe trauma and have had more recovery resources available to them.

Yet another line of research on trauma and memory has focused less on how false memories may be created or how research questions may be worded and more on explaining recovered memories for trauma using "ordinary" memory processes. As Schacter (1999) and Schooler et al. (1997) highlight, there are many processes such as interference or decay over time, that affect our memory for a variety of information. Some researchers argue that these same processes can be used to explain forgotten memories of trauma. Read and Lindsey (2000), for example, examined adults' memories for several nontraumatic childhood events. A number of participants indicated that they had complete or partial amnesia for some of the reported childhood events. The researchers use this as evidence that amnesia can occur for a variety of childhood experiences and the general memory processes at work for their participants may also explain amnesia for traumatic childhood events.

Representing a different theoretical stance on trauma and memory are a variety of recent studies that seem to show that memories for traumatic events are different in important ways from memories for non-traumatic events. Forgetting trauma needs to be explained by different mechanisms than those of ordinary memory process. There has been growing interest, for example, in the ways in which trauma seems to alter a number of physical systems. While much of this work focuses on the physiology of PTSD, a

number of recent studies are making links between neuroanatomical and neurochemical correlates of trauma and their impact on memory. Bremner et al. (1999), Bremner (1999), and Yehuda and Harvey (1997) provide important examples. Research has also examined psychological factors that may differentiate traumatic memories from others. Ward and Carroll (1997), Safer, Christianson, Autry, and Osterlund (1998) and Mechanic, Resick, and Griffin (1998) present discussions of ways in which trauma may lead to differences in the cognitive processing of events. Spiegel (1997) discusses links between dissociation and memories for traumatic events and van der Kolk and Fisler (1995) present preliminary findings that suggest that traumatic memories may be stored in sensorymotor rather than narrative form, thus making them less accessible using conventional memory retrieval strategies. Finally, recent research has also begun to explore ways in which the social context, particularly the silencing that occurs around trauma, may differentiate traumatic memories. Work by Fivush and Schwartzmuller (1995) that discusses the ways in which talking to another person enhances children's memory sets a developmental context for this idea. Tromp et al. (1995) and Fish and Scott (1999) present empirical data that examines this question in more detail and finds support for the role of silencing.

Finally, in response both to accusations by proponents of the position that the creation of false memories is a large problem, and efforts by clinicians to improve services for

survivors, much recent work has focused on examining how clinicians actually deal with recovered memories in therapy, the degree to which individuals recover memories in therapy, and translating empirical work on trauma and memory into specific recommendations for clinical practice. Recent studies of both survivors themselves and clinicians such as Chu et al. (1999) and Andrews et al. (1999) show that many survivors do not recover their first memory in therapy. These studies replicate and support earlier work such as Williams (1994) that reported similar findings. Andrews et al. (1999) and Palm and Gibson (1998) also represent recent research that questions clinicians about their practice related to memories for trauma. This recent work suggests that clinicians are well informed about issues of trauma and memory, there is little use of techniques for memory recovery with clients, and when techniques such as guided imagery were used it was often only after memories had been recovered, not to facilitate initial recall. These recent findings stand in contrast to the picture at times painted by advocates of a "false memory syndrome" of clinicians aggressively pursuing the recovery of abuse memories. Given the large amount of discussion in the field about trauma, memory, and clinical practice, there have also been important recent efforts to discuss practice implications that derive from this debate. Recommendations include discussions of best practices for interviewing child victims (Faller, 1999) and for conducting therapy with adult survivors (Courtois, 1999).

SELECTED ABSTRACTS

ANDREWS, B., BREWIN, C.R., OCHERA, J., MORTON, J., BEKERIAN, D. A., DAVIES, G. M., & MOLLON, P. (1999). **Characteristics, context, and consequences of memory recovery among adults in therapy.** *British Journal of Psychiatry*, 175, 141-146. *Background:* There are concerns that memories recovered during therapy are likely to be the result of inappropriate therapeutic changes. *Aims:* To investigate systematically these concerns. *Method:* 108 therapists provided information on all clients with recovered memories seen in the past 3 years, and were interviewed in detail on up to 3 such clients. *Results:* Of a total of 690 clients, therapists reported that 65% recalled child sexual abuse and 35% recalled other traumas, 32% started recovering memories before entering therapy. According to their therapists' accounts, among the 236 detailed client cases very few appeared improbable and corroboration was reported in 41%. Techniques to aid recall were used in 42%, but only in 22% were they used before memory recovery started. *Conclusions:* Some of the data are consistent with memories being of iatrogenic origin, but other data clearly point to the need for additional explanations.

