Amnesia and Crime

Dominique Bourget, MD, and Laurie Whitehurst, PhD

Amnesia for serious offenses has important legal implications, particularly regarding its relevance in the contexts of competency to stand trial and criminal responsibility. Forensic psychiatrists and other mental health professionals are often required to provide expert testimony regarding amnesia in defendants. However, the diagnosis of amnesia presents a challenge, as claims of memory impairment may stem from organic disease, dissociative amnesia, amnesia due to a psychotic episode, or malingered amnesia. We review the theoretical, clinical, and legal perspectives on amnesia in relation to crime and present relevant cases that demonstrate several types of crime-related amnesia and their legal repercussions. Consideration of the presenting clinical features of crime-related amnesia may enable a fuller understanding of the different types of amnesia and assist clinicians in the medico-legal assessment and diagnosis of the claimed memory impairment. The development of a profile of aspects characteristic of crime-related amnesia would build toward establishing guidelines for the assessment of amnesia in legal contexts.

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The forensic literature is replete with reports of offenders who have claimed total or partial amnesia for violent crimes, including murder or attempted murder.[1–14] Claims of amnesia have been reported in an estimated range of 10 to 70 percent of homicides. Memory impairment during the commission of crimes has also been reported by perpetrators of domestic violence[15–19] and by sex offenders.[1–3,6]

Dissociation and Dissociative Amnesia

While memory disturbances are often associated with organic brain disease, crime-related amnesia raises the question of dissociation, a term that refers to the disruption of normally integrated functions of consciousness, memory, identity, or perception of the environment. A dissociative state is an altered state of consciousness concurrent with a traumatic experience. Dissociative amnesia, formerly termed psychogenic or functional amnesia, is a disorder characterized by the inability to remember important personal experiences and events after a traumatic experience of psychological origin.[20]

Current psychiatric diagnostic systems differ in their definition of the term dissociation and in the classification of dissociative disorders. These inconsistencies have, in part, resulted in confusion surrounding how dissociation is conceptualized. Spitzer and colleagues[21] reviewed recent efforts to clarify the conceptualization of dissociation by distinguishing between types (pathologic versus nonpathologic dissociation) and related phenomena (detachment versus compartmentalization). Pathologic dissociation has been viewed as a categorical phenomenon characteristic of individuals with dissociative disorder,[22] while nonpathologic dissociation has been conceptualized as a dimensional construct that may range from common daydreaming to severe dissociative disorders.[23–26] Although there is some empirical evidence of a distinction between pathologic and nonpathologic dissociation,[22,27] there is ongoing controversy over its application to clinical diagnosis and classification.[21]

Detachment is thought to arise from intense fear or trauma and has been defined as an altered state of consciousness involving a disconnection from one's sense of self (depersonalization) or the external world (derealization).[28] Dissociative amnesia may result when detachment interferes with the encoding and storage of traumatic information.[21,28,29] Compartmentalization is characterized by the failure to control cognitive functions or actions normally amenable to intentional control (including the inability to bring normally accessible information into conscious awareness).[28] The affected functions and related information are pre-

Dr. Bourget is Associate Professor, Department of Psychiatry, and Part-time Professor, Department of Psychology, University of Ottawa, and Forensic Psychiatrist, Royal Ottawa Mental Health Centre, Ottawa, Ontario, Canada. Dr. Whitehurst is Professor, Department of Psychology, University of Ottawa, Ottawa, Ontario, Canada. Address correspondence to: Dominique Bourget, MD, Royal Ottawa Mental Health Centre, 1145 Carling Avenue, Ottawa, ON K1Z 7K4. E-mail: dbourget@rohcg.on.ca

served and continue to influence emotion, cognition, and behavior. In this view, dissociative amnesia may represent the compartmentalization form of dissociation and reflect a retrieval deficit that prevents the volitional recall of stored information.

Theoretical Perspectives on Amnesia

Dissociative Amnesia

Various frameworks have been put forth to account for how and why dissociative amnesia might occur. Many psychological explanations include the proposal that dissociative amnesia serves a protective function of minimizing the adverse emotional consequences of trauma, either by impairing encoding of the traumatic experience,[30] or by repressing the experience from conscious awareness.[10,11] Although repressed memory may be a plausible explanation for dissociative amnesia, the lack of scientific evidence of repression has been noted.[31]

Another explanation holds that dissociative amnesia is best understood from a biological and neurological perspective.[32] In this view, biological reactions to psychological trauma, such as neuroendocrine dysregulation resulting from extreme stress, have acute effects on attention and memory encoding and consolidation.[30,32] Repeated exposure to stress may result in widespread alterations in neurotransmission[33,34] and direct effects on brain function.[32,35]

Studies of glucocorticoid treatment in humans have shown that elevated glucocorticoid levels reduce traumatic memory retrieval[36–40] by inhibiting activity in the medial temporal lobe.[37] Acute psychosocial stress may impair delayed memory retrieval in humans.[41] Kuhlmann and colleagues[41] suggest that retrieval of emotionally arousing material is particularly sensitive to the effect of psychosocial stress.

