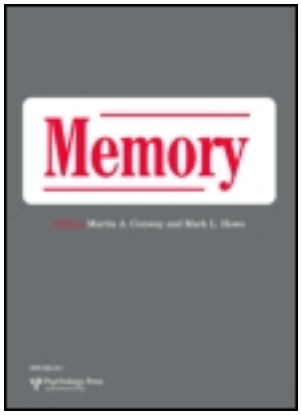

Memory
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/pmem20

Let's use those tests! Evaluations of crime-related amnesia claims

Maarten J. V. Peters [a b], Kim I. M. van Oorsouw [a b], Marko Jelicic [a b] & Harald Merckelbach [a b]

[a] Department of Clinical Psychological Science, Maastricht University, Maastricht, The Netherlands

[b] The Maastricht Forensic Institute, Maastricht University, Maastricht, The Netherlands

Published online: 21 Feb 2013.

To cite this article: Maarten J. V. Peters, Kim I. M. van Oorsouw, Marko Jelicic & Harald Merckelbach (2013) Let's use those tests! Evaluations of crime-related amnesia claims, Memory, 21:5, 599-607, DOI: 10.1080/09658211.2013.771672

To link to this article: http://dx.doi.org/10.1080/09658211.2013.771672

Memory, 2013
Vol. 21, No. 5, 599–607, http://dx.doi.org/10.1080/09658211.2013.771672

Let's use those tests! Evaluations of crime-related amnesia claims

Maarten J. V. Peters[1,2], Kim I. M. van Oorsouw[1,2], Marko Jelicic[1,2], and Harald Merckelbach[1,2]

[1]Department of Clinical Psychological Science, Maastricht University, Maastricht, The Netherlands
[2]The Maastricht Forensic Institute, Maastricht University, Maastricht, The Netherlands

Suspects awaiting trial often claim that they cannot remember important parts of their violent crimes. It is not unusual that forensic experts readily accept such claims and interpret them in terms of dissociative amnesia or, more specifically, a ''red-out''. This interpretation hinges on the assumption that heightened levels of stress implicated in violent crimes interfere with memory. We argue that the notion of red-out is a priori not plausible and that alternative interpretations—primarily malingering and substance-induced organic amnesia—should be considered and ruled out first before concluding that memory loss is dissociative in nature. We illustrate our point with four cases that superficially have the contours of red-out tragedies. We believe that, in such cases, neuropsychological tests and/or psychopharmacological information on dose–response relationships can assist forensic experts to exclude malingering or substance-induced amnesia. There is no reason for not using tests and tools from neuropsychology and psychopharmacology.

Keywords: Crime-related amnesia; Red-out; Malingering; Neuropsychological testing; Psychopharmacology.

Defendants regularly claim that they cannot remember vital parts of the (often violent) crime they committed (Cima, Nijman, Merckelbach, Kremer, & Hollnack, 2004; van Oorsouw & Merckelbach, 2010). This alleged memory failure is technically known as crime-related amnesia (e.g., Pujol & Kopelman, 2003). Most best-practice guidelines stipulate that psychologists who act as expert witnesses and evaluate such claims, should consult the scientific literature. This sounds reasonable enough, but what if the literature offers speculations that are not justified by solid research?

In our view the literature on crime-related amnesia overvalues the plausibility of dissociative memory loss (e.g., Moskowitz, 2004; Porter, Birt, Yuille, & Hervé, 2001) and in doing so biases expert witnesses in how they handle these cases. In the DSM-IV-TR dissociative amnesia is listed as a separate nosological category and defined as ''an inability to recall important personal information, usually of traumatic or stressful nature, that is too extensive to be explained by ordinary forgetfulness'' (American Psychiatric Association, 2000, p. 478). Other types of amnesia are given less consideration in the DSM-IV-TR. For example, offenders may deliberately feign amnesia in order to obstruct police interrogation and/or to reduce criminal responsibility (Christianson & Merckelbach, 2004). Yet malingering is not elaborated in the DSM-IV-TR, and much the same is true for the various manifestations of organic amnesia, which are the result of permanent neurological damage (e.g., traumatic brain injury) or temporary brain dysfunction (e.g., alcohol blackout).