BREMNER, J.D., NARAYAN, M., STAIB, L.H., SOUTHWICK, S.M., MCGLASHAN, T., & CHARNEY, D.S. (1999). **Neural correlates of memories of childhood sexual abuse in women with and without Posttraumatic Stress Disorder.** *American Journal of Psychiatry*, 156, 1787-1795. *Objective:* Childhood sexual abuse is very common in our society, but little is known about the long-term effects of abuse on brain function. The purpose of this study was to measure neural correlates of memories of childhood abuse in sexually abused women with and without the diagnosis of PTSD. *Method:* 22 women with a history of childhood sexual

abuse underwent injection of [¹⁵O]H₂O, followed by positron emission tomography imaging of the brain while they listened to neutral and traumatic (personalized childhood sexual abuse events) scripts. Brain blood flow during exposure to traumatic and neutral scripts was compared for sexually abused women with and without PTSD. *Results:* Memories of childhood sexual abuse were associated with greater increases in blood flow in portions of anterior prefrontal cortex (superior and middle frontal gyri — areas 6 and 9), posterior cingulate (area 31), and motor cortex in sexually abused women with PTSD than in sexually abused women without PTSD. Abuse memories were associated with alterations in blood flow in medial prefrontal cortex, with decreased blood flow in subcallosal gyrus (area 25), and a failure of activation in anterior cingulate (area 32). There was also decreased blood flow in right hippocampus, fusiform/inferior temporal gyrus, supramarginal gyrus, and visual association cortex in women with PTSD relative to women without PTSD. *Conclusions:* These findings implicate dysfunction of medial prefrontal cortex (subcallosal gyrus and anterior cingulate), hippocampus, and visual association cortex in pathological memories of childhood abuse in women with PTSD. Increased activation in posterior cingulate and motor cortex was seen in women with PTSD. Dysfunction in these brain areas may underlie PTSD symptoms provoked by traumatic reminders in subjects with PTSD.

BRUCK, M. & CECI, S.J. (1999). **The suggestibility of children's memory.** *Annual Review of Psychology*, 50, 419-439. In this review, the authors describe a shift that has taken place in the area of developmental suggestibility. Formerly, studies in this area indi-

cated that there were pronounced age-related differences in suggestibility, with preschool children being particularly susceptible to misleading suggestions. The studies on which this conclusion was based were criticized on several grounds (e.g., unrealistic scenarios, truncated age range). Newer studies that have addressed these criticisms, however, have largely confirmed the earlier conclusions. These studies indicate that preschool children are disproportionately vulnerable to a variety of suggestive influences. There do not appear to be any strict boundary conditions to this conclusion, and preschool children will sometimes succumb to suggestions about bodily touching, events, and participatory events. The evidence for this assertion is presented in this review.

CHU, J.A., FREY, L.M., GANZEL, B.L., & MATTHEWS, J.A. (1999). **Memories of childhood abuse: Dissociation, amnesia, and corroboration.** *American Journal of Psychiatry*, 156, 749-755. *Objective:* This study investigated the relationship between self-reported childhood abuse and dissociative symptoms and amnesia. The presence or absence of corroboration of recovered memories of childhood abuse was also studied. *Method:* Participants were 90 female patients admitted to a unit specializing in the treatment of trauma-related disorders. Participants completed instruments that measured dissociative symptoms and elicited details concerning childhood physical abuse, sexual abuse, and witnessing abuse. Participants also underwent a structured interview that asked about amnesia for traumatic experiences, the circumstances of recovered memory, the role of suggestion in recovered memories, and independent corroboration of the memories. *Results:* Participants reporting any type of childhood abuse demonstrated elevated levels of dissociative symptoms that were significantly higher than those in subjects not reporting abuse. Higher dissociative symptoms were correlated with early age at onset of physical and sexual abuse and more frequent sexual abuse. A substantial proportion of participants with all types of abuse reported partial or complete amnesia for abuse memories. For physical and sexual abuse, early age at onset was correlated with greater levels of amnesia. Participants who reported recovering memories of abuse generally recalled these experiences while at home, alone, or with family or friends. Although some participants were in treatment at the time, very few were in therapy sessions during their first memory recovery. Suggestion was generally denied as a factor in memory recovery. A majority of participants were able to find strong corroboration of their recovered memories. *Conclusions:* Childhood abuse, particularly chronic abuse beginning at early ages, is related to the development of high levels of dissociative symptoms including amnesia for abuse memories. This study strongly suggests that psychotherapy usually is not associated with memory recovery and that independent corroboration of recovered memories of abuse is often present.