It has been noted that the distinction between organic amnesia and dissociative amnesia may be arbitrary, as both may be a consequence of brain changes that lead to disruptions of memory processes. Markowitsch and colleagues[42–46] described several patients with dissociative amnesia who, compared with nonamnesic patients, showed metabolic brain alterations in memory-processing regions. In one patient, positron emission tomography (PET) imaging did not show increased right-hemispheric glucose metabolism during a task requiring autobiographical memory,[42] whereas another patient displayed substantially reduced glucose metabolism in the right frontotemporal area.[45] Based on this research, Markowitsch[47] suggested that the retrieval of autobiographical events is blocked or disrupted as a consequence of an imbalance in brain activity in patients with dissociative amnesia. In contrast, Yasuno *et al.*[48] found increased activation in the right anterior medial temporal lobe (including the amygdala) in a patient with dissociative amnesia during a task requiring explicit retrograde memory. In control subjects, bilateral hippocampal region activation was increased during the task. During recovery from the amnestic state one year later, the subject showed decreased activation in the medial temporal region and increased activation in the right hippocampal region.

Psychiatric accounts of crime-related dissociative amnesia propose that a dissociative state due to strong emotional stress is present during the commission of the offense. In this view, dissociation occurs and later memory retrieval is impaired by extreme levels of arousal accompanying crime-related behavior. A heightened state of arousal may inhibit the encoding of an autobiographical memory for the event,[49] or the person's own actions may be the source of the stress, impairing encoding and producing the amnesia.[31,50] However, the premise that dissociative amnesia stems from concurrent high emotional stress has been questioned, based mainly on the argument that amnesia does not always develop for events that are accompanied by strong emotional reactions.[51]

Amnesia Due to a Psychotic Episode

Crime-related amnesia may occur due to the presence of a psychotic episode. Psychosis is associated with an increased prevalence of violent crime, including homicidal behavior.[52–59] Taylor and Kopelman[14] reported that 7 of 19 offenders who claimed amnesia for their violent crimes had a primary diagnosis of schizophrenia. A recent study of the psychiatric aspects of 118 cases of criminal homicide found that psychotic disorder, mainly paranoid schizophrenia, and alcohol intoxication accounted for the offenses of 24 percent of offenders who claimed amnesia for their crimes.[60] It has been suggested that the presence of psychosis impairs attention, impeding the encoding of events.[2,9]

Amnesia Due to Sleep Disorders

Amnesia for crime may also be associated with sleep disorders. There are several case reports of amnesia for violence, including homicide, committed in a state of sleepwalking (somnambulism)[61–68] or sleep terror.[69,70] Shapiro and colleagues[71] describe a parasomnic behavior (termed sexsomnia) based on a case series of 11 individuals who initiated sexual behavior while asleep. All of the individuals claimed to be unaware of their behavior. Three cases faced legal charges pertaining to the sexual behavior. Polysomnographic features of parasomnia were revealed in sleep studies of all (nine) tested individuals. The authors note distinguishing features of sexsomnia and propose that sexsomnia be viewed as a distinct variant of sleepwalking.[71]

Clinical Perspectives on Crime-Related Amnesia

In clinical practice, there is a need to distinguish between different types of claimed memory impairment, including amnesia caused by organic disease, dissociative amnesia, amnesia due to a psychotic episode, and feigned or malingered amnesia. Several clinical and offense-related features have been observed in offenders who claim amnesia for crimes.

Amnesia for an offense is commonly associated with excessive consumption of alcohol, with or without concurrent use of other licit or illicit drugs and may be classified as a dissociative or an organic form of amnesia. When viewed as an organic form, amnesia resulting from intoxication generally involves extreme peak levels[72] and a longstanding history of alcohol abuse.[2,6,73] Memory impairments produced by alcohol have been linked to a disruption of hippocampal function by ethanol, which directly alters hippocampal neural activity and interacts with neurons in afferent brain structures (for a review, see Ref. 74). Memory loss due to alcohol intoxication may occur because of an encoding deficit that results in a "blackout" of the offense.