Address correspondence to: Maarten J. V. Peters, Department of Clinical Psychological Science, Faculty of Psychology and Neuroscience, Maastricht University, P.O. Box 616, 6200 MD, Maastricht, The Netherlands. E-mail: m.peters@maastrichtuniversity.nl

Swihart, Yuille, and Porter (1999) launched the concept of *red-out*. Its underlying assumption is that some perpetrators experience rage to such degree that they develop memory loss for their criminal acts. The only prerequisite for a red-out seems to be extreme emotional arousal. The term has been cited over and over again as if it were a well-established manifestation of amnesia (see for examples Porter et al., 2001; Pyszora, Jaldow, & Kopelman, 2009). There is indeed some evidence that the incidence of claimed amnesia increases with the severity of the violence (e.g., Bradford & Smith, 1979; Taylor & Kopelman, 1984). But does this show that extreme rage is a reliable precursor of genuine memory loss? Our point is that the hypothetical state called red-out is at odds with the well-established memory principle that people remember actions better than concepts (e.g., Zimmer, 2001), and that people remember their own actions better than those of others (i.e., self-reference effect; e.g., Kesebir & Oishi, 2010). Furthermore, intense emotions seem to enhance rather than undermine the encoding of episodic memories (Cahill & McGaugh, 1998). There is also much evidence demonstrating that the suppression of an emotional memory makes such memory hyperaccessible (i.e., white-bear effect; Rassin, 2001; Wegner, Schneider, Carter, & White, 1987).

Proponents of the red-out concept seem not to be bothered by the implausibilities that surround this concept. Consider the study by Pyszora, Barker, and Kopelman (2003), who investigated amnesia for criminal offences retrospectively in a sample of 207 British inmates. They found that 29% ($n = 59$) had claimed amnesia for their offences. These claims were particularly related to self-reported alcohol abuse, previous blackouts (either alcohol or dissociative), previous psychiatric problems, and crimes of passion (i.e., red-outs). Those claiming amnesia were significantly more likely to have used the defence of diminished responsibility, provocation, and lack of intent secondary to intoxication than offenders not claiming amnesia. At 3 years post conviction no less than 33% of the amnesic sample reported complete recovery of their memories, 26% had a partial return of memories, whereas 41% said that there was no return of memories.

Pyszora et al. (2003) relied on the differences between those claiming crime-related amnesia and those who did not as a jumping-off point for speculating about the origins of crime-related amnesia. The authors note that ''Amnesia in the context of these crimes of passion is almost invariably psychogenic in origin, rather than the result of alcoholic intoxication or neurological disease. It is likely to have been caused either by dissociation or impaired memory encoding at the time of the offence (secondary to intense emotional arousal), or as a result of suppression/repression of the painful memory and/or avoidance of rehearsal, resulting in a failure of memory retrieval'' (Pyszora et al., 2003, p. 486). The fact that fewer amnesic offenders than non-amnesic offenders denied their crime is interpreted by the authors as evidence for the integrity of the amnesia claims. They write: ''Five (2.4%) of the amnesic offenders were suspected of having feigned their memory loss, according to either the psychiatric assessments or the trial judge's report'' (Pyszora et al., 2003, p. 483).

This low percentage stands in sharp contrast to the study of Cima and colleagues (2004) which employed a test to screen for malingered amnesia. They observed in their sample of offenders who claimed crime-related amnesia that 53% of them failed on this test. This finding allows for a radically different interpretation of the statistics provided by Pyszora et al. (2003); namely crime-related amnesia as an instrumental strategy that is employed by offenders when there is overwhelming forensic evidence against them (and no use in denying) and that comes with a tendency to fabricate sad stories about one's background and one's psychiatric history.

In our view, dissociative amnesia—and particularly red-out—can best be viewed as diagnoses by exclusion. More plausible alternatives should be eliminated first. As said, one such alternative—and a very prominent one is sheer malingering. Another plausible route to amnesia is drug or alcohol intoxication. We illustrate our point by briefly describing four cases that we evaluated as expert witnesses over the past few years. Superficially they look like red-out cases. Yet if one goes one step deeper, the alternative interpretations become apparent and often, turn out to be more plausible.

MAN WITH A HAMMER

In 2009, 10 August began as a normal summer day for Mr Cowin, a middle-aged man who was unemployed. Around 10 a.m. he took his daughter to ballet class, he returned to his home and started to clean up the attic. Around 11 a.m. he

descended to get a coffee. His wife was sitting on the patio reading a book. While leaving the kitchen Mr Cowin passed a small cabinet. There was a hammer lying on its top. It had been used for construction works. Mr Cowin picked up the hammer, walked onto the patio, and started smashing it into his wife.

Mr Cowin would later say that he had no memory of what happened thereafter. But we have the description of Mrs Cowin. That same day she made her first official statement to the police at the emergency room of the local hospital. She remembered that she started screaming at Mr Cowin, after which she fell on the floor. Mr Cowin then had tried to strangle her:

> At that moment I could not recognise my own husband anymore. He was in a rage. I tried to talk to him. There was blood everywhere. I managed to put my hands between his hands. All of a sudden he stopped and stood up. I managed to get the phone but blood was blurring my sight. My hands were slippery, so I asked my husband to dial 911 after which I ran to the neighbours.