COURTOIS, C.A. (1999). *Recollections of sexual abuse: Treatment principles and guidelines.* New York: Norton & Co. This book provides empirical and clinical data on human memory processes for normal and traumatic events and on the treatment of posttraumatic conditions in general, and child abuse in particular; the critiques and concerns voiced by cognitive psychologists who investigate memory and suggestibility issues; the recommendations made by a number of professional task forces and advisory committee charged with studying the issues and making recommendations for practice; and the recommendations of expert clinicians and clinical researchers. This book proposes guidelines and principles of treatment for individuals where memory of abuse is at issue. It attempts a balanced perspective on

the complex issues at hand to assist clinicians in taking a therapeutic stance that neither inappropriately suggests nor suppresses reports or suspicions of abuse in a patient's background. This book does not provide an immutable "set in concrete" treatment model; rather, it suggests general principles and guidelines as the foundation of reasonable practice that is explorative and empowering to the patient rather than suggestive.

ELLIOTT, D.M. (1997). **Traumatic events: Prevalence and delayed recall in the general population.** *Journal of Consulting and Clinical Psychology*, 65, 811-820. A random sample of 724 individuals across the United States were mailed a questionnaire containing demographic information, an abridged version of the Traumatic Events Survey, and questions regarding memory for traumatic events. Of these, 505 (70%) completed the survey. Among respondents who reported some form of trauma (72%), delayed recall of the event was reported by 32%. This phenomenon was most common among individuals who observed the murder or suicide of a family member, sexual abuse survivors, and combat veterans. The severity of the trauma was predictive of memory status, but demographic variables were not. The most commonly reported trigger to recall of the trauma was some form of media presentation (i.e. television show, movie), whereas psychotherapy was the least commonly reported trigger.

ENNS, C.Z., MCNEILLY, C.L., CORKERY, J.M., & GILBERT, M.S. (1995). **The debate about delayed memories of child sexual abuse: A feminist perspective.** *The Counseling Psychologist*, 23, 181-279. Examines issues related to the delayed memories of adult survivors of childhood incest from feminist and scientist-practitioner perspectives. The historical context of the debate over delayed memories is discussed in terms of Freud's (1896 [1962]) seduction hypothesis and the impact of the feminist movement on theory and therapy for child sexual abuse (CSA). The recent general backlash against feminism has influenced criticisms of the emerging literature on child sexual abuse and has focused on areas such as "false memory." Although the False Memory Syndrome Foundation has devoted some attention to male clients and therapists, most of its efforts question the credibility of female clients and therapists. Therapists working with CSA survivors need to be knowledgeable about theories and research on memory and the conceptualization of amnesia for CSA. Core therapeutic skills in this area are discussed.

FIVUSH, R., PIPE, M., MURACHVER, T., & REESE, E. (1997). **Events spoken and unspoken: Implications of language and memory development for the recovered memory debate.** In M. A. Conway (Ed.), *Recovered memories and false memories* (pp. 34-62). Oxford: Oxford University Press. In this chapter, the authors take a developmental perspective on the recovered/false memory controversy. Because 'recovered' memories are events that occurred in childhood, understanding how basic memory abilities change and develop through infancy and childhood is critical to evaluating many of these memory claims. Moreover, because 'recovered' memories are most often expressed as verbal accounts of events experienced in childhood, we focus on the ways in which language interacts with children's developing abilities to recall events from their past. Two related questions are addressed. First, what is it that preverbal infants and children recall of their past experiences and can any of these memories be 'translated' into language as children become linguistically fluent? Second, how do children's memories for personally experienced events change as they enter the language-learning years, and how does the ability to express memories verbally change the ways in which memories may be organized, represented, and

recalled? In considering this issue, we discuss both how language is used to help organize and remember experiences, as well as how verbal recall of events changes both as a function of age of the child and age of the memory. [Adapted from Text]