The state-dependent memory theory[75] is invoked to account for the combination of dissociative amnesia and alcohol or drug use. In this theory, memories encoded during intoxication cannot be retrieved unless the intoxication is reinstated. As some researchers have found a correlation of learning and memory with mood state,[76] the state-dependent memory theory may warrant further investigation and research. Conversely, Wolf[77] showed that when a significant amount of alcohol was given to homicide offenders claiming amnesia for crimes committed under the influence of alcohol, the offenders continued to report memory loss for details of their crimes.

Organic Amnesia

Organic amnesia is caused by a structural defect such as traumatic brain injury, neurologic disease, or acute alcohol or drug intoxication. Organic retrograde amnesia occurs most frequently with bilateral damage to medial or anterior temporal or prefrontal brain regions.[47] The right temporofrontal region is thought to be important in the retrieval of past personal emotional events.[78] However, as organic pathology is usually indicated by failures of retention of information,[2] problems with memory storage rather than retrieval may underlie the memory dysfunction in organic amnesia.[79]

Individuals with organic amnesia often show an emotional flattening and reduced insight into their condition.[45] Crime-related organic amnesia is often for events of lengthy duration and may be for events not directly related to the offense.[2] The memory impairment is permanent and may be complete or partial.[2,73,80]

Dissociative Amnesia

Studies of dissociative amnesia in relation to criminal behavior report an association between a claim of amnesia and several variables relating to the offense or to the offender. Although there are reports of full or complete dissociative amnesia, it is usually described as a hazy or patchy memory for events directly related to the crime and localized to the actual time of the act itself.[2] The amnestic period has a sudden onset[2] and has been described as blurred at the beginning and end.[73] While few studies have examined follow-up information regarding recovery of memory, there are reports of transient memory loss for crimes.[73,80]

Dissociative amnesia is associated with crimes that are committed in a state of extreme emotional arousal and in which the victim is known intimately by the offender.[2,12,14–19,73,79,81] Frequently, the crime is unplanned and no motive is discernible.[14,73,79] The incidence of amnesia claims increases with the severity of the violence.[1–3,12,14,49,82] Crime-related dissociative amnesia is associated with

alcohol abuse,[1,11,14,18,73,79,80,83,84] and alcoholic offenders may be over-represented.[4]

In a recent Canadian case, a nurse experienced a dissociative episode when an elderly bedridden patient yelled at her for accidentally spilling a bedpan. With her emotional triggers setting off her dissociative behavior, she did not recall using a metal table leg to strike repeatedly and kill the patient, who died of a severe brain injury. She had had previous amnestic episodes and received a diagnosis of dissociative disorder. Her dissociative behavior is thought to be based in part on a deprived childhood and sexual abuse. She was found not to be criminally responsible for the crime.[85]

Some studies of dissociative amnesia for crimes report that offenders who claim memory loss are more likely than nonamnesic offenders to have a history of alcoholic or dissociative blackouts not due to organic causes, or a previous psychiatric disorder.[14,73,80] Depressive symptoms have been reported in offenders claiming amnesia for their crimes.[11,14]

An investigation of the role of personality factors in crime-related amnesia found that offenders who claimed partial amnesia for their crimes scored higher than nonamnesic offenders on measures of introversion and lower on measures of impulsivity and hostility.[6] In a study of 105 accused homicide offenders, Parwatikar and coworkers[11] reported that those who claimed amnesia for their crimes scored higher on the neurotic triad scales of the MMPI. Other psychological characteristics, such as relatively low intelligence and manipulative behavior, including the tendency to feign symptoms, have been noted in offenders who claim amnesia for their crimes.[3,9,11,84] However, other research found no evidence to suggest that offenders who claimed amnesia for their crimes had lower intelligence levels.[4]

Offenders who claim amnesia for crimes are, on average, older[4,14,80] and may have more prior convictions than those who do not claim amnesia.[4] It has been noted that offenders who claim crime-related dissociative amnesia often alert the police to their crimes[79] and are less likely to deny the offense than are those who do not claim amnesia.[31,80]

Dissociative Identity Disorder

Dissociative identity disorder (DID; formerly termed multiple-personality disorder) is considered to be a severe dissociative disorder. The DSM-IV[20] characterizes DID by the presence of at least two distinct identities that, in turn, take control of the individual's behavior. Memory dysfunction is a key diagnostic criterion of DID.[20] The post-traumatic model of DID proposes that the disorder stems from a natural defensive reaction to extreme childhood trauma that results in dissociative states (viewed as separate identities) in which memories of traumatic events are stored.[86–89] In this model, dissociated memories of experiences may be partially or totally inaccessible for voluntary retrieval by some dissociative identities (interidentity amnesia).[90–92] Interidentity amnesia may be one-way (asymmetric) or two-way (symmetric) and can coexist in an individual with DID.[90]

