
Amnesia and Crime

How Much Do We Really Know?

Daniel L. Schacter *University of Toronto*

ABSTRACT: *Claims of amnesia occur frequently after the commission of violent crimes and can have a significant bearing on the outcome of criminal trials. This article considers the relation between amnesia and crime within the broader context of research on memory and amnesia and provides a critical evaluation of current knowledge concerning the issue. Particular attention is paid to the problem of distinguishing between genuine and simulated claims of amnesia. It is suggested that reliable data concerning the nature of amnesic episodes that occur after the commission of a crime are sparse, and that there is as yet little evidence that genuine and simulated amnesia can be distinguished in criminal cases. The results of several laboratory studies are summarized that indicate that feeling-of-knowing ratings distinguished between genuine and simulated amnesia under conditions in which psychologists and psychiatrists did not.*

In July of 1982, a small item appeared in the back pages of the *Toronto Star* concerning an ongoing trial in the Ontario Supreme Court ("Accused Killer," 1982). The accused was a 33-year-old man who, several months earlier, had signed a confession in which he admitted to the brutal murder of a 61-year-old man. A striking feature of the confession was the apparent ability of the accused to recall numerous details of the incident. At the time of the trial, however, the defendant claimed that he had made the earlier statement to protect a close friend who otherwise would have become a suspect. In support of this claim, a psychologist testified that the accused never would have remembered the murder in such detail if he had, in fact, committed it. Amnesia, stated the psychologist, follows the commission of a violent crime; a claim of detailed memory for an alleged act of homicide casts doubt upon the possibility that it ever occurred.

The psychologist's testimony in this case was surprising. It suggested, at least indirectly, that much is known about the nature of amnesia following a violent crime—so much, in fact, that one could confidently make an absolute statement about an individual case, as had been done in this instance. After all, a psychologist would presumably be reluctant to testify that people cannot remember committing violent crimes unless there is substantial evidence to that effect, because misleading or inaccurate testimony can have profound consequences in a courtroom.

Does existing knowledge concerning amnesia in

criminal cases provide an empirical foundation for claims such as the one put forward in this psychologist's testimony? The purposes of this article are to provide a critical evaluation of relevant literature and to delineate some of the key issues that need to be confronted in order to improve our understanding of the problem. More specifically, I will argue that (a) amnesia is reported frequently after the commission of a violent crime and constitutes an important psychological, medical, and legal problem; (b) there is a lack of reliable evidence concerning the nature of amnesia that is reported in criminal cases; (c) many claims of amnesia after crimes are simulated; and (d) virtually nothing is known about how to distinguish between genuine and simulated amnesia in actual criminal cases. After discussing existing literature, I will consider briefly recent research in our laboratory that provides some preliminary information concerning the differentiation of genuine and simulated amnesia.

This article focuses on psychological studies of amnesia that are either directly concerned with criminal cases or provide scientific information that is relevant to such cases. No attempt is made to review systematically legal precedents and decisions concerning individual cases in which amnesia played a role. Discussion of court rulings concerning amnesia can be found in articles by Cocklin (1981), Gibbens and Williams (1977), and Rubinsky and Brandt (1985).

Varieties of Amnesia

Before I discuss literature that is concerned directly with the issue of amnesia in criminal cases, it is useful to place this problem in the broader context of research on human amnesia. Consider first the well-known distinction between *organic* and *functional* amnesia. Organic amnesia refers to pathological forgetting that is produced by damage to the brain. Perhaps the most intensively studied manifestation of organic amnesia is known as the *amnesic syndrome*, a chronic and debilitating loss of memory that exists in conjunction with relatively normal intellectual function. Among the conditions associated with the amnesic syndrome are Korsakoff's disease, closed-head injury, encephalitis, damage to the medial temporal region, anoxia, ruptured aneurysms of the anterior communicating artery, and tumors of the third ventricle. In virtually all of these conditions, two discernible classes of amnesia are observed. *Anterograde* amnesia entails forgetting of facts and events that occur after the onset of disease or neurological trauma, whereas *retrograde* am-

nesia entails forgetting of facts and events that occurred before the critical precipitating incident (cf. Russell & Nathan, 1946). Research concerning the amnesic syndrome has proliferated in recent years, and a number of recent monographs and articles provide reviews of pertinent literature (Cermak, 1982; Hirst, 1982; Schacter & Crovitz, 1977; Squire, 1982; Whitty & Zangwill, 1977).

Other kinds of organic amnesia have also been studied. For example, it has been demonstrated that even moderate doses of alcohol and other drugs can produce memory deficits in normal subjects (e.g., Birnbaum & Parker, 1977; Eich, 1980). In addition, several studies have explored the more severe form of amnesia encountered in alcoholic blackout, which occurs when an alcoholic is amnesic for an episode of intoxication (Goodwin, Crane, & Guze, 1969; Goodwin, Othmer, Halikas, & Freeman, 1970; Lisman, 1974; Tarter & Schneider, 1976; Travis, 1973). Note that in these cases amnesia is restricted to a single critical episode from the recent past or a small number of such episodes, whereas in the amnesic syndrome a chronic memory disorder disrupts storage and retrieval of many kinds of information. I will refer to cases in which memory loss is restricted to a specific event or episode as *limited* amnesia.

Functional amnesia differs from organic amnesia insofar as it occurs in the absence of detectable brain pathology. The most frequent causes of functional amnesia are emotional shocks or psychologically traumatic events. Instances of functional anterograde amnesia—that is, inability to store and retrieve new information after a traumatic event—are quite rare. In almost all cases, functional amnesia is confined to events that occurred before the critical precipitating incident. However, the results of clinical observations and research permit us to distinguish among three types of functional amnesia. First, *functional retrograde amnesia* entails loss of knowledge of personal identity and virtually all of the autobiographical memories that constitute one's personal past, and it typically includes a fugue state in which the patient is unaware of memory loss. Second, a form of functional amnesia occurs in cases of multiple personality: There is a substantial degree of amnesia between and among different personalities. Third, psychological trauma can sometimes produce limited amnesia—pathological forgetting of a specific episode. Although this kind of amnesia is characterized by retrograde (and not anterograde) loss, I will reserve the term functional retrograde amnesia for cases that include loss of personal identity and large sectors of the autobiographical record.

The scientific literature concerning each of the three

forms of functional amnesia is sparse. For example, almost all information concerning the characteristics of memory loss in functional retrograde amnesia derives from anecdotal descriptions or clinical observations (e.g., Abeles & Schilder, 1935; Fisher, 1945; Gudjonsson, 1979; Gudjonsson & Haward, 1982; Kanzer, 1939); the first controlled, quantitative study was reported relatively recently (Schacter, Wang, Tulving, & Freedman, 1982). The same is true of multiple personality amnesia: Clinical (e.g., Lasky, 1982; Schreiber, 1973; Thigpen & Cleckley, 1957) and anecdotal (e.g., Keyes, 1982) accounts are available, but few controlled studies are reported in the literature (see Ludwig, Brandsma, Wilbur, Bendfeldt, & Jameson, 1972). And the phenomenon of functionally induced limited amnesia has received virtually no attention; researchers have only recently begun to explore amnesia for psychologically traumatic or shocking episodes (Christianson & Nilsson, 1984; Loftus & Burns, 1982).