Mr Cowin stated that from that point onwards he had clear memories again: ''I had blood on my hands, so I knew I had done something to my wife. I asked for an ambulance. I blacked out. We are in the middle of a divorce but are still living together. I don't know why I did it. My brain tilted. The situation is tense at home due to the divorce. I can't remember anything''.

The court appointed one of us as an expert witness to evaluate the alleged memory loss of Mr Cowin. At first sight his case seems to be a perfect example of a red-out scenario: intense emotional arousal due to an acrimonious divorce dispute builds up and then explodes, leading to violence and memory loss. What further supports this scenario is that the family had financial problems and Mr Cowin had kept the details of the financial debts secret.

The case file and the medical history of Mr Cowin did not contain any clues that his memory problems might have an organic background. However, malingering so as to reduce criminal responsibility was a distinct possibility. So, when evaluating Mr Cowin, we included malinger tests, thereby following the so-called multi-method approach (e.g., Giger, Merten, & Merckelbach, 2010; Larrabee, 2007). The crux of this approach is that the two basic dimensions of malingering—deliberate cognitive underperformance and symptom exaggeration—are evaluated using separate tests.

To screen for deliberate underperformance we employed the Amsterdam Short Term Memory test (ASTM; Schmand & Lindeboom, 2005), and the Test of Memory Malingering (ToMM; Tombaugh, 1996). To assess symptom exaggeration we employed the Structured Inventory of Malingered Symptomatology (SIMS; Smith & Burger, 1997) and the MMPI-2 validity scales (Butcher, Dahlstrom, Graham, Tellegen & Kaemmer, 1989).

On the ASTM test, which is an easy passive recognition test based on floor-effect principles (i.e., scores below the cut-off are unlikely, even in bona fide neurological patients), Mr Cowin scored far below the cut-off of 84/85, which raised the suspicion that he was exaggerating his memory problems. Much the same was true for his performance on the ToMM. In this task participants are presented with 50 line drawings after which they have to make old–new discriminations for 50 pairs of line drawings. Each pair contains a wrong alternative and the original line drawing that was presented earlier (correct alternative). The ToMM involves two repetitive series of such old–new discriminations. On the first, Mr Cowin only attained a score of 30 correct, while on the second series, his score dropped to 24, a pattern that indicates deliberate underperformance. His scores on the MMPI-2 validity scales were raised and suggested that his responses to the clinical items could not be interpreted in a reliable way. As for the SIMS, however, we found that his scores were within the normal range test. So he did not attempt to present himself as a psychiatric patient with an abundance of bizarre and atypical symptoms.

In our report to the court we concluded that Mr Cowin had deliberately underperformed on our memory tests and that therefore we could not exclude the possibility that he was fabricating his crime-related amnesia. Mr Cowin was sentenced to 4 years' imprisonment.

A DRAMATIC HOLIDAY

Jack, Robin, and David went on a skiing trip to Poland. They left their Dutch hometown around 3 a.m. and arrived at their destination in the late afternoon of the next day after a 16-hour drive. Tired but excited about their skiing trip they went to a local pub, where they consumed two bottles

of vodka and a couple of beers. When walking home the three friends quarrelled about a girl that they met at the pub. The discussion radicalised, there was a fight, and Jack was killed. Cause of death was hypothermia and extreme loss of blood due to multiple stab wounds.

When the police interrogated Robin, he said the following:

> I remember walking home when Jack became aggressive. We quarrelled about a girl we met at the local pub. When we arrived at our cabin, Jack grabbed me by the throat and attempted to choke me. David tried to separate us, but got punched in the face by Jack. I was terrified. I never experienced Jack being so violent, he totally lost control. I literally feared for my life. Jack continued to attack us. We had nowhere to go, we were standing in a small corridor. The last thing I remember is Jack hitting us. After that, all is blank. My first memory is of someone calling me. It came from outside. At that moment, I was lying on the floor between the living room and the kitchen. I got up and looked out the window. There was Jack, in the snow, covered in blood. I was confused. What had happened? That's when I called the emergency services and woke up David who was sleeping upstairs.

David's last memory was about the three quarrelling in the corridor when he was suddenly hit in the face by Jack. His next memory is of Robin waking him up the following morning.

Jack was stabbed 25 times with a knife that was later found in the kitchen sink. Both Robin and David claimed to have no memory whatsoever of the stabbing. Given the provocations and arguments that preceded the crime, it is tempting to interpret the memory loss as the manifestation of an uncontrollable red-out state.