Controversy surrounds the diagnostic validity of DID. While results of studies on interidentity amnesia in dissociative disorders indicate that explicit memory appears to be diminished in DID (for a review, see Ref. 93), skepticism has been raised, in part by reports of cases of DID with apparent malingering[94–97] and assertions that symptoms of DID cannot be reliably distinguished from malingering.[98–100]

The potential for malingering presents a significant challenge in forensic assessments of offenders diagnosed with DID and claiming amnesia for violent crimes. Perr[101] reviewed a case in which a 49-year-old man (Mr. A) was given a diagnosis of multiple personality disorder (MPD) in 1975, 10 years before he was charged with the murder of his girlfriend. He denied any knowledge of the homicide, but stated that one of his other personalities, Billy Ray, may have committed the murder. While Mr. A claimed to have no personal awareness of his alternate personalities, others reported several experiences with Billy Ray, described as a sociopathic personality that displayed bizarre, threatening, and violent behavior.

Extensive corroborative reports of Mr. A's history of violent behavior and psychiatric records were available for a 9-year period before the homicide. Mr. A had received several diagnoses in addition to MPD, including paranoid schizophrenia, bipolar disorder with psychotic features, major depression, psychotic depressive reaction, and alcohol abuse. Longstanding periods of amnesia and fugue states were indicated. Despite Mr. A's psychiatric history, a mental status review 11 months after the homicide revealed no signs or symptoms of mental illness, raising the concern of possible malingering. However, extensive records and observations supported the existence of a

severe and chronic condition, and Mr. A was found not guilty by reason of insanity.[101]

Amnesia Due to a Psychotic Episode

Amnesia for crime may result from impairments of attention due to the delusional thinking characteristic of most types of schizophrenia. However, some psychotic individuals have no obvious delusions or hallucinations but display outbursts of violent behavior, including homicidal behavior, for which there is no discernible motive.[102] Clinical features include denial of the illness and amnesia for schizophrenic outbursts. This occurs mostly in individuals with disorganized schizophrenia, which is characterized by severe disorganization of thinking and behavior.

Nolan and colleagues[103] assessed the extent to which psychosis, disordered impulse control, and psychopathy contribute to assaultive behavior of psychiatric inpatients, most of whom had a diagnosis of schizophrenia or schizoaffective disorder. Factor analysis of assailant interview ratings revealed that positive psychotic symptoms (i.e., delusions and hallucinations with threatening content) accounted for about 20 percent of assaults. However, the analysis also showed a high loading for "amnesia," indicating frequent endorsement of items indicating assailants' inability to provide a reason for the assault or lack of recall of the event itself. Nolan *et al*. suggest that psychotic confusion and disorganization may contribute to aggression by causing assailants to misunderstand the actions of their victims.

Amnesia due to a psychotic episode is illustrated in a case examined by one of the authors (DB), of a man in his early 20s who was involved in repeated incidents of physical assault on adolescent victims. The man's behavior and thinking were severely disorganized, and he was unable to provide a coherent account of the incidents. His psychotic state and disorganized, unpredictable behavior had developed in a progressive fashion. Collateral information from his relatives revealed that his overall level of functioning had significantly declined over the previous two years. While the man was reclusive and withdrawn, his parents had observed numerous instances of abnormal and bizarre behavior. His diagnosis was schizophrenia, disorganized type.

Psychotic features (i.e., delusions and auditory and/or visual hallucinations) occur relatively frequently in major depressive episodes.[104] While it has been reported that psychotic depression is more severe than nonpsychotic depression,[105] Ohayon and Schatzberg[104] determined in a general population study that depression with psychotic features was not associated with severity. These authors found that feelings of worthlessness or guilt were frequently associated with psychotic features.