For present purposes, the relevance of the foregoing distinctions is that, in the large majority of criminal cases that involve amnesia, the loss of memory either has a functional origin or concerns only a single critical event. I have found no cases in the literature in which a patient afflicted with chronic organic amnesia has come before the courts on a serious criminal matter that is related to his or her memory disorder. Organic factors may play a role when concussion, alcohol intoxication, or epileptic seizure occurs during a crime, with subsequent limited amnesia for the crime itself, but in these cases memory problems typically do not exist prior to the crime. The fact that chronic organic amnesia is rarely associated with crime has one major consequence for the present discussion: Most of our scientific knowledge of amnesia derives from studies of patients with chronic memory disorders. As I have noted, there have been relatively few systematic studies of functional retrograde amnesia, multiple personality amnesia, or limited amnesia, and there is a corresponding absence of well-established facts about these disorders. The lack of basic knowledge concerning limited amnesia is particularly significant, because, as we shall see shortly, this is the most frequently reported form of amnesia in criminal cases.

Amnesia in Criminal Cases

Let us now turn to manifestations of amnesia in actual criminal cases. I will first delineate the contexts in which claims of amnesia may arise and then review existing data concerning the incidence and nature of amnesia in criminal cases. I will then discuss at some length the critical problem of distinguishing genuine from simulated amnesias.

Medicolegal Significance of Amnesia

What exactly is the significance of amnesia in criminal cases? Why is it important whether an accused can remember an alleged crime, or for that matter, whether he or she can remember his or her own name and personal history? The literature provides two main reasons. First, and perhaps most significant from a practical standpoint,

This article was supported by a Special Research Program Grant from the Connaught Fund, University of Toronto, and by Grant No. U0361 from the Natural Sciences and Engineering Research Council of Canada. Some of the ideas discussed in this article were originally presented at the Symposium on Clinical Criminology, Toronto, April 1983. I thank Carol A. Macdonald for help with the preparation of the manuscript.

Correspondence concerning this article should be addressed to Daniel L. Schacter, Department of Psychology, University of Toronto, Toronto, Ontario, Canada M5S 1A1.

is that amnesia for a particular episode or sector of one's past may imply that behavior during the critical time period was *automatic*. Automatism, in a legal context, refers to behavior that is executed involuntarily and without consciousness or intention. The significance of automatism for the attribution of criminal responsibility has been spelled out clearly by Martin (1981):

Voluntary conduct is essential for criminal liability. If a person's bodily movements are not subject to the control of his will, there is no voluntary conduct. Automatism has now become the term used to denote unconscious involuntary behavior. (pp. 22-23)

Amnesia, of course, does not necessarily imply automatic behavior during the forgotten time period. As Hopwood and Snell (1933) and many others have pointed out, an accused might be genuinely amnesic for an alleged crime and even for his or her entire personal past yet still have behaved consciously and with intent during the crucial incident: The amnesia could represent involuntary repression of the "horrible deed" that had been committed. A thorough review of issues pertaining to automatism and criminal responsibility by Gibbens and Williams (1977) indicates that the defense of noninsane automatism, backed by a claim of amnesia, has produced mixed outcomes, including conviction, unconditional acquittal, and acquittal conditional upon detention in a psychiatric hospital. A discussion of the intricate issues involved in a plea of noninsane automatism is beyond the scope of this article. For excellent illustrations of the many pertinent complexities and of the crucial significance of amnesia, see the discussions by Gibbens and Williams (1977) and Martin (1981).

A second area in which a claim of amnesia has had relevance in criminal cases concerns competency to stand trial (Rosesch & Golding, 1980). If an accused cannot remember an alleged crime or does not know his or her own identity, can he or she instruct counsel properly or assist in the preparation of a defense? This issue was brought into sharp focus by the publicized 1959 murder trial in England of Guenther Padola (see Bradford & Smith, 1979, and Furneaux, 1960, for case details). Padola, accused of murdering a policeman who attempted to arrest him after a robbery, claimed that he was afflicted by a full-blown functional retrograde amnesia that extended from the period of the crime through his entire past life. On the basis of this amnesia, Padola's counsel argued that he was unfit to plead. The jury, however, did not believe that Padola's amnesia was genuine, and it proceeded to convict him.

Thus, the claim that amnesia constitutes a basis for a plea of incompetence was not addressed directly in the Padola case. In subsequent cases in which the issue has arisen, the courts have generally ruled that patients suffering from amnesia are competent to stand trial (Cocklin, 1981; Koson & Robey, 1973). However, there have been suggestions that amnesia might, under some conditions, qualify as grounds for incompetence, as indicated by an opinion rendered in a recent U.S. case: "The loss of

memory should bar prosecution only when its presence would, in fact, be crucial to the construction and representation of a defense and hence essential to the fairness and accuracy of the proceedings" (cited in Lasky, 1982, pp. 24-25). In addition, in those cases in which there is reason to believe that amnesia is temporary and memory recoverable, an adjournment of trial to permit therapeutic restitution of memory has been viewed by the courts as an appropriate tactic (Koson & Robey, 1973).

Incidence and Nature of Amnesia

There have been only a few studies that have included sufficient numbers of cases to permit an estimate of the frequency of occurrence of amnesia after a crime, but there is some consistency among them. Both Guttmacher (1955; 36 cases) and Leitch (1948; 51 cases) found that slightly over 30% of convicted murderers claimed that they could not remember their crimes. O'Connell (1960; 50 cases) reported a 40% incidence of limited amnesia in his sample of homicide cases. Comparing various personality and cognitive characteristics of those who did and did not claim amnesia, O'Connell found a tendency for lower intelligence and hysterical tendencies in the amnesic group, as well as a high frequency of alcohol intoxication and reports of "gross rage reaction" during the crime.

In a more recent investigation, Bradford and Smith (1979; 30 cases) reported that 65% of individuals charged with homicides claimed amnesia. In approximately 60% of these cases, the amnesia was limited to the crime itself, whereas in the other instances it ranged from 30 minutes to 24 hours preceding the crime. Bradford and Smith attempted to classify the amnesias into different categories, based on the statements of the accused. They found that almost all subjects claimed either a "patchy" or "hazy" amnesia; only one described a complete memory blackout. None of the patients who claimed amnesia demonstrated recovery of memory during the period of psychiatric evaluation. In comparison with those who did not claim memory loss, the amnesic group was characterized by a higher frequency of alcohol intoxication and emotional arousal during the crime, in agreement with the findings of O'Connell (1960). Similar conclusions are suggested by the findings of Parwatikar, Holcomb, and Menninger (1985). They studied 105 men charged with homicide and found that 23% of them claimed amnesia for the crime. Compared with 50 individuals in their sample who had confessed to their murders, those who claimed amnesia were more frequently intoxicated with alcohol and other drugs during the crime and showed higher levels of depression, hysteria, and hypochondriasis on pretrial Minnesota Multiphasic Personality Inventory (MMPI) evaluations. Consistent with these results, Taylor and Kopelman (1984) observed that 9 out of 34 men (26%) who were convicted of murder or manslaughter claimed amnesia for their crimes. Psychological examinations conducted shortly after commission of the offense indicated that amnesic individuals were characterized by significantly higher levels of depression than nonamnesic

individuals. In addition, individuals who claimed amnesia were more likely to have been intoxicated during the crime than those who did not.