GOLD, S.N., HUGHES, D.M., & SWINGLE, J.M. (1999). **Degrees of memory of childhood sexual abuse among women survivors in therapy.** *Journal of Family Violence, 14*, 35-46. Past and current memory for childhood sexual abuse reported by a clinical sample of 160 women survivors was assessed utilizing a structured clinical interview. Response alternatives for memory were ordered along a continuum. To minimize treatment effects, participants were interviewed as early in therapy as possible. Fairly complete recollection both in the past and currently was reported by 26.3% of the sample, 36.9% apparently lost and subsequently recovered sexual abuse memories, and 36.9% endorsed intermediate degrees of memory. Only 2.5% indicated a decrease in degree of recollection over time. Age at onset was the only abuse characteristic found to differentiate participants with fairly complete memory from the rest of the sample. Findings are interpreted as illustrating that conclusions about memory for abuse are highly dependent on the way inquiries are conceptualized and worded.

HYMAN, I.E. & LOFTUS, E.F. (1998). **Errors in autobiographical memory.** *Clinical Psychology Review, 18*, 933-947. Memory is always constructive. People create the past based on the information that remains in memory, their general knowledge, and the social demands of the retrieval situation. Thus, memories will often contain some small errors and occasionally some large errors. In this article, we describe several different types of memory errors and consider how these errors may influence therapy. The specific types of errors discussed are false childhood memories, time-slice errors, biased memory for attitudes and previous mental states, and the forget-it-all effect.

MECHANIC, M.B., RESICK, P.A., & GRIFFIN, M.G. (1998). **A comparison of normal forgetting, psychopathology, and information-processing models of reported amnesia for recent sexual trauma.** *Journal of Consulting and Clinical Psychology, 66*, 948-957. This study assessed memories for sexual trauma in a nontreatment-seeking sample of recent rape victims and considered competing explanations for failed recall. Participants were 92 female rape victims assessed within 2 weeks of the rape; 62 were also assessed 3 months postassault. Memory deficits for parts of the rape were common 2 weeks postassault (37%) but improved over the 3-month window studied (16% still partially amnesic). Hypotheses evaluated competing models of explanation that may account for reported recall deficits. Results are most consistent with information-processing models of traumatic memory.

MELCHERT, T.P. (1999). **Relations among childhood memory, a history of abuse, dissociation, and repression.** *Journal of Interpersonal Violence, 14*, 1172-1192. The author of this study investigated several questions regarding the relationships between a history of child abuse, recovered abuse memories, childhood memory in general, repression, and dissociation. Of the total sample ($n = 560$ undergraduate students), one quarter reported a history of child abuse, and 18% of these reported that they had a period when they lacked memories of their abuse. These participants endorsed a variety of descriptions of their recovered memories, many of which do not suggest a lack of conscious access to the memories. General quality of childhood memory was found to be unrelated to a history of abuse, and most participants, regardless of their abuse history, reported recovering memories

from their childhood in general. Repressive personality traits were found to be unrelated to recovering abuse memories, but dissociative traits were found to be weakly associated with recovering abuse memories.

QUAS, J.A., GOODMAN, G.S., BIDROSE, S., PIPE, M.E., CRAW, S., & ABLIN, D. S. (1999). **Emotion and memory: Children's long-term remembering, forgetting, and suggestibility.** *Journal of Experimental Child Psychology, 72*, 235-270. Children's memories for an experienced and a never-experienced medical procedure were examined. 43 3-13 yr olds were questioned about a voiding cystourethrogram fluoroscopy (VCUG) they endured between 2 and 6 yrs of age. Children 4 yrs or older at the time of VCUG were more accurate than children younger than age 4 yrs. Longer delays were associated with providing fewer units of correct information but not with more inaccuracies. Parental avoidant attachment style was related to increased efforts in children's VCUG memory. Children were more likely to assent to the false medical procedure when it was alluded to briefly than when described in detail, and false assents were related to fewer "do-not-know" responses about the VCUG. Results have implications for childhood amnesia, stress and memory, individual differences, and eyewitness testimony.

SCHACTER, D.L. (1999). **The seven sins of memory: Insights from psychology and cognitive neuroscience.** *American Psychologist, 54*, 182-203. Examines how and why memory can get us into trouble. It is suggested that memory's misdeeds can be classified into 7 basic "sins": transience, absentmindedness, blocking, misattribution, suggestibility, bias, and persistence. The first 3 sins involve different types of forgetting, the next 3 refer to different types of distortions, and the final sin concerns intrusive recollections that are difficult to forget. Evidence is reviewed concerning each of the 7 sins from relevant sectors of psychology (cognitive, social, and clinical) and from cognitive neuroscience studies that include patients with focal brain damage or make use of recently developed neuroimaging techniques. Although the 7 sins may appear to reflect flaws in system design, it is argued instead that they are by-products of otherwise adaptive features of memory.