Malmquist[106] proposed that most depressed individuals who commit homicide are of the psychotic type. Depressive disorders have been reported frequently in parents who have murdered their children.[107–111] In a recent study of fathers who had committed filicide we determined that psychotic elements were present at the time of the offense in 12 (39%) of the 31 cases in which the diagnosis was depression.[109]

Amnesia Due to Sleep Disorders

Current DSM-IV criteria for sleepwalking disorder include behavioral arousals in slow-wave sleep, unresponsiveness during the episode, confusion or disorientation after awakening, and amnesia for the episode after full awakening.[20] Disturbed psychological functioning can continue for as long as one hour after an episode of violent behavior.[70] Sleep terror disorder differs from sleepwalking disorder by the presence of autonomic and emotional arousal. The two parasomnia disorders may occur in the same episode and may overlap.[70] In both disorders the violent behavior typically follows an episode of partial arousal from early non-REM sleep, usually within two hours after sleep onset.[112] This episode of partial arousal from deep sleep is characterized by the appearance of waking brain functioning in some but not all brain areas.[70] Highly complex activities can be engaged in for extended periods during both sleepwalking and sleep terrors.[70,113]

A recent comprehensive review of non-REM parasomnias in adults[114] concludes that sleepwalking may result from the interaction of physical and environmental factors in a genetically susceptible individual. Factors that may contribute to the onset of sleepwalking episodes by increasing slow-wave sleep or making arousal from sleep more difficult include prior ingestion of alcohol, drugs, and (or) medication, prior sleep deprivation, and situational stress.

A review of 50 reports of sleepwalking violence noted that the violent behavior was often described as unpremeditated.[112] Most of the offenders were men between the ages of 27 and 48, with a marked personal and/or family history of parasomnia disorders.

Several features may distinguish sexual behavior in sleep from other parasomnias such as sleepwalking.[71] In most cases, sexsomnia originates from non-REM sleep and occurs at any time during sleep. There is widespread autonomic activation, and sexual arousal is frequently (but not always) present. Violence or injurious behavior occurs infrequently.

In their study of nine men and two women who initiated sexual behavior while asleep, Shapiro and colleagues[71] reported that most had a personal and/or family history of parasomnia (sleepwalking, sleep talking, and sleep terror). Other related diagnoses included sleep apnea and paraphilia, posttraumatic stress disorder, major depression, schizophrenia, and developmental delay.[1] Five of the individuals had a history of substance abuse or used alcohol in excess before the event. Ages ranged from 16 to 43 years.

Sexsomnia is illustrated in the case of a 49-year-old man who was charged with sexual assault on a 14-year-old girl after he had entered the girl's bed and fondled her. The man presented a defense of being in a state of somnambulism when the event occurred, and his girlfriend testified that he often initiated sex with her while sleeping. However, the court found him guilty. As the man was not considered to be a risk to society, he was given absolute discharge and two years' probation.[115]

Malingered Amnesia

Another interpretation of crime-related amnesia acknowledges the likelihood that some offenders intentionally fabricate memory loss to avoid punishment for a crime or for other personal gain. While an early study reported that 20 percent of the offenders claiming amnesia were fabricating the memory loss,[73] it has been suggested that the rate of malingering is higher.[116] The likelihood of malingered amnesia may be greater in offenders with antisocial personality disorder.[31,84] Using polygraphy, Lynch and Bradford[84] showed that offenders with antisocial personality disorder have a higher propensity to feign amnesia for crimes, compared with those with no personality disorder or other psychopathologic disorders. It has been suggested that offenders with antisocial personality disorder may be prone to malingering amnesia for crimes in part because of the tendencies of manipulation, habitual deceit, and a general poverty in major affective reactions that characterize this disorder.[31,84] Other authors have noted the possible contribution of low intelligence and frontal executive dysfunction to the feigning of amnesia for crimes.[3,117] However, as it is possible that highly intelligent malingerers are more adept at feigning amnesia for crimes and may thus evade detection and less frequently receive a diagnosis of malingering, further research may help to clarify a link between low intelligence/frontal executive dysfunction and feigned amnesia.

Legal Perspectives on Amnesia

Amnesia for serious offenses has important legal implications in the contexts of competency to stand trial and criminal responsibility. As per the competency standard set by *Dusky v. U.S.*,[118] amnesia could render a defendant incompetent to stand trial because memory loss for the events would prevent him or her from having a reasonable degree of rational understanding and restrict his or her ability to assist counsel in the preparation of his or her defense. Moreover, Tysse[119] points out that because of the defendant's inability to assist in his or her own defense, he or she could not have a fair trial, as he or she might not be able to employ some circumstance significant to his or her own defense. The issue of competency to stand trial was addressed in the famous case of *Wilson v. U.S.*[120] Robert Wilson sustained a serious head injury in a motor vehicle accident while allegedly attempting to escape from the scene of a robbery. When he regained consciousness three weeks later, Mr. Wilson reported that he had no recollection of events surrounding the offense. While an initial hearing concluded that Mr. Wilson was suffering organic amnesia and was incompetent, a second hearing found him competent to stand trial despite his continued reported inability to remember the relevant events of the crime. Mr. Wilson was subsequently tried and convicted. In that decision, the U.S. Court of Appeals, DC Circuit, ruled that a lack of memory for an alleged offense does not automatically constitute incompetence. The U.S. Court of Appeals concluded that six factors should be addressed in evaluating the impact of amnesia on a defendant's ability to stand trial. These factors involved the defendant's ability to consult with and assist his attorney, the extent to which the memory loss affected the defendant's ability to testify and to reconstruct evidence extrinsically; the extent to which the government assisted in that reconstruc-