The foregoing studies suggest that a claim of amnesia is encountered in a substantial proportion of homicide cases. What about in other crimes? Taylor and Kopelman (1984) observed amnesia in only 8% of 120 individuals who were convicted of violent crimes other than homicide, and they found no evidence of amnesia in 47 individuals convicted of nonviolent crimes. Lynch and Bradford (1980) studied 22 cases in which defendants claimed drug- or alcohol-induced amnesia for their crimes. Forty-four percent of the defendants had been charged with violent crimes, such as murder, manslaughter, rape, or assault; 23% had been charged with theft, 10% with dangerous use of a firearm, and the remainder with various other offenses. Hopwood and Snell (1933) reported 100 cases in which individuals claimed amnesia for their crimes. The large majority of these cases—about 90%—were homicide or attempted homicide; the others were divided among indecency, arson, and “acquisitive crime.” Hopwood and Snell (1933) argued on the basis of their findings that “the majority of crimes which are followed by amnesia are those accompanied by strong emotional reactions” (p. 32). Although the frequency distribution observed by Hopwood and Snell might simply reflect the overall distribution of cases that were referred to them (they did not include a nonamnesic control group), their conclusion is consistent with the findings of O’Connell (1960), Taylor and Kopelman (1984), and Bradford and Smith (1979) and also with other case reports in which limited amnesia occurred after homicides that were apparently accompanied by extreme emotion (e.g., Diamond, 1969; Gudjonsson & Mackeith, 1983; Power, 1977; Sadoff, 1974).

The frequently cited relation between extreme emotion during violent crime and claims of amnesia is consistent with recent laboratory research concerning emotion and memory. Evidence from a number of studies suggests that memories acquired in a particular mood state (e.g., happy or sad) are more readily recalled in an affectively congruent state than in an incongruent one (see Bower, 1981; Teasdale & Fogarty, 1979). Thus, affective states can serve as a source of state-dependent memory: It may be quite difficult to retrieve memories that were established during an extreme state of emotion until and unless that state is reestablished. A particularly dramatic criminal case in which mood-state-dependence played a role is the assassination of Robert F. Kennedy by Sirhan Sirhan. In the waking state, Sirhan claimed limited amnesia for the crime, but under hypnosis, as his mood became more similar to the highly agitated state in which he shot Kennedy, Sirhan recalled the episode and reenacted parts of it (Diamond, 1969, cited in Bower, 1981). In subsequent waking states, the homicidal episode remained inaccessible. It would be desirable to explore further the role of mood-state-dependence in limited amnesias that occur after violent crimes.

The issue of state-dependent memory may also be

pertinent to the finding of a relation between alcohol intoxication and claims of limited amnesia in the studies of O’Connell (1960), Bradford and Smith (1979), Taylor and Kopelman (1984), and Parwatikar et al., (1985). As noted earlier, several studies have revealed that alcoholics sometimes report amnesia or “blackout” for an episode of intoxication (e.g., Goodwin et al., 1969, 1970). In many of these cases there is a complete or *en bloc* amnesia (Goodwin et al., 1969), whereas in others there is a patchy or *fragmentary* amnesia (Goodwin et al., 1969), in which memory for certain aspects of the episode of intoxication can be quite good (Travis, 1973). A question of considerable interest is whether the kinds of alcoholic amnesia that are encountered in criminal cases represent state-dependent memory loss: Would it be possible to reinstate memory for the critical episode by introducing a state of intoxication at the time of recall? Relevant evidence has been reported by Wolf (1980). He studied five men with a long-term history of alcoholism and associated blackouts who had been charged with first-degree murder. All of them claimed amnesia for their crimes, and all had been severely intoxicated during the critical episode. Wolf induced a state of alcohol intoxication in each defendant under controlled clinical conditions. He found that they experienced violent feelings while intoxicated but did not remember the homicidal episode. This failure to observe evidence of state-dependent memory in alcoholic defendants is consistent with the results of two studies of non-criminal populations. Lismann (1974) failed to uncover evidence of state-dependent effects in an experimental study of blackout in alcoholics, and Goodwin (1974) has reported that alcoholics are not especially susceptible to state-dependent memory loss. There is, however, experimental evidence that alcohol and other drugs can produce state-dependent memory effects in nonalcoholic volunteers (see Eich, 1980, for review). It is thus possible that the severe or *en bloc* amnesia that is often observed in alcohol abusers may be irreversible and associated with anterograde memory failure (Goodwin et al., 1969, 1970; Travis, 1973), whereas milder amnesias observed in non-alcoholics may be reversible by reinstatement of the intoxicated state. Further exploration of this idea in criminal cases is clearly needed.

More generally, it bears mentioning that studies of amnesia in violent crimes have done little more than to document the fact that alcohol intoxication is sometimes associated with reports of amnesia. For example, it would be informative to explore systematically the relation of variables such as the long-term drinking history of the accused to the nature of the reported amnesia (cf. Lynch & Bradford, 1980). In view of the possibility that different types of alcohol-induced amnesia may be reported by alcoholic and nonalcoholic individuals, this issue merits investigation.

Although limited amnesia is observed frequently after violent crimes, a striking feature of the cited studies on homicide and memory loss is the absence of cases of functional retrograde amnesia. The sole exception of which I am aware is the Padola case; it is discussed further

in the next section. Claims of functional retrograde amnesia following other crimes, however, have been observed. Kennedy and Neville (1957) noted that apparently amnesic patients who eventually admitted malingering had committed various petty offenses; they did not indicate whether any of the genuine functional amnesics in their study had been involved in a crime. Berrington, Liddell, and Foulds (1956) found that 14 of 37 patients who presented with functional retrograde amnesia were "escaping from justice." No details about the type of crime were presented. Wilson, Rupp, and Wilson (1950) observed that participation in a crime triggered episodes of functional retrograde amnesia in a small proportion of patients; one had participated in a robbery, another had passed a bad check, and a third had been an accomplice to murder. The impression that functional retrograde amnesia occurs relatively rarely after crimes—particularly those of a violent nature—is further strengthened by the fact that in the classic studies of this condition by Abeles and Schilder (1935) and Kanzer (1939), which included over 135 cases, no instances of criminal activity were documented.

