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DISSOCIATIVE AMNESIA AS A METAMEMORY
PHENOMENON

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DISSOCIATIVE AMNESIA AS A METAMEMORY PHENOMENON

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Kim Isabelle Mireille van Oorsouw

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Prof. dr. H.L.G.J. Merckelbach

BEOORDELINGSCOMMISSIE

Prof. dr. C. de Ruiter (voorzitter)
Dr. R.J.C. Huntjens (Universiteit Utrecht)
Prof. dr. P.J. van Koppen
Dr. P. van Panhuis (FPD Breda)
Prof. dr. F. Verhey

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GENERAL INTRODUCTION*

INTRODUCTION

Memory loss for an event that should be remembered under normal circumstances is termed amnesia. Three distinct types of amnesia can be distinguished, namely organic amnesia, dissociative amnesia (also referred to as psychogenic or functional amnesia), and feigned amnesia.

Organic amnesia refers to memory loss due to brain damage, head injury, viral infections or intoxication (Bourget & Bradford, 1995; Kopelman, 1987, 1995; Schacter, 1986a, 1986b). Organic amnesia can be permanent when there is structural brain damage. A famous case of organic amnesia is that of H.M. who, after having his hippocampus removed in an attempt to reduce his epileptic seizures, suffered from severe amnesia (Milner, Corkin, & Teuber, 1968). He had trouble remembering events that happened 1 to 3 years prior to the surgery (i.e., retrograde amnesia) and could not store any new information (i.e., anterograde amnesia). That is, after someone told him something, or after he experienced an event or read a book, he could not recall it later on. Many times, however, organic amnesia resulting from alcohol or drug intoxication or a concussion is of a more transient nature. In such cases, the amnesic gap becomes smaller and disappears while time passes.

Dissociative amnesia is defined as an "inability to recall important personal information, usually of a traumatic or stressful nature, that is too extensive to be explained by ordinary forgetfulness" (APA, 1994, p.477). Over the last century, cases of dissociative amnesia have been reported in the clinical literature (Janet, 1907; Kopelman, 1987, 1995; Markowitsch et al., 1998). In dissociative amnesia, the normally integrated functions of memory and consciousness are disrupted, resulting in a lack of memories of a person's identity or behavior. Dissociative amnesia is believed to be caused by intense stress due to marital problems, financial difficulties or traumatic childhood experiences (Arrigo & Pezdek, 1997; Loewenstein, 1991). In this latter condition, dissociation and the resulting dissociative amnesia is believed to serve as a defense mechanism (see for a critical discussion, Giesbrecht, 2006). The idea is that due to stressful circumstances, there is an increase in arousal. Actions performed under these circumstances (e.g., committing a crime) might be difficult to remember later on when arousal levels are normalized.

There are case-reports in which someone suffering from mild organic brain damage in combination with psychological distress reported profound retrograde amnesia (e.g., Mackenzie Ross, 2000). In such cases, it is difficult to distinguish organic from dissociative amnesia and the possibility of feigned amnesia should be taken into consideration.

Feigned amnesia refers to a deliberate simulation of memory problems in order to obtain personal gain. This can be, for example, financial compensation after a car accident, but also a reduction of punishment after committing a crime. There are several well-documented cases in which perpetrators feigned amnesia for their crime (e.g. Denney, 1996; see also Cima et al., 2003b). In only a handful of these cases, brain dysfunctions (i.e., organic amnesia) account for the memory loss. Most of the time, crime-related amnesia is believed to be of the dissociative type arising from the stressful circumstances surrounding the crime. Lawyers and psychiatrists often seem to think that such a claim of amnesia is very plausible. Although it is possible that genuine amnesia for crimes occurs as a result of extreme emotional arousal or intoxication, recent studies show that attributing amnesia to such factors could also be a form of faking bad (Cima, 2003a). Motives for offenders to simulate amnesia are to obstruct the police investigation, to avoid or to minimize of legal responsibility or to gain sympathy.