tion; the strength of the prosecution's case; and any other general factors relevant to the case.

Regarding cases involving psychosis, a disordered thought process or delusions may render a defendant incapable of a rational understanding of charges, or limit his full appreciation of a faced sentence. However, the presence of psychosis is not sufficient in itself for a finding of incompetency to stand trial if the defendant is considered able to consult with his or her lawyer and participate in the legal process (for a review, see Ref. 121).

Amnesia for serious offenses has particular relevance in the context of criminal responsibility, as it may indicate automatism, which refers to criminal behavior that is not voluntarily controlled and is executed without intent. In Canada, the automatism defense is either insane (mental disorder) or non-insane (nonmental disorder) automatism. Insane automatism applies to a crime arising from organic brain dysfunction, signifying an involuntary action resulting from a disease of the mind (and therefore a defense of mental disorder and a verdict of not criminally responsible by reason of mental disorder). Non-insane automatism refers to a crime attributed to involuntary action due to a transitory impairment of mental functioning which does not stem from a disease of the mind (entitling the accused to an acquittal, if successful).

The Automatism Defense

In Canada in 1971, the automatism defense was extended to include automatism induced by psychological trauma, a state of dissociation also referred to as psychological blow automatism. The first Supreme Court case dealing with psychological blow automatism was *R. v. Rabey*,[122] in which a 20-year-old University of Toronto student, infatuated with a female student, had learned that she thought of him as a "nothing." The next day, he met the woman by chance, hit her on the head with a rock he had obtained from the geology lab, and tried to strangle her. He had amnesia for the event, and afterward was extremely confused, dazed, and emotionally distraught. The trial judge put the issue of non-insane automatism to the jury, which acquitted. On appeal, it was determined that the trial judge erred in his finding of non-insane automatism, and a new trial was ordered. The Court made the distinction between internal and external causes of automatism, based on theories that suggest that a condition stemming from the psychological or emotional make-up of the accused, rather than some external factor, should lead to a finding of insanity. On the basis of that distinction, the majority decided that an internal, psychological blow such as the accused suffered was insufficient to cause non-insane automatism.

In 1992 the Supreme Court of Canada considered the case of *R. v. Parks*,[123] in which the accused, while sleepwalking, drove to the home of his in-laws, murdered his mother-in-law, and severely injured his father-in-law. He then confessed his actions to the police. The trial judge put the plea of non-insane automatism to the jury. There was no issue over the voluntariness of the accused's actions; the jury accepted the expert evidence that the accused was sleepwalking. The accused was acquitted of both charges. In addressing whether somnambulism is a disease of the mind, the court focused on the continuing danger theory, which holds that any condition likely to present a recurring danger to the public should be treated as insanity. The court assessed the likelihood of recurrence of the violent behavior and upheld the acquittals.

In the landmark Supreme Court of Canada case of *R. v. Stone*,[124] a 42-year-old man accused of murdering his wife while apparently in a dissociative state raised the defenses of provocation and non-insane automatism based on a psychological blow. The deceased had been making insulting comments directed toward his virility and about the fidelity of his former wife, comments described by the defense expert as "exceptionally cruel, psychologically sadistic, and profoundly rejecting." The accused went into an automatic state and stabbed his wife 47 times. He disposed of the body and left the jurisdiction, but returned a few weeks later and surrendered to police. The jury ruled that the accused was not suffering from a disease of the mind. The defense of automatism was rejected, and the accused was convicted of manslaughter, based on the provocation defense. Appeals from conviction and against the Crown's sentence were dismissed.