Extreme alcohol consumption is a typical feature of many violent crime cases, but its role is often overlooked (van Oorsouw, Merckelbach, Ravelli, Nijman, & Mekking-Pompen, 2004). A total of 30% to 65% of convicted violent offenders say that they were intoxicated at the time of the crime (e.g., Evans, Schreiber Compo, & Russano, 2009). Over a third of these offenders report problems with recollecting details of the crime due to intoxication (Cima et al., 2004; Kopelman, 1995). Of course, like dissociative amnesia and red-outs, a claim of alcohol blackout may serve a strategic function (i.e., to minimise criminal responsibility; van Oorsouw et al., 2004). Yet several studies have demonstrated that, even at moderate dosages, alcohol has a memory-undermining effect (e.g., Read, Yuille, & Tollestrup, 1992; van Oorsouw & Merckelbach, 2012). It is therefore vital to systematically reconstruct the alcohol dosages. Without objective data about the precise alcohol intake, a claim of alcohol blackout should be met with scepticism.

The blood alcohol concentration (BAC) of the offender is an important indicator for the likelihood of a genuine blackout. At BACs exceeding 0.25% a blackout becomes more plausible (Kalant, 1996), interfering with the consolidation of memories (White, 2003). A reconstruction of Robin and David's BACs at the time of the stabbing, based on blood and breath tests conducted by the police, yielded BAC estimates ranging between 0.18% and 0.27%. In addition a blurry onset, islands of memory, and shrinking of the amnestic episode while time passes are indicative of genuine amnesia (e.g., Jelicic & Merckelbach, 2007). Both Robin and David reported a blurry onset, islands of memory, and later described details that they initially could not remember. They tried to reconstruct the events, resulting in source-monitoring errors (Johnson, Hashtroudi, & Lindsay, 1993). People who attempt to reconstruct a blacked-out episode regularly report such errors. Malingerers, on the other hand, are often dogmatic about their memory loss (Christiansson & Merckelbach, 2004). They report a sudden onset, claim that they will not benefit from cues, and are reluctant to undertake reconstruction attempts.

To assess memory functioning and potential malingering tendencies of the defendants, we administered the Verbal Learning Task (VLT; Heslinga, van den Burg & Saan, 1983), and the ASTM and SIMS respectively to Robin and David. Both displayed normal memory functioning on the VLT and did not underperform on the ASTM or over-endorse symptoms on the SIMS. In our report to the court we concluded that excessive alcohol consumption rather than red-out was most likely to be responsible for the memory loss of both defendants. The court of appeal ruled that the threatening situation had warranted self-defence reactions of the defendants. Yet, given the disproportional and extremely violent character of this reaction, the court sentenced both defendants to 7 years of imprisonment.

ZOLPIDEM WOMAN

A middle-aged woman was accused of murdering her 14-year-old daughter. She claimed amnesia for a period of roughly 2 days: the day her daughter died and most of the preceding day. The woman had just spent a vacation overseas with her boyfriend. He had informed her that he wanted to break up. The prosecutor argued that the defendant had been unable to cope with this crisis and had decided to take her own life and that of her daughter (filicide–suicide). According to the prosecutor the defendant had wanted her daughter to die along with her, because the biological father of the daughter (the defendant's ex-husband) was a drug addict and was unable to look after their child. What is known with certainty is that a neighbour alerted the police when she saw two bodies lying in the defendant's home. Paramedics were able to reanimate the defendant, but could not revive her daughter. Autopsy showed that the girl had traces of prescription medications (sleeping pills and antidepressants) and butane (a gas sold in bottles as a fuel for cooking and camping) in her blood. The medical experts concluded that she had died because of asphyxia. The defendant's blood also contained traces of medication and butane.

Note that the amnesia claim fits perfectly a red-out scenario. We carefully read the defendant's file and her medical records, interviewed her, and also gave her tests and questionnaires. The defendant was highly educated. After college she completed art school and had moderate success as a sculptor. She had a history of mild depression and at the time of her daughter's death had been taking paroxetine, an SSRI antidepressant, for many years. Apart from depressive episodes she had never had an illness affecting cognitive functioning. During the interview the defendant told us that a few days before the tragic events she had been overseas with her boyfriend. Back in the Netherlands she visited her general practitioner because of sleeping problems due to jet lag. She was prescribed zolpidem, a nonbenzodiazepine hypnotic used to initiate sleep. The defendant said she could remember going to the pharmacy and ingesting a zolpidem pill, but was unable to recall subsequent events. She reported amnesia for the day her daughter died and also could not remember much from the preceding day.

She had a blurred memory of waking up in a psychiatric institution. The defendant did at least have one island of memory: She vaguely recalled drinking coffee with a neighbour the day before her daughter died. When asked if she would be willing to undergo therapy to recover her memories of the tragic events, she replied she would do anything to understand what happened on the day her daughter died. Thus, it seems that the amnesia of the defendant had bona fide elements (e.g., Jelicic & Merckelbach, 2007).