Similarly, there have been only a few reported cases of crimes occurring in conjunction with multiple personality amnesia. One widely publicized case, discussed at length in a recent popular account (Keyes, 1982), concerned Billy Milligan, a 23-year-old man who was accused of several combined rape-robberies that occurred at Ohio State University in 1977. Evaluation by various psychologists and psychiatrists revealed and confirmed a diagnosis of multiple personality. Ten distinct personalities had been distinguished at the time of trial, and still others emerged with time. As in other cases, the key feature of this patient was a dense amnesia among personalities: Most of the individual personalities did not remember events experienced by the others. At the time of arrest, the then-conscious personality was apparently bewildered by the charges and denied knowledge of wrongdoing (Keyes, 1982). It was argued that the robberies and rapes in each case were committed by two different subpersonalities and that the crimes occurred at a time when the core personality had been "asleep" or "unconscious" for several years. After extensive psychiatric examination, Milligan was deemed competent to stand trial. The subsequent verdict of not guilty by reason of insanity was virtually uncontested by the defense. Therapeutic attempts to unify or "fuse" Milligan's many selves, carried out after the trial in different hospitals and prisons, have been thwarted by political and legal controversy concerning the most appropriate milieu for his detention. It is unfortunate that the sole thorough account of the Milligan affair is Keyes's largely uncritical popularization, because many important questions need to be addressed concerning this fascinating and tragic case.

A second publicized case involving multiple personality and crime concerned Kenneth Bianchi, the "Hillside Strangler," who was charged and ultimately convicted of several brutal murders committed during 1977-1978. The case has been described and discussed in great detail by

several of the examining psychologists and psychiatrists (Allison, 1984; Orne, Dinges, & Orne, 1984; Watkins, 1984). Suffice it to say that the multiple personality diagnosis was a controversial one, partly because of questions concerning the patterns of amnesia exhibited by the three personalities that ultimately emerged in Bianchi's case (Orne, Dinges, & Orne, 1984; Watkins, 1984). Besides the Milligan and Bianchi cases, there are only a few links between multiple personality and crime. Two cases were alluded to in Keyes's (1982) book, and Allison (1984) made brief reference to seven cases that he had examined. Ludwig et al. (1972) commented that a multiple personality whom they studied spent some time in jail for minor offences. Forsyth (1940) described the case of a convicted embezzler who complained of severe memory lapses and was later diagnosed as a multiple (double) personality. It is not clear, however, if and how the multiple personality amnesia and the criminal activity were related in any of these cases.

Genuine Versus Simulated Amnesia: How Can We Tell?

Throughout the discussion thus far, I have frequently inserted the word *claimed* when making reference to the various types of amnesia that occur after a crime. The reason for including this modifier is that not all cases of amnesia are genuine: Some defendants simulate amnesia, presumably with the hope that a report of memory loss will help to reduce the severity of punishment that they encounter. Hopwood and Snell (1933), for example, classified about 20% of their cases of limited amnesia as either "simulated" or "doubtful," and Bradford and Smith (1979) found that in almost all cases of accused murderers who submitted to polygraph or sodium amytal tests, the claim of amnesia was not supported. Others have also suggested that, given a claim of amnesia after an offense, the probability of simulation is considerable (Adatto, 1949; Lynch & Bradford, 1980; O'Connell, 1960; Parwatikar et al., 1985; Power, 1977; Price & Terhune, 1919). The fact that many claims of amnesia are not genuine raises significant medicolegal issues. If, for example, the occurrence of genuine amnesia is a necessary condition for a successful plea of nonsane automatism (Gibbens & Williams, 1977), then it is crucial to differentiate accurately between real and simulated amnesia. Similarly, if a ruling concerning competence to stand trial may be influenced by the presence of amnesia, we need to know whether it is genuine.

The difficulty of the task should not be underestimated. For example, in the literature on functional retrograde amnesia, the mere hint of legal complications is typically viewed as a high probability signal of simulated amnesia: Most functional retrograde amnesia patients who at some point admit simulation are attempting to escape criminal prosecution or other legal difficulties (Berrington, Liddell, & Foulds, 1956; Gillespie, 1937; Kanzer, 1939; Kennedy & Neville, 1957; Kiersch, 1962). If criminal activity itself is a sign of simulation, how can we separate genuine from feigned cases, given the com-

mission of a crime? The literature abounds with opinions, but objective data are in short supply.

Two types of criteria for distinguishing genuine from simulated amnesia can be delineated (my focus is on limited amnesia, but in most discussions of simulation there is no explicit distinction among types of amnesia). The first type concerns aspects of the accused's behavior other than the amnesia itself. Power (1977), for example, has suggested that the character of the crime—whether it is planned or impulsive—provides clues concerning the legitimacy of the amnesia; a claim of amnesia after a carefully planned crime is highly suspicious. Others have argued that the psychiatric history of the accused may provide a basis for judging the genuineness of the alleged memory loss (e.g., Bradford & Smith, 1979; Sadoff, 1974). It has also been suggested that the electroencephalograph (EEG) can be a helpful tool: When there is reason to believe that a reported memory loss is associated with organic factors such as epilepsy or head injury, an abnormal EEG reading might lend support to the claim (Lennox, 1943; Sadoff, 1974). A related strategy entails the use of techniques such as polygraphy, hypnosis, or administration of sodium amytal. The idea here is to achieve insight into the character of the amnesia in a way that would not be possible using only unaided questioning—either by using polygraphy to observe the autonomic responses of the accused or by using sodium amytal or hypnosis to lessen his or her ability to feign deliberately. When these tactics have been used, they have corroborated some claims of amnesia and have cast doubt on others (Bradford & Smith, 1979; Lynch & Bradford, 1980). However, techniques such as polygraphy and hypnosis are characterized by numerous controversial issues, with respect to both the validity of the procedures and the application of findings in medicolegal contexts (e.g., Kleinmuntz & Szucko, 1984; W. Kroger & Douc e, 1979; Lykken, 1981; Orne, 1979). Indeed, most defendants cannot be required to submit to polygraphy, amytal interviews, or hypnosis.

The second approach to distinguishing genuine from simulated amnesia focuses on the nature of the alleged memory loss. It has been suggested that a limited amnesia with a sudden, sharply defined onset and termination should be viewed with caution, whereas reports of a gradual or blurred onset and termination are more likely to indicate genuine memory loss (Power, 1977). Similarly, some authors contend that a patchy amnesia, in which some features of a crime are recalled, is more likely to be genuine than is an absolute amnesia (e.g., Bradford & Smith, 1979). Others, however, view patchy amnesias with skepticism and suggest that they may be self-serving devices used by malingerers (Koson & Robey, 1973).

Several investigators have suggested that repeated questioning of the accused may yield useful information about the *consistency* of amnesia: If the recollection of the accused varies over time or is self-contradictory, there is greater likelihood of simulated amnesia (Power, 1977; Price & Terhune, 1919; Sadoff, 1974). One possible problem with this approach is suggested by data con-

cerning organic retrograde amnesia. Sisler and Penner (1975) repeatedly assessed length of retrograde amnesia in head injury patients and found that it fluctuated considerably across test sessions. It is probably not unreasonable to assume that such fluctuation occurs in cases of genuine amnesia after a crime. If so, then inconsistency of reported amnesia need not be a sign of simulation.