The law of automatism was rewritten in the *Stone* case. Before the case, unconsciousness was viewed as the predominant element in a state of automatism. Yeo[125] noted that the *Stone* case clarified that unconsciousness need not exist in a state of automatism; rather, the important element in automatism is whether criminal behavior is involuntary or not. Automatism was redefined as a state of impaired con-

sciousness in which an individual, though capable of action, has no voluntary control over that action, and two types of automatism were delineated (insane and non-insane). It was also determined that a single approach to all cases involving claims of automatism would be taken, as automatism may arise in different contexts (i.e., psychological blow automatism, somnambulism, and extreme intoxication akin to a state of automatism).

The principles contained within the Stone case form the basis under which any defense of automatism must proceed. The first stage of the automatism analysis sets out what an accused must do to satisfy the evidentiary burden of automatism, to establish a proper foundation for such a defense. The second stage determines whether the automatistic state is due to a disease of the mind.

To satisfy the evidentiary burden of automatism, the accused must claim that he or she acted involuntarily at the relevant time, and the defense must present expert psychiatric evidence confirming its claim. More weight is given to medical evidence if the accused has a history of automatistic-like dissociative states. The automatism analysis must also consider the nature of the alleged automatism trigger. Finally, the analysis must consider whether there is evidence of a motive for the crime. A motiveless act would generally lend plausibility to a claim of involuntariness.

If the accused has laid proper foundation for the defense of automatism, it must then be determined whether the alleged automatistic state was caused by a disease of the mind. Two distinct approaches may be taken: the internal-cause test and the continuing-danger test. Under the internal cause theory, developed in the context of psychological-blow automatism, the defendant's automatistic reaction to the psychological blow, the alleged trigger, is assessed from the perspective of an ordinary normal individual experiencing the same stressful circumstances. If it is determined that a normal individual would have reacted in a like manner by experiencing an automatistic state, a defense of non-insane automatism would be supported, as the cause of the automatism would be considered to be an external event and not due to the psychological or emotional character of the defendant.

Under the continuing-danger theory, the likelihood of a recurrence of violence that would present a danger to the public suggests a disease of the mind. Particularly relevant in the examination of this factor are the psychiatric history of the accused and the likelihood that the alleged trigger would recur. A documented history of automatistic-like dissociative states suggests a recurring nature. The greater the anticipated frequency of the trigger in the accused's life, the greater the risk posed to the public, and therefore the more likely that a disease of the mind is present.

In determining whether the alleged condition is a disease of the mind, other factors must also be considered, including the possibility that the automatism is feigned. This factor is particularly relevant in cases in which consideration of the internal cause and continuing danger factors alone does not allow a conclusive answer to the question of disease of the mind.

If the judge determines that there is a disease of the mind, then the defense of insane automatism is left to the jury, who decides whether the accused has proven on a balance of probabilities that he or she suffered from a mental disorder that rendered him or her incapable of appreciating the nature and quality of the act in question. A positive decision results in a disposition of not criminally responsible by reason of mental disease. If the judge determines that there is no disease of the mind, then the defense of non-insane automatism goes to the jury, which decides whether the defense has proven that the accused acted involuntarily on a balance of probabilities. A positive decision results in absolute acquittal.

The decision in *Stone* has been applied to subsequent cases, including *R. v. Campbell*,[126] in which the accused was charged with attempted murder after he attacked his sleeping girlfriend with a knife while he was sleepwalking. There was no trigger and no motive for the attack. The judge accepted that the accused was in fact sleepwalking at the time of the attack, and therefore the attack was not voluntary. However, the judge also found that sleepwalking represents a continuing danger to the public with an internal cause, and therefore somnambulism is a disease of the mind. The accused was found not criminally responsible by reason of mental disorder.

Discussion

Memory impairment for crimes is a controversial issue with clinical and legal implications. Claims of amnesia are quite common in clinical practice, and because dissociative states fall under a defense of mental disorder in Canada, forensic psychiatrists and

other mental health professionals are frequently required to provide expert testimony in cases involving amnesia in relation to crime.

Dissociative amnesia often has legal repercussions, in part due to its relevance to the legal constructs of competency to stand trial and criminal responsibility. Amnesia can affect an individual's competency to stand trial if he or she cannot plead or advise the lawyer. Experiencing a dissociative state can decrease an individual's capacity to control his or her actions and therefore diminish criminal responsibility. Moreover, defendants who claim amnesia are usually regarded as having limited credibility or are even disregarded because of the inherent possibility of malingering. When a defendant claims not to remember the event in question, the court can have considerable difficulty formulating a decision. Wrongful decisions regarding the authenticity of an individual's amnesia can be very costly, with the outcome that lighter or harsher sentences are given than is just.