We asked the defendant to fill out the SIMS and also administered Rey's Complex Figure test (RCF; Lezak, Howieson, Bigler & Tranel, 2012), which can be used as a test of underperformance. On the SIMS she scored well below the cut-off for malingering. Her high score on the RCF revealed that her memory (at time of testing) was excellent. Thus test performance of the defendant was not suggestive of deliberate underperformance or intentional over-endorsement of symptoms.

What is remarkable in this case is that the defendant reported memory loss after taking sleeping pills. In their review Daley, McNeil, and Binder (2011) concluded that the ingestion of zolpidem might undermine the ability to store new information in memory. Hence it is conceivable that the defendant's amnesia was an adverse reaction to zolpidem ingestion. There is also a possibility that her memory loss was brought about by a combination of paroxetine and zolpidem (Katz, 1995). In any case, an interpretation of her amnesia along the lines of adverse psychopharmacological effects is far more likely than one in terms of malingering or red-out. Although the court of appeal did not reject the possibility that the defendant had no memory for the events leading to her daughter's death, it did find the defendant guilty of premeditated murder. She was sentenced to 8 years imprisonment.

A MAN FROM KURDISTAN

Due an escalating conflict between his own family and another family, this man had been threatened with death. And so, some 10 years ago, he had been forced to flee from Kurdistan to the Netherlands. He learned Dutch, got himself a job as a courier, and lived a quiet life, until that fatal summer evening in 2011. That evening his friend visited him in his flat. While he was preparing a meal the doorbell rang. His boss was standing at the front door. He wanted to have

the parcels back that the Kurdish courier should have delivered that day. The Kurdish man refused to hand over the parcels because the boss had not paid him in the past two weeks. The boss became furious and alerted his son and another man who were waiting outside. They invaded the flat, while shouting and making intimidating movements. The Kurdish courier stabbed the son three times with a knife, thereby hitting him in the heart. The son stumbled outside and died right in front of the flat. It was the Kurdish courier himself who called the police.

The police arrested him and interrogated him several times. During the interrogations he described how his boss had been standing at the door, the invasion of the three men, how he had called the police, but he consistently claimed that he was unable to remember how he had stabbed the son with a knife. He added that of course he had to be punished, but he simply could not remember that he had stabbed the man with a knife. Did the defendant malinger his memory loss or was it authentic? We interviewed the defendant and administered a series of tests and tasks. His performance on standard VLT was within the normal range. His score on the SIMS was well below the cut-off, indicating that he was not trying to impress with rare symptoms.

As a measure of deliberate underperformance we gave the defendant the vocabulary and abstraction subtests of the Malingering Scale (Schretlen, Wilkins, van Gorp & Bobholz, 1992). The items of these tests involve target stimuli (e.g., words or sequences) and for each target the participant has to choose from two alternatives the one that fits best with the target (because it is a synonym or because it is the next logical step in the sequence). The items are simple enough that even persons with low IQ levels can recognise the correct alternative. The subtests are based on the binomial principle of forced-choice testing. Correct responses on both subtests are totalled (range: 0–46). Scoring 18 or less would indicate below-chance level ($p < .05$) performance. The defendant had a score of 42, which is far above chance level.

Finally we administered a 15-item autobiographical Symptom Validity Test (SVT; Merten & Merckelbach, 2012). Such an SVT involves a forced-choice procedure in which the defendant is asked a series of questions about the details of the purportedly forgotten episode (e.g., ''How many times was the victim stabbed? a. One time; b. Three times.''). For each question the defendant must choose between two equally plausible answers, one of which is correct and the other is incorrect. Again, below chance performance indicates strategic avoidance of correct answers, and is therefore an indication that someone is intentionally not telling what he/she knows. In this case the defendant attained a score of 10, which is above chance level.

In sum, then, there was not a single hint that the defendant malingered his crime-related amnesia. Was it a red-out? We do not think that this diagnosis by exclusion would help us to understand what happened in this case. Rather we would argue that an interpretation in terms of reflex-like behaviour makes more sense. Eyewitnesses had told the police that the critical incident happened in a split second, as the defendant stood in an open kitchen, close to the front door, preparing a salad with a knife. Thus, at the moment the boss and his associates invaded the apartment, the defendant might have been caught in a double-capture slip (e.g., Reason, 1992) in which he used the knife to ward off his aggressors. Of course, most people do not have vivid memories of their double capture slips. They notice the fatal results, but the slips themselves are outside awareness. However, the lack of memory that is implicated in such automatism is not motivationally driven and has nothing to do with repression or dissociation. One might even question whether the term amnesia is appropriate at all in such cases, because that term has pathological connotations. The court accepted our conclusion that the memory loss in this case was bona fide and probably had to do with a fatal coincidence of preparing a meal while one is attacked. The man from Kurdistan was acquitted.