The aforementioned criteria have been applied most frequently to limited amnesia, but the issue of simulation has also emerged in cases of functional retrograde amnesia and multiple personality amnesia. In the Padola case mentioned earlier, the defense's plea of incompetence, based on Padola's apparent loss of identity and memory, was rejected because the jury did not believe that the amnesia was genuine. Interestingly, one of the major points put forward by the prosecution to discredit the amnesia was that Padola retained a fund of general knowledge and skills about particular specialized topics (Bradford & Smith, 1979). However, general knowledge can be preserved in cases of functional amnesia (Schacter et al., 1982), so this may be a highly questionable strategy for inferring simulated amnesia. In the Milligan multiple-personality case, the possibility was raised repeatedly that the patient was merely a "brilliant con-man" who was able to feign amnesia. Psychiatric testimony relied upon the complexity and consistency of the cross-personality amnesia to counter this charge. As noted earlier, concerns regarding the validity of amnesia were also expressed and debated in the Bianchi case of multiple personality (Orne et al., 1984; Watkins, 1984).

The foregoing discussion indicates that a variety of suggestions have been made about distinguishing between genuine and simulated amnesia. The most striking characteristic of these suggestions is that they lack empirical support. Only a few investigators have used objective methods to examine the character of alleged amnesia for a crime (e.g., Brandt, Rubinsky, & Lassen, 1985; Lynch & Bradford, 1980; Parwatikar et al., 1985). In these studies, however, the actual status of the subjects (i.e., genuinely amnesic or simulating) was unknown to the investigators; verification of subjects' status would have required a confession by simulators. Thus, even though simulated amnesia occurs frequently, and legal decisions of major importance hinge on accurate detection of simulation, there is as yet no reliable evidence that cases of genuine and simulated amnesia can be distinguished (for further discussion, see Schacter, 1986b).

Discriminating Between Genuine and Simulated Amnesias: A Laboratory Analogue

How can we create a foundation of basic knowledge that could provide a basis for distinguishing between genuine and simulated amnesia? One approach that should be pursued further is to study individuals who claim amnesia in criminal cases and attempt to determine which methods enable us to discriminate between genuine and simulating subjects. As just implied, however, the difficulty with this approach is that the only way we can know with certainty whether subjects are simulating is by direct ad-

mission on their part. Some simulators eventually admit their actions, but there is no reason to assume that all of them do. It might still be possible to build a profile of simulated amnesia on the basis of studies of subjects who at some point admit simulation and then apply that knowledge to other cases. However, the fact that we cannot be certain about the status of an unknown percentage of cases suggests the need for an alternative approach to complement research conducted in actual criminal cases of amnesia.

One such alternative is to create a laboratory analogue of the phenomenon. The purpose of a laboratory analogue is to capture the main features of a phenomenon that occurs in the clinic or in everyday life (for examples of laboratory analogue studies of various kinds of amnesia, see Detterman, 1976; Loftus & Burns, 1982; Mayes & Meudell, 1981; Schacter, Harbluk, & McLachlan, 1984; Schacter & Tulving, 1982; Weiskrantz & Warrington, 1975; Woods & Piercy, 1974). To create a laboratory analogue of a real-life situation in which a person claims amnesia for a specific event, "amnesia" could be induced in one group of subjects by asking them about an aspect of an event that is difficult to remember, whereas a second group could be instructed to simulate "amnesia" for the same event. The critical question is whether a measure can be found that distinguishes between genuine and simulating subjects. The major advantages of this approach are that (a) we know with certainty who genuinely cannot remember and who is simulating, and (b) we have the freedom—not readily available in actual cases—to explore a wide range of experimental situations and indices of performance. In view of these advantages, I have recently conducted a series of laboratory experiments that explore the relation between genuine and simulated forgetting of a specific event.

Before discussing these studies, however, one drawback inherent in this approach should be acknowledged: We do not know whether results obtained in a laboratory situation will generalize to the very different circumstances that are encountered in actual cases in which a person claims amnesia for a crime. It is likely that even the most diligent attempt to create a laboratory analogue that faithfully reflects key aspects of the phenomenon will be insufficient in important respects. One cannot, for practical and ethical reasons, induce extreme states of emotion in subjects who participate in a laboratory study, even though such states often accompany alleged amnesia for a crime; the motivation for successful simulation is almost certainly higher in actual cases than in the laboratory; and the content of the allegedly forgotten event in criminal cases—usually an act of physical violence—obviously cannot be duplicated in a laboratory study. For all of these reasons, the laboratory analogue that I will discuss does not attempt to mimic the exact circumstances that are encountered in claims of amnesia for criminal acts; its purpose is rather to provide some basic facts about the similarities and differences between genuine and simulated forgetting of a specific episode. Once a sufficient body of knowledge is established regarding

the relation between genuine and simulated forgetting, it may be possible to develop techniques that are applicable to actual cases.

A detailed description of the logic, method, and results of the experiments completed thus far has been provided elsewhere (Schacter, 1986a), so I will provide only a brief summary of them. The basic paradigm is one in which a group of college students are shown a relatively complex and lifelike episode—an excerpt from a novel in one experiment and a videotaped documentary in two others. One group is exposed to the episode by a first experimenter (Experimenter A) and is then questioned by a second experimenter (Experimenter B) about an aspect of the event that is virtually impossible to recall, such as a conversational detail. This group represents an analogue of a real-life situation in which a person has genuinely forgotten a specific event. A second group of subjects is exposed to the same event. In this group, however, Experimenter A supplies the correct answer to the question that is later asked by Experimenter B and instructs subjects to try to convince Experimenter B—who is unaware of their status—that they are genuinely unable to remember the event. This group represents an analogue of the situation in which a person claims amnesia for a particular event, even though he or she in fact remembers it.

What sort of measure would enable a naive observer to determine which subjects are simulating and which are genuinely unable to remember? One important characteristic of a useful measure is that it should rely solely on what subjects say when questioned at the time they attempt to recall the episode. In actual cases of simulated forgetting, investigators do not know what really occurred during the critical episode; they must depend entirely on what the person says about it. Thus, a laboratory procedure should not be dependent on an examiner's knowledge of what actually happened during the critical incident. In conformity with this requirement, our experiments explored the possibility that *feeling-of-knowing* ratings could provide a basis for distinguishing between genuine and simulating subjects. The feeling of knowing is a subjective conviction that one could retrieve or recognize an unrecalled item, event, or fact if one were given some useful hints or cues. People frequently report a feeling of knowing that they can recognize unrecalled events (e.g., Blake, 1973; Hart, 1967; Nelson, 1984; Nelson, Leonesio, Shimamura, Landwehr, & Narens, 1982; Schacter, 1983; Schacter & Worling, 1985). The feeling of knowing seemed well suited to the present concerns, because a feeling of knowing about an unrecalled event can be assessed in the absence of any knowledge about the contents of the event; an observer can simply ask people to rate the strength of their feeling of knowing that they could recall or recognize a forgotten event under specified conditions.

In our studies, Experimenter B asked subjects in both the genuine and the simulating groups to make feeling-of-knowing ratings regarding the likelihood that they could retrieve the forgotten event under different condi-

tions. Subjects were first asked to rate the likelihood that they could recall the forgotten event if they were given more time to try to remember it, and then they were asked to rate the likelihood that they would remember the event in the presence of various hints or cues.