The controversy surrounding crime-related amnesia is in part due to the potential for fabrication of memory loss. Undoubtedly, some do feign amnesia for their crimes. However, genuine amnesia for crimes is often seen in clinical practice, whether due to a dissociative state, a psychotic episode, or organic causes. In accepting evidence supporting the validity of amnesia claims, it seems clear that the important issue should be determining how to distinguish between genuine amnesia, whatever the cause, and malingered amnesia in cases raising an index of suspicion. Despite several attempts to solve this dilemma,[2,11–13,84] there is still no clear answer. While case studies suggest the efficacy of the Symptom Validity Test (SVT) in identifying malingered amnesia,[127,128] others have argued that the SVT lacks sensitivity.[129] Moreover, limitations to its use in the clinical or forensic setting have been noted (e.g., Ref. 116). As the potential will always exist for offenders to feign memory loss for their crimes, it seems important that future studies focus on developing and testing valid and reliable screening and diagnostic tools to assess the likelihood of malingered amnesia.

In a medico-legal context, forensic psychiatrists examining individuals who have committed a homicide are required to offer an opinion on the mental state of the person at the time of the offense. In clinical practice, it may be difficult to differentiate between organic, dissociative, and malingered amnesia solely on the basis of interviews with the accused. While repeated interviews allowing the creation of a bond between an individual and a mental health professional may encourage recall of the event, a proper diagnosis requires a thorough investigation using a multidisciplinary and multitechnique approach. An evaluation of the individual's verbal and nonverbal behaviors that could indicate possible malingering should be undertaken during interviews relating to the event in question. Self-report questionnaires such as the Structured Inventory of Malingered Symptomatology[130] can be used to evaluate the tendency to exaggerate memory complaints (indicative of malingering). The Dissociative Experiences Scale[131] can be employed as a screening instrument for dissociative symptoms, and structured interviews such as the Dissociative Disorders Interview Schedule[132] can be used to assess whether the individual has a dissociative disorder. While DSM-IV criteria are a useful tool, all relevant information, including clinical history and assessment, collateral information, and past and present behavior should be considered in a primary diagnosis. Any history of alcohol and other substance misuse should be established. The pattern and characteristics of the claimed amnesia should be investigated, and a history of previous dissociative or amnestic incidents determined. Further inquiry should be made into the presence or absence of any condition or trigger likely to have produced dissociation, reasonableness of account in light of the specified circumstances, and collateral observations, all of which would provide invaluable clinical information in assessing claims of amnesia in a legal context.

Regarding claimed amnesia due to sleep disorders, Horn[133] contends that difficulty in evaluating claims of sleepwalking is caused by the existence of three different sleepwalking defenses among U.S. courts (i.e., classifying sleepwalking as an unconscious defense, *People v. Sedeno*[134]; an automatism defense, *McClain v. Indiana*[135]; or an insanity defense, *Bradley v. State*[136]). Horn[133] notes that the legal classification of sleepwalking based on involuntary mental incapacity (unconsciousness), physical incapacity (automatism), or insanity is not supported by medical evidence on sleepwalking, and proposes that the credibility of a sleepwalking defense should be assessed using a test of objective criteria based on empirical medical research that suggests that sleepwalking is a physiological condition (and not a psychological disorder). A determination as to whether a defendant was sleepwalk-

ing during an alleged crime may be enabled by consideration of the individual's predisposition to sleepwalking, the existence of precipitating factors associated with sleepwalking, and the duration between sleep onset and the time the criminal act took place.

While it is beyond the scope of this article to provide an in-depth review of neuropsychological and neuroanatomical studies of memory, advances in neuroimaging techniques and the development of new paradigms and theories on the human memory system serve to remind us that much remains to be learned in the area of normal and dysfunctional or abnormal memory.[137] From a medico-legal perspective, a better understanding and determination of cognitive capacities in an individual presenting with a memory disorder is likely to affect assessments of fitness and criminal responsibility. The fact that a brain injury or brain damage contributing to the amnesia can be demonstrated objectively would be of invaluable assistance in the context of a forensic psychiatric assessment.

A review of the literature reveals several clinical features observed in cases of crime-related amnesia. Consideration of the characteristics of the report of the event and of the individual claiming memory loss may facilitate an evaluation of the amnesia. As it now stands, the forensic assessment of individuals who claim amnesia represents a most interesting challenge. Further research aimed at delineating such features would be useful, as developing a profile of aspects characteristic of crime-related amnesia would enable a fuller clinical understanding of the different types of amnesia and build toward establishing important guidelines for the issue of dissociative amnesia in legal contexts.

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