This thesis is concerned with all three types of amnesia that were discussed above; organic (e.g., resulting from alcohol blackout), dissociative (e.g., crime-related or expectancy-based) and feigned (e.g., the undermining effect of feigning). The main goal of the research presented in this thesis was to gain more insight into the processes that may underlie claims of (dissociative) amnesia in the legal arena. We will argue that the different types of amnesia are related to each other, and may form endpoints on a continuum. In the following paragraphs you will be introduced to the major themes of this dissertation: amnesia claimed by defendants, amnesia claimed by victims, and the role of simulation, metamemory beliefs, and expectations in such claims.

HOW OFTEN IS AMNESIA CLAIMED?

As said, amnesia is commonly reported by perpetrators. Although the precise prevalence of these claims is unknown, estimates that can be found in the literature are rather consistent. Leitch (1948) noted that 16 out of 51 offenders (31%) convicted of murder or manslaughter claimed amnesia for their crime. Similarly, O'Connell (1960) reported a 40% incidence of amnesia in his sample of murderers. In a more recent study, Kopelman (1995) reported that 25-45% of criminals found guilty of homicide claim amnesia for the event. Likewise, in a population of 62 German psychiatric inpatients, 24% claimed amnesia for their crime (Cima, Merckelbach, Hollnack, & Knauer, 2003). In the Netherlands, the percentages also circle around 25% (Cima, Nijman, Merckelbach, Kremer, & Hollnack, 2004).

Not only defendants of crimes, but also alleged victims sometimes claim to have had episodes in which they could not remember the assault or abuse. Most of these cases pertain to recovered memories of sexual abuse: In such cases, victims claim that after a long period of amnesia, memories of a traumatic past return. A report of the expert group on special abuse cases (Nierop, & Van den Eshof, 2001) states that 67% of the cases this expert group was asked to evaluate, concerned reports based on recovered memories of sexual abuse[1].

HOW AUTHENTIC ARE AMNESIA CLAIMS?
Research has demonstrated that beliefs people have about their own memory, so called *metamemory beliefs*, can be easily manipulated. The feeling of being amnesic can be induced by some type of "memory work". Also, the deliberate simulation of memory problems might, in some individuals, seriously undermine their memory. The presence of metamemory beliefs or certain expectations about memory may affect what information in memory is accessible. The work presented in this thesis will demonstrate that it is not always a matter of either 'genuine' or 'simulated' amnesia. The different types of amnesia may form endpoints on a continuum (Kopelman, 2000). An important aspect of judging the authenticity of an amnesia claim is to determine under what circumstances the amnesia arose in the first place.

DEFENDANTS WITH MEMORY LOSS

In August 2001, 44 year old B. killed his wife after she had threatened to ruin his life by accusing him of incest.[2] When he came to his senses, he found himself in the garden. His wife's dead body was on the ground and his hands were around her neck. When he reported himself to the police, he claimed to have no memories of killing his wife. His last memory was about him getting very angry when his wife threatened to accuse him of incest. He later said that at that point he started sweating, his ears started to sing, and the light went out in his eyes. The psychiatrist, psychologist and neurologist who were asked to assess B. came to a similar conclusion. According to the psychiatrist, the threat of losing

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[1] De feiten beschouwd. Verslag van de Landelijke Expertisegroep Bijzondere Zedenzaken over de periode 1 oktober 1999- 31 december 2000. This expert group evaluates reports of complex sexual abuse cases before the District Attorney decides on further proceedings with the case.