The results of three experiments revealed that the types of feeling-of-knowing ratings made by subjects in the genuine and the simulating groups were similar in several respects (see Schacter, 1986a, for details). There was, however, one way in which feeling-of-knowing ratings made by genuine and simulating subjects differed: When asked to rate the likelihood that hints or cues would elicit the forgotten episode, simulators consistently provided lower feeling-of-knowing ratings than did genuinely forgetful subjects. That is, simulators tended to downplay the possibility that hints would help them to remember, whereas genuine subjects felt that hints would be very helpful.

One possible reason that simulators provided lower feeling-of-knowing ratings than did genuinely forgetful subjects involves their subjective notions about forgetting specific events. When attempting to simulate, subjects may have drawn upon their intuitions, beliefs, and assumptions concerning characteristics of memory loss in order to generate feeling-of-knowing ratings that would resemble those of a genuinely forgetful subject. It seems plausible to suggest that these intuitions and beliefs were not altogether accurate and that simulators therefore generated a pattern of feeling-of-knowing ratings that could be discriminated from those of genuine subjects (see Schacter, 1986a, 1986b, for further discussion). If this idea is indeed correct, it may contain a lesson for investigators who attempt to devise a technique for detecting simulated amnesia: A useful technique is likely to tap a feature of forgetting about which people have inaccurate intuitions and beliefs (cf. Brandt et al., 1985). Thus, an important task for future studies will be to examine in detail people's intuitions and assumptions concerning the characteristics of amnesia for specific events. Although students of memory have expressed some interest in the general issue of what people know or believe about memory function (e.g., Herrmann, 1982; Sehulster, 1981), little empirical research has been reported, and a great deal of work remains to be done. Note, however, that the general idea that simulators' inaccurate beliefs concerning the characteristics of a psychological phenomenon can provide a basis for detecting them has been applied in other situations that require identification of simulated psychological symptoms (e.g., Anthony, 1976; Kroger & Turnbull, 1975; Lezak, 1983; Resnick, 1984).

A second purpose of the laboratory analogue was to determine whether expert judges could distinguish between genuine and simulating subjects. In addition to making feeling-of-knowing ratings, subjects were required to "think out loud" for several minutes as they attempted to recall the forgotten episode. Verbal transcripts of the retrieval attempts were then given to psychologists and psychiatrists with professional interests in memory and amnesia, several of whom possess extensive experience

in assessing medicolegal cases involving simulated amnesia. Their task was to try to classify each subject as either genuine or simulating on the basis of the verbal protocols. This procedure was included because the literature contains no empirical information concerning experts' ability to detect simulated amnesia, even though this is clearly a critical issue in medicolegal contexts. In each of two experiments, the judges were unable to classify subjects with above-chance accuracy. Moreover, classification performance did not exceed chance even when judges indicated that they were certain that they had classified an individual subject correctly.

What accounts for the judges' poor performance? Once again, consideration of people's intuitions and beliefs about forgetting may provide some insight. Because little is known about the features that characterize forgetting of specific events, the judges probably did not have access to any specialized information that would be unavailable to simulators and therefore would provide a basis for detecting them. Instead, the judges may have drawn upon their own beliefs about the characteristics of genuine and simulated forgetting. It is possible, however, that these beliefs were quite similar to those held by the simulators. If such were the case, judges would not have had a reliable basis for distinguishing simulators from genuinely forgetful subjects. Nevertheless, it is possible that judges would have been able to discriminate accurately had they interviewed subjects themselves or had they been provided with visual or audio tapes of subjects; future research could examine this possibility experimentally. The poor performance of the judges is, however, consistent with previous findings that experts have difficulty detecting simulated psychological and psychiatric symptoms of various kinds (Alpert, Fox, & Kahn, 1980; Heaton, Smith, Lehman, & Vogt, 1978; Resnick, 1984).

In summary, the results of this laboratory analogue provide some preliminary information concerning the relation between genuine and simulated forgetting and perhaps suggest directions for future research. It bears repeating, however, that no claims can be made regarding the practical usefulness of the feeling-of-knowing procedure: We do not know whether feeling-of-knowing ratings can differentiate between genuine and simulated memory loss under conditions that approximate more closely the circumstances encountered in actual criminal cases, nor do we know whether the results can be replicated with subjects who are representative of criminal populations. In addition, the foregoing findings were based on differences between groups of subjects, whereas in actual criminal cases, it is necessary to classify individuals. To classify individuals, it would be desirable to have a measure that yields a nonoverlapping distribution of scores for genuine and simulating subjects. In these experiments, however, there was considerable overlap between the feeling-of-knowing ratings made by genuine and by simulating subjects.

One further point should be noted concerning the relation of the feeling-of-knowing procedure to actual cases of amnesia for crimes. Even if this procedure were

developed so that it permitted accurate classification of individual subjects under conditions that closely approximated those encountered in real life, a further problem would have to be confronted before the technique could be practically useful. Because the procedure is a relatively simple and straightforward one, it might be easy for an informed lawyer to "coach" a defendant to respond in a manner characteristic of a genuinely amnesic person. This is a problem that has not yet been addressed in the literature on amnesia and crime, perhaps because there are no widely accepted techniques or strategies for detecting simulated amnesia. It seems quite likely, however, that to be applicable, a technique for distinguishing between genuine and simulated amnesia in criminal cases must be one that cannot be easily "beaten" by appropriate coaching. To this end, it would be desirable to develop a technique that relies on a complex pattern of responses and that bases the discrimination between genuine and simulating subjects on a derived measure that does not bear a simple relation to any one response that the subject makes. This general strategy has been applied with some success to the detection of various simulated psychological disorders (e.g., Anthony, 1971; Bash & Alpert, 1980; Buckhart, Christian, & Gynther, 1978; Grow, McVaugh, & Eno, 1980).

Conclusions

The most striking feature of the literature concerning amnesia and crime is the lack of basic knowledge about key issues. In spite of the acknowledged importance of the problem, little is understood about the nature of amnesic episodes that are encountered in criminal cases, still less is known about how to determine whether a report of amnesia is genuine, and there is a glaring lack of information concerning experts' ability to detect simulated amnesia. Perhaps it is not entirely unrealistic to hope that the results of systematic research will soon provide a basis for changing this evaluation. Until that time, however, absolute statements about what can and cannot be remembered about the commission of a crime, such as the statement referred to at the beginning of this article, must be viewed with a great deal of skepticism.