DISCUSSION

If we, as expert witnesses, had relied on the literature on red-outs (e.g., Bourget & Whitehurst, 2007; Porter et al., 2001; Pyszora et al., 2003), we would have concluded in the cases described above that the amnesia claims were probably authentic and had a dissociative origin. The courts, in turn, might have accepted such a conclusion and would have considered diminished responsibility in these cases, arguing that defendants who are provoked into a state of extreme rage cannot fully control their behaviours (i.e., they are lured into a state of automatism).

Clearly, in crime-related amnesia cases, the opinions provided by forensic psychiatrists or psychologists are often crucial in determining the legal outcomes. Our point is that in crime-related amnesia cases experts are well advised to define the literature they consult broadly, preferably including neuropsychological and psychopharmacological studies. In the first case, not red-out but rather feigned amnesia turned out to be the most likely scenario. This became evident only after we administered neuropsychological malingering tests. To avoid that claims of amnesia become an easy route to an automatism defence, malingering tests are necessary.

The first case also illustrates the importance of a multi-method approach while investigating claims of crime-related amnesia. The rationale behind this approach is that malingering is a multidimensional phenomenon that may involve underperformance or symptom exaggeration (i.e., Iverson, 2006). Thus, during a forensic examination, both dimensions should be assessed with tools. In simulation studies in the laboratory this multi-method approach has proven to be effective in identifying malingered amnesia (e.g., Giger et al., 2010). Given that there are dedicated tests with known error rates to investigate malingered amnesia, the failure to use such tests is an indication that the forensic examination does not meet the professional standards, a conclusion that was drawn some years ago by the neuropsychological community (e.g., Bush, Ruff, Troster, Barth, Koffler, et al., 2005; Professional Practice Board of the British Psychological Society, 2009). Forensic psychologists and psychiatrists should take neuropsychological evaluations as an example (e.g., Larrabee, 2012).

The second case illustrates that psychopharmacology too is an important field for expert witnesses who evaluate claims of crime-related amnesia. Many violent crimes are associated with alcohol intoxication (e.g., Evans et al., 2009; Haggard-Grann, Hallqvist, Langstrom, & Moller, 2006). And so alcohol blackout rather than the emotional stress implicated in red-outs might be considered an important antecedent of memory loss. Psychopharmacology has greatly advanced our insights into dose–response relationships. For instance, we now know that, at intoxication levels of 0.31%, chances are 50% that an offender develops genuine memory loss for his crime (Perry et al., 2006).

The third case makes plain that zolpidem or the interaction between zolpidem and antidepressive medication may precede memory loss. Given that many people are prescribed sleep medication, the base-rate of this type of memory loss may be higher than is typically appreciated. Meanwhile psychopharmacologists have observed that, even in low dosages, a drug like zolpidem seriously interferes with, for example, driving behaviour (Leufkens, Lund, & Vermeeren, 2009).

Of all these cases, that of the man from Kurdistan came closest to a red-out state. There were no indications for malingered memory loss, he had not been drinking heavily, and neither did he use any sleep medication. He was, though, provoked by his boss. But even in that case one wonders what the concept of red-out—or dissociation for that matter—adds in terms of explanatory power. At the moment his boss and his associates entered his house, the man was cooking and had a knife in his hand. Also, the threatening nature of the situation resembled an episode in which he had been beaten up by the police in Kurdistan. Thus the man acted in a reflex-like manner rather than in a state of rage when he stabbed his boss's son. Such a conditioning interpretation allows for the possibility that people engage in acts of transgression without consciously monitoring their behaviour. We think that conditioning might offer a far better account of those rare cases of psychogenic amnesia than concepts like red-out, but this point merits further research, preferably laboratory research.

For expert witnesses who have to evaluate crime-related amnesia cases, the literature on red-outs and dissociative amnesia is simply not good enough as a solid starting point (see also Centor, 1982; Ornish, 2001). What expert witnesses need is the knowledge accumulated in neuropsychology about malingering and how to detect it. What they also need is psychopharmacology and what it says about alcohol and drug intoxication in relation to memory loss. If we, as expert witnesses, fail to consult these neighbouring fields we run the risk of becoming lopsided in our approach. Over the past years the psychology and law domain has generated detailed knowledge about memory accounts of offenders and witnesses (Howe, 2012). But we should not become overconfident and neglect the tools that neuropsychology and psychopharmacology offer us. Let us use those tools.

Manuscript received 24 January 2013
Manuscript accepted 26 January 2013
First published online 19 February 2013

REFERENCES

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders, fourth edition text revision*. Arlington, VA: Author.