SPIEGEL, D. (1997). **Trauma, dissociation, and memory.** *Annals of the New York Academy of Sciences, 821*, 225-237. Dissociation is a failure to integrate aspects of identity, memory, perception, and consciousness. Individuals with dissociative disorders usually report a history of exposure to traumatic stressors. Dissociative symptoms are included in the DSM-IV definition of PTSD and are required for a diagnosis of acute stress disorder. Several appealing models for a neural basis of dissociation have recently appeared and are reviewed.

WIDOM, C.S. & MORRIS, S. (1997). **Accuracy of adult recollections of childhood victimization: Part 2. Childhood sexual abuse.** *Psychological Assessment, 9*, 34-46. Questions have been raised about the accuracy of retrospective self-reported information about childhood sexual abuse. Using data from a prospective-cohorts-design study, a large group of children who were sexually and physically abused or neglected approximately 20 years ago were followed up and compared with a matched control group. Accuracy of adult recollections of childhood sexual abuse was assessed using 4 different measures, completed in the context of a 2-hour in-person interview in young adulthood ($n = 1,196$). Results indicate gender differences in reporting and accuracy, substantial underreporting by sexually abused respondents in general, good discriminant validity and predictive efficiency of

self-report measures for women, and some support for the construct validity of the measures. Implications for researchers and practitioners are discussed.

WILLIAMS, L.M. (1994). **Recall of childhood trauma: A prospective study of women's memories of child sexual abuse.** *Journal of Consulting and Clinical Psychology, 6*, 1167-1176. 129 women with previously documented histories of sexual victimization in childhood were interviewed and asked detailed questions about their abuse histories to answer the question "do people actually forget traumatic events such as child sexual abuse, and if so, how common is such forgetting?" A large proportion of the women (38%) did not recall the abuse that had been reported 17 years earlier. Women who were younger at the time of the abuse and those who were molested by someone they knew were more likely to have no recall of the abuse. The implications for research and practice are discussed. Long periods with no memory of abuse should not be regarded as evidence that the abuse did not occur.

YEHUDA, R. & HARVEY, P.D. (1997). **Relevance of neuroendocrine alterations in PTSD to cognitive impairments of trauma survivors.** In J.D. Read & D.S. Lindsay (Eds.), *Recollections of Trauma* (pp. 221-252). New York: Plenum Press. It is now well established that memory consolidation in both animals and humans is influenced by stress-responsive neuromodulators. Recent theories have attempted to apply knowledge about the effect of these neuromodulators on memory, in order to explain the nature of memory-related impairments in trauma survivors with PTSD. However, as will be described in this chapter, most existing theories have not incorporated recent information about biological aspects of PTSD in their formulations. This chapter will describe differences in the acute and chronic neurobiological response to trauma in individuals who develop PTSD versus those who do not, and will discuss the relevance of these findings to understanding the biological underpinnings of memory impairments in PTSD. Furthermore, a theoretical formulation of how to explore cognitive impairments in PTSD by considering possible risk factors for disturbed memory processing in response to trauma will be presented. [Adapted from Text]

ADDITIONAL CITATIONS Annotated by the Editor

BREMNER, J. D. (1999). **Traumatic memories lost and found: Can lost memories of abuse be found in the brain?** In L. Williams & V. Banyard (Eds.), *Trauma and Memory* (pp. 217-227). Thousand Oaks, California: Sage.

CLANCY, S. A., MCNALLY, R. J., & SCHACTER, D. L. (1999). **Effects of guided imagery on memory distortion in women reporting recovered memories of childhood sexual abuse.** *Journal of Traumatic Stress, 12*, 559-569.

CLANCY, S. A., SCHACTER, D. L., MCNALLY, R. J., & PITMAN, R. K. (1999). **False recognition in women reporting recovered memories of sexual abuse.** *Psychological Science, 11*, 26-31.

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SAFER, M. A., CHRISTIANSON, S., AUTRY, M. W., & OSTERLUND, K. (1998). **Tunnel memory for traumatic events.** *Applied Cognitive Psychology, 12*, 99-117.

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PILOTS UPDATE

National Center for PTSD (116D)
VA Medical and Regional Office Center
215 North Main Street
White River Junction, Vermont 05009-0001