REFERENCES

- Abeles, M., & Schilder, P. (1935). Psychogenic loss of personal identity. *Archives of Neurology and Psychiatry*, *34*, 587-604.
- Accused killer called "non-violent." (1982, July 21). *Toronto Star*, p. 10.
- Adatto, C. P. (1949). Observations on criminal patients during narcoanalysis. *Archives of Neurology and Psychiatry*, *62*, 82-92.
- Allison, R. B. (1984). Difficulties diagnosing the multiple personality syndrome in a death penalty case. *The International Journal of Clinical and Experimental Hypnosis*, *32*, 102-117.
- Alpert, S., Fox, H. M., & Kahn, M. W. (1980). Faking psychosis on the Rorschach: Can expert judges detect malingering? *Journal of Personality Assessment*, *44*, 115-119.
- Anthony, N. (1971). Comparison of clients' standard, exaggerated, and matching MMPI profiles. *Journal of Consulting and Clinical Psychology*, *36*, 100-103.
- Anthony, N. (1976). Malingering as role taking. *Journal of Clinical Psychology*, *32*, 32-41.
- Bash, I. Y., & Alpert, M. (1980). The determination of malingering. *Annals of the New York Academy of Sciences*, *347*, 86-99.
- Berrington, W. P., Liddell, D. W., & Foulds, G. A. (1956). A re-evaluation of the fugue. *Journal of Mental Science*, *102*, 280-286.
- Birnbaum, I. M., & Parker, E. S. (Eds.). (1977). *Alcohol and memory*. Hillsdale, NJ: Erlbaum.
- Blake, M. (1973). Prediction of recognition when recall fails: Exploring the feeling of knowing phenomenon. *Journal of Verbal Learning and Verbal Behavior*, *12*, 311-319.
- Bower, G. H. (1981). Mood and memory. *American Psychologist*, *36*, 129-148.
- Bradford, J. W., & Smith, S. M. (1979). Amnesia and homicide: The Padola case and a study of thirty cases. *Bulletin of the American Academy of Psychiatry and Law*, *7*, 219-231.
- Brandt, J., Rubinsky, E., & Lassen, G. (1985). Uncovering malingered amnesia. *Annals of the New York Academy of Sciences*, *444*, 502-503.
- Buckhart, B. R., Christian, W. L., & Gynther, M. D. (1978). Item subtlety and faking on the MMPI: A paradoxical relationship. *Journal of Personality Assessment*, *42*, 76-80.
- Cermak, L. S. (Ed.). (1982). *Human memory and amnesia*. Hillsdale, NJ: Erlbaum.
- Christianson, S.-A., & Nilsson, L.-G. (1984). Functional amnesia as induced by a psychological trauma. *Memory & Cognition*, *12*, 142-155.
- Cocklin, K. (1981). Amnesia: The forgotten justification for finding an accused incompetent to stand trial. *Washburn Law Journal*, *20*, 289-306.
- Detterman, D. K. (1976). The retrieval hypothesis as an explanation of induced retrograde amnesia. *Quarterly Journal of Experimental Psychology*, *28*, 623-632.
- Diamond, B. (1969, September). Interview regarding Sirhan Sirhan. *Psychology Today*, 48-55.
- Eich, J. E. (1980). The cue-dependent nature of state-dependent retrieval. *Memory & Cognition*, *8*, 157-173.
- Fisher, C. (1945). Amnesic states in war neuroses: The psychogenesis of fugues. *Psychoanalytic Quarterly*, *14*, 437-468.
- Forsyth, D. (1940). The case of a middle-aged embezzler. *British Journal of Medical Psychology*, *18*, 141-153.
- Furieux, R. (1960). *Guenther Padola*. London: Stevens.
- Gibbens, T. C. N., & Williams, J. E. H. (1977). Medicolegal aspects of amnesia. In C. W. M. Whitty & O. L. Zangwill (Eds.), *Amnesia* (pp. 245-264). London: Butterworths.
- Gillespie, R. D. (1937). Amnesia. *Archives of Neurology and Psychiatry*, *37*, 748-764.
- Goodwin, D. W. (1974). Alcoholic blackout and state-dependent learning. *Federation Proceedings*, *33*, 1833-1835.
- Goodwin, D. W., Crane, J. B., & Guze, S. B. (1969). Phenomenological aspects of the alcoholic "blackout." *British Journal of Psychiatry*, *115*, 1033-1038.
- Goodwin, D. W., Othmer, E., Halikas, J. A., & Freeman, F. (1970). Loss of short-term memory as a predictor of the alcoholic "blackout." *Nature*, *227*, 201-202.
- Grow, R., McVaugh, W., & Eno, T. D. (1980). Faking and the MMPI. *Journal of Clinical Psychology*, *36*, 910-917.
- Gudjonsson, G. H. (1979). The use of electrodermal responses in a case of amnesia (A case report). *Medicine, Science and the Law*, *19*, 138-140.
- Gudjonsson, G. H., & Haward, L. R. C. (1982). Case report—Hysterical amnesia as an alternative to suicide. *Medicine, Science and the Law*, *22*, 68-72.
- Gudjonsson, G. H., & Mackeith, J. A. C. (1983). A specific recognition deficit in a case of homicide. *Medicine, Science and the Law*, *23*, 37-40.
- Guttmacher, M. S. (1955). *Psychiatry and the law*. New York: Grune & Stratton.
- Hart, J. T. (1967). Memory and the memory-monitoring process. *Journal of Verbal Learning and Verbal Behavior*, *6*, 685-691.
- Heaton, R. K., Smith, H. H., Lehman, R. A. W., & Vogt, A. T. (1978). Prospects for faking believable deficits on neuropsychological testing. *Journal of Consulting and Clinical Psychology*, *46*, 892-900.