Bourget, D., & Whitehurst, L. (2007). Amnesia and crime. *Journal of the American Academy of Psychiatry and the Law*, *35*, 469–480.

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.

Bush, S. S., Ruff, R. M., Troster, A. I., Barth, J. T., Koffler, S. P., Pliskin, N. H., ... Silver, C. H. (2005). Symptom validity assessment: Practical issues and medical necessity. *Archives of Clinical Neuropsychology*, *20*, 419–426.

Butcher, J. N., Dahlstrom, W. G., Graham, J. R., Tellegen, A., & Kaemmer, B. (1989). *Manual for the restandardized Minnesota Multiphasic Personality Inventory: MMPI-2*. Minneapolis, MN: University of Minnesota Press.

Cahill, L., & McGough, J.L. (1998). Mechanisms of emotional arousal and lasting declarative memory. *Trends in Neuroscience*, *21*, 294–299.

Centor, A. (1982). Criminals and amnesia: Comment on Bower. *American Psychologist*, *37*, 240.

Christianson, S., & Merckelbach, H. (2004). Crime-related amnesia as a form of deception. In P. A. Granhag & L. A. Strömwal (Eds.), *The detection of deception in forensic contexts* (pp. 195–217). New York, NY: Cambridge University Press.

Cima, M., Nijman, H., Merckelbach, H., Kremer, K., & Hollnack, S. (2004). Claims of crime-related amnesia in forensic patients. *International Journal of Law and Psychiatry*, *27*, 215–221.

Daley, C., McNiel, D. E., & Binder, R. L. (2011). "I did what?" Zolpidem and the courts. *Journal of the American Academy of Psychiatry and the Law*, *39*, 535–542.

Evans, J. R., Schreiber Compo, N., & Russano, M. (2009). Intoxicated witnesses and suspects: Procedures and prevalence according to law enforcement. *Psychology, Public Policy, and the Law*, *15*, 194–221. doi:10.1037/a0016837.

Giger, P., Merten, T., & Merckelbach, H. (2010). Detection of feigned crime-related amnesia: A multi-method approach. *Journal of Forensic Psychology Practice*, *10*, 440–463.

Haggard-Grann, U., Hallqvist, J., Langstrom, N., & Moller, J. (2006). The role of alcohol and drugs in triggering criminal violence: A case cross-over study. *Addiction*, *101*, 100–108.

Heslinga, H. W., van den Burg, W., & Saan, R. J. (1983). *De nieuwe 15-Woordentest in een gezonde populatie*. Intern rapport nr. 8324, afdeling Neuropsychologie, Rijksuniversiteit Groningen.

Howe, M. L. (2012). Memory lessons from the courtroom: Reflections on being a memory expert on the witness stand. *Memory*, In Press.

Iverson, G. L. (2006). Ethical issues associated with the assessment of exaggeration, poor effort, and malingering. *Applied Neuropsychology*, *13*, 77–90.

Jelicic, M., & Merckelbach, H. (2007). Evaluating the authenticity of crime-related amnesia. In S. A. Christianson (Ed.), *Offenders'memory of violent crimes* (pp. 215–234). Chichester, UK: Wiley.

Johnson, M. K., Hashtroudi, S., & Lindsay, S. D. (1993). Source monitoring. *Psychological Bulletin*, *114*, 3–28.

Kalant, H. (1996). Intoxicated automatism: Legal concept vs. scientific evidence. *Contemporary Drug Problems*, *23*, 631–648.

Katz, S. E. (1995). Possible paroxetine-zolpidem interaction. *American Journal of Psychiatry*, *152*, 1689.

Kesebir, S., & Oishi, S. (2010). A spontaneous self-reference effect in memory: Why some birthdays are harder to remember than others. *Psychological Science*, *21*, 1525–1531.

Kopelman, M. D. (1995). The assessment of psychogenic amnesia. In A. D. Baddeley, B. A. Wilson, & F. N. Watts (Eds.), *Handbook of memory disorders* (pp. 427–448). New York, NY: Wiley.

Larrabee, G. J. (2007). Aggregation across multiple indicators improves the detection of malingering: Relationships to likelihood ratios. *The Clinical Neuropsychologist*, *22*, 666–679.

Larrabee, G. J. (2012). A scientific approach to forensic neuropsychology. In G. J. Larrabee (Ed.), *Forensic neuropsychology: A scientific approach, second edition* (pp. 3–22). New York, NY: Oxford University Press.

Leufkens, T. R. M., Lund, J. S., & Vermeeren, A. (2009). Highway driving performance and cognitive functioning the morning after bedtime and middle-of-the-night use of gaboxadol, zopiclone and zolpidem. *Journal of Sleep Research*, *18*, 387–396.