- Herrmann, D. J. (1982). Know thy memory: The use of questionnaires to assess and study memory. *Psychological Bulletin*, 92, 434-452.
- Hirst, W. (1982). The amnesic syndrome: Descriptions and explanations. *Psychological Bulletin*, 91, 435-460.
- Hopwood, J. S., & Snell, H. K. (1933). Amnesia in relation to crime. *Journal of Mental Science*, 79, 27-41.
- Kanzer, M. (1939). Amnesia: A statistical study. *American Journal of Psychiatry*, 96, 711-716.
- Kennedy, A., & Neville, J. (1957). Sudden loss of memory. *British Medical Journal*, 2, 428-433.
- Keyes, D. (1982). *The minds of Billy Milligan*. New York: Bantam Books.
- Kiersch, T. A. (1962). Amnesia: A clinical study of ninety-eight cases. *American Journal of Psychiatry*, 119, 57-60.
- Kleinmuntz, B., & Szucko, J. J. (1984). Lie detection in ancient and modern times: A call for contemporary scientific study. *American Psychologist*, 39, 766-776.
- Koson, D., & Robey, A. (1973). Amnesia and competency to stand trial. *American Journal of Psychiatry*, 130, 588-592.
- Kroger, R. O., & Turnbull, W. (1975). Invalidity of validity scales: The case of the MMPI. *Journal of Consulting and Clinical Psychology*, 43, 48-55.
- Kroger, W., & Douc e, R. (1979). Hypnosis in criminal investigation. *International Journal of Clinical and Experimental Hypnosis*, 27, 358-374.
- Lasky, R. (1982). *Evaluation of criminal responsibility in multiple personality and the related dissociative disorders*. Springfield, IL: Charles C Thomas.
- Leitch, A. (1948). Notes on amnesia in crime for the general practitioner. *Medical Press*, 219, 459-463.
- Lennox, W. G. (1943). Amnesia, real and feigned. *American Journal of Psychiatry*, 99, 732-743.
- Lezak, M. D. (1983). *Neuropsychological assessment*. (2nd ed.). New York: Oxford University Press.
- Lisman, S. A. (1974). Alcoholic "blackout": State dependent learning? *Archives of General Psychiatry*, 30, 46-53.
- Loftus, E. F., & Burns, T. E. (1982). Mental shock can produce retrograde amnesia. *Memory & Cognition*, 10, 318-323.
- Ludwig, A. M., Brandsma, J. M., Wilbur, C. B., Bendfeldt, F., & Jameson, D. A. (1972). The objective study of multiple personality. *Archives of General Psychiatry*, 26, 298-310.
- Lykken, D. T. (1981). *A tremor in the blood: Uses and abuses of the lie detector*. New York: McGraw-Hill.
- Lynch, B. E., & Bradford, J. M. W. (1980). Amnesia: Its detection by psychophysiological measures. *Bulletin of the American Academy of Psychiatry and the Law*, 8, 288-297.
- Martin, G. A. (1981). Mental disorder and criminal responsibility in Canadian law. In S. J. Hucker, C. D. Webster, & M. H. Ben-Aron (Eds.), *Mental disorder and criminal responsibility* (pp. 15-31). Toronto: Butterworths.
- Mayes, A., & Meudell, P. (1981). How similar is immediate memory in amnesic patients to delayed memory in normal subjects? A replication, extension and reassessment of the amnesic cueing effect. *Neuropsychologia*, 19, 647-654.
- Nelson, T. O. (1984). A comparison of current measures of the accuracy of feeling-of-knowing predictions. *Psychological Bulletin*, 95, 109-133.
- Nelson, T. O., Leoncio, R. J., Shimamura, A. P., Landwehr, R. F., & Narens, L. (1982). Overlearning and the feeling of knowing. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 8, 279-288.
- O'Connell, B. A. (1960). Amnesia and homicide. *British Journal of Delinquency*, 10, 262-276.
- Orne, M. T. (1979). The use and misuse of hypnosis in court. *International Journal of Clinical and Experimental Hypnosis*, 27, 311-341.
- Orne, M. T., Dinges, D. F., & Orne, E. C. (1984). On the differential diagnosis of multiple personality in the forensic context. *The International Journal of Clinical and Experimental Hypnosis*, 32, 118-169.
- Parwatar, S. D., Holcomb, W. R., & Menninger, K. A., II. (1985). The detection of malingered amnesia in accused murderers. *Bulletin of the American Academy of Psychiatry and the Law*, 13, 97-103.
- Power, D. J. (1977). Memory, identification and crime. *Medicine, Science, and the Law*, 17, 132-139.
- Price, G. E., & Terhune, W. B. (1919). Feigned amnesia as a defense reaction. *Journal of the American Medical Association*, 72, 565-567.
- Resnick, P. J. (1984). The detection of malingered mental illness. *Behavioral Sciences and the Law*, 2, 21-37.
- Rosesch, R., & Golding, S. L. (1980). *Competency to stand trial*. Urbana: University of Illinois Press.
- Rubinsky, E. W., & Brandt, J. (1985). *Amnesia as a criminal defense: A challenge to neuropsychology*. Manuscript submitted for publication.
- Russell, W. R., & Nathan, P. W. (1946). Traumatic amnesia. *Brain*, 69, 280-300.
- Sadoff, R. L. (1974). Evaluation of amnesia in criminal legal situations. *Journal of Forensic Sciences*, 19, 98-101.
- Schacter, D. L. (1983). Feeling of knowing in episodic memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 9, 39-54.
- Schacter, D. L. (1986a). Feeling-of-knowing ratings distinguish between genuine and simulated forgetting. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 12, 30-41.
- Schacter, D. L. (1986b). On the relation between genuine and simulated amnesia. *Behavioral Sciences and the Law*, 4, 47-64.
- Schacter, D. L., & Crovitz, H. F. (1977). Memory function after closed head injury: A review of the quantitative research. *Cortex*, 13, 150-176.
- Schacter, D. L., Harbluk, J. L., & McLachlan, D. R. (1984). Retrieval without recollection: An experimental analysis of source amnesia. *Journal of Verbal Learning and Verbal Behavior*, 23, 593-611.
- Schacter, D. L., & Tulving, E. (1982). Amnesia and memory research. In L. S. Cermak (Ed.), *Human memory and amnesia* (pp. 1-32). Hillsdale, NJ: Erlbaum.
- Schacter, D. L., Wang, P. L., Tulving, E., & Freedman, M. (1982). Functional retrograde amnesia: A quantitative case study. *Neuropsychologia*, 20, 523-532.
- Schacter, D. L., & Worling, J. R. (1985). Attribute information and the feeling of knowing. *Canadian Journal of Psychology*, 39, 467-475.
- Schreiber, F. (1973). *Sybil*. Chicago: Regency.
- Schulster, J. R. (1981). Structure and pragmatics of a self-theory of memory. *Memory & Cognition*, 9, 263-276.
- Sisler, G., & Penner, H. (1975). Amnesia following severe head injury. *Canadian Psychiatric Association Journal*, 20, 333-336.
- Squire, L. R. (1982). The neuropsychology of human memory. *Annual Review of Neuroscience*, 5, 241-273.
- Tarter, R. E., & Schneider, D. U. (1976). Blackouts. Relationship with memory capacity and alcoholism history. *Archives of General Psychiatry*, 33, 1492-1496.
- Taylor, P. J., & Kopelman, M. D. (1984). Amnesia for criminal offences. *Psychological Medicine*, 14, 581-588.
- Teasdale, J. D., & Fogarty, S. J. (1979). Differential effects of induced mood on retrieval of pleasant and unpleasant events from episodic memory. *Journal of Abnormal Psychology*, 88, 248-257.
- Thigpen, C. H., & Cleckley, H. M. (1957). *The three faces of Eve*. New York: McGraw Hill.
- Travis, N. (1973). Observations of blackouts and other alcohol-induced memory impairments. *Dissertation Abstracts International*, 34B, 429B.
- Watkins, J. G. (1984). The Bianchi (L. A. Hillside Strangler) case: Sociopath or multiple personality? *The International Journal of Clinical and Experimental Hypnosis*, 32, 67-101.
- Weiskrantz, L., & Warrington, E. K. (1975). Some comments on Woods' and Piercy's claim of a similarity between amnesic memory and normal forgetting. *Neuropsychologia*, 13, 365-368.
- Whitty, C. W. M., & Zangwill, O. L. (Eds.). (1977). *Amnesia*. London: Butterworths.
- Wilson, G., Rupp, C., & Wilson, W. W. (1950). Amnesia. *American Journal of Psychiatry*, 106, 481-485.
- Wolf, A. S. (1980). Homicide and blackout in Alaskan natives. *Journal of Studies on Alcohol*, 41, 456-462.
- Woods, R. T., & Piercy, M. (1974). A similarity between amnesic memory and normal forgetting. *Neuropsychologia*, 12, 437-445.