Lezak, M. D., Howieson, D. B., Bigler, E. D., & Tranel, D. (2012). *Neuropsychological assessment, fifth edition*. New York, NY: Oxford University Press.

Merten, T., & Merckelbach, H. (2012). Forced choice tests as single-case experiments in the differential diagnosis of distortion. *Journal of Experimental Psychopathology*, In press.

Moskowitz, A. (2004). Dissociation and violence: A review of the literature. *Trauma, Violence, and Abuse*, *5*, 21–46.

Ornish, S. A. (2001). A blizzard of lies: Bogus psychiatric defenses. *American Journal of Forensic Psychiatry*, *22*, 19–30.

Perry, P. J, Argo, T. R., Barnett, M. J., Liesveld, J. L., Hernan, J. M., Trnka, M. G., & Brabson, M. A. (2006). The association of alcohol-induced blackouts and grayouts to blood alcohol concentrations. *Journal of Forensic Sciences*, *51*, 896–899.

Porter, S., Birt, A. R., Yuille, J. C., & Hervé, H. F. (2001). Memory for murder: A psychological perspective on dissociative amnesia in legal contexts. *International Journal of Law and Psychiatry*, *24*, 23–42.

Professional Practice Board of the British Psychological Society. (2009). *Assessment of effort in clinical testing of cognitive functioning for adults*. Leicester, UK: British Psychological Society.

Pujol, M., & Kopelman, D. (2003). Psychogenic amnesia. *Practical Neurology*, *3*, 292–299.

Pyszora, N., Baarker, A. F., & Kopelman, M. D. (2003). Amnesia for criminal offences: A study of life

sentence prisoners. *Journal of Forensic Psychiatry and Psychology*, *14*, 475–490.

Pyszora, N., Jaldow, E., & Kopelman, M. (2009). Amnesia. In S. Young, M. Kopelman, & G. Gudjonsson (Eds.), *Forensic neuropsychology in practice: A guide to assessment and legal processes* (pp. 135–163). New York, NY: Oxford University Press.

Rassin, E. (2001). Thought suppression, memory, and interrogative suggestibility. *Psychology, Crime, & Law*, *7*, 45–55.

Reason, J. (1992). *Human error*. Cambridge UK: Cambridge University Press.

Read, D. J., Yuille, J. C., & Tollestrup, P. A. (1992). Recollections of a robbery: Effects of arousal and alcohol upon recall and person identification. *Law and Human Behavior*, *16*, 425–446.

Schmand, B., & Lindeboom, J. (2005). *The Amsterdam Short Term Memory Test*. Leiden: PITS.

Schretlen, D., Wilkins, S., van Gorp, W., & Bobholz, J. (1992). Cross-validation of a psychological test battery to detect faked insanity. *Psychological Assessment*, *4*, 77–83.

Smith, G. P., & Burger, G. K. (1997). Detection of malingering: Validation of the Structured Inventory of Malingered Symptomatology (SIMS). *Journal of the American Academy of Psychiatry and the Law*, *25*, 183–189.

Swihart, G., Yuille, J. C., & Porter, S. (1999). The role of state dependent memory in ''redouts''. *International Journal of Law and Psychiatry*, *22*, 199–212.

Taylor, P. J., & Kopelman, M. D. (1984). Amnesia for criminal offenses. *Psychological Medicine*, *14*, 581–588.

Tombaugh, T. N. (1996). *Test of Memory Malingering*. Los Angeles, CA: Western Psychological Services.

van Oorsouw, K., & Merckelbach, H. (2010). Detecting malingered memory problems in the civil and criminal arena. *Legal and Criminological Psychology*, *15*, 97–114.

van Oorsouw, K., & Merckelbach, H. (2012). The effect of alcohol on crime-related amnesia: A field study. *Applied Cognitive Psychology*, *26*, 82–90.

van Oorsouw, K., Merckelbach, H., Ravelli, D., Nijman, H., & Mekking-Pompen, I. (2004). Alcohol blackouts for criminally relevant behavior. *The American Academy of Psychiatry and the Law*, *32*, 364–370.

Wegner, D. M., Schneider, D. J., Carter, S. R., & White, T. L. (1987). Paradoxical effects of thought suppression. *Journal of Personality and Social Psychology*, *53*, 5–13.

White, A. M. (2003). What happened? Alcohol, memory blackouts, and the brain. *Alcohol Research & Health*, *27*, 186–196.

Zimmer, H. D. (2001). Why do actions speak louder than words. Action memory as a variant of encoding manipulations or the result of a specific memory system? In H. D. Zimmer, R. Cohen, M. J. Guynn, J. Engelkamp, R. Kormi-Nouri, & M. A. Foley (Eds.), *Memory for action: A distinct form of episodic memory?* (pp. 151–198). New York, NY: Oxford University Press.