[2] This case-report is based on a real Dutch case. See LJN: AE3911

his daughter induced a primitive, animal like, survival reaction that could not be consciously controlled. In psychiatric terms B. suffered from an *acute dissociative disorder.* The psychologist said that B's aggressive behavior was the result of years of accumulated frustration because of his wife's offensive remarks. Her threath of falsely accusing him of sexual abuse with their daughter would have been the last drop for B., who was said to be an introverted person. The neurologist reported that, because of the severe emotional state, B. was unable to determine his free will and could not see that his dissociative 'acting out' was unacceptable. All experts reached the similar conclusion that B. suffered from *dissociative amnesia.* The experts declared B. to be mentally insane at the time of the killing. Although the experts' opinions are disputable, they must have sounded very plausible to the district court which adopted this opinion, dismissed the case, and send B. home a free man (see for a description Merckelbach & Jelicic, 2005; Wagenaar & Crombag, 2005).

Some argue that during an episode of extreme rage, memories are not stored properly (Swihart, Yuille, & Porter, 1999). According to Kopelman (2002), stress sometimes has a direct effect upon the medial temporal/ diencephalic system, thereby producing an impairment in new learning (encoding deficit). In other cases, stress predominantly affects frontal control/executive systems, such that the retrieval of autobiographical memories is inhibited (retrieval deficit). This inhibition is exacerbated when a subject is extremely aroused (p. 2172). Although this stress-dissociation account of crime-related amnesia may sound plausible, especially in the case of B., it is at odds with studies showing that most eyewitnesses of extreme violence have accurate rather than impaired memory for the events (Porter, Birt, Yuille, & Hervé, 2001). A recent study examined the role of stress in relation to amnesia in substantial samples (N = 308) from German and Dutch forensic hospitals (Cima et al., 2004). If extreme levels of stress were to be related to crime-related amnesia, one would expect that such claims are typically found among those who committed violent and emotional crimes. However, it appeared that there was no support for the stress-dissociation hypothesis of crime-related amnesia. That is, in contrast to previous studies (Kopelman, 1995; O'Connel, 1960; Taylor & Kopelman, 1984), claims of amnesia were not more prevalent among patients who had committed serious emotional crimes like homicide than among those who had committed less violent crimes.

Like B's case demonstrates, claiming amnesia can be very beneficial for a defendant. Scientific literature suggests that when someone suffers from amnesia, this amnesia might be a manifestation of a psychiatric disorder at the time the crime was committed. According to Moskowitz (2004), many offenders

suffer from some type of dissociative disorder which may have caused their violent behavior. If true, the defendant may not be held fully responsible for his behavior. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994), a Dissociative Identity Disorder (DID) can be accompanied by amnesia. Amnesia is also said to occur in people suffering from Post Traumatic Stress Disorder (PTSD) as a result of traumatization. According to some authors, amnesia would provide evidence for an *acute dissociative state* at the time of the crime (Janssen & Van Leeuwen, 2000). This is a state in which the normally integrated functions of consciousness, memory, identity, or perception of the environment are disrupted with the result that the person involved cannot remember his/her actions (APA, 1994). Swihart and co-workers (1999) called this phenomenon "red-out". In cases in which claims of amnesia are raised by the defendants, judges often call upon a psychiatrist to evaluate the defendant's mental state at the time of the crime and the credibility of the claimed memory loss.

AUTOMATISM, CRIMINAL INTENT, AND INCOMPETENCE TO STAND TRIAL

For the legal system, the phenomenon of dissociative amnesia is a complicated matter. In the United States, a claim of amnesia might be associated with automatic behavior, loss of criminal intent or incompetence to stand trial (McSherry, 1998, 2003, 2004; Porter et al., 2001; Roesch & Golding, 1986; Schacter, 1986a). In the Netherlands, similar concepts are used. It remains, however, a complicated issue in which psychological terms like automatism and dissociation and legal terms like *psychische overmacht* and insanity are sometimes used interchangeably, thereby creating confusion. Also, when it comes to the assessment of insanity and competency to stand trial, different legal rules are applicable in the US and the Netherlands. Nevertheless, the concepts are similar in principle. For that reason we will focus on the definitions that are used in Anglo-Saxon law.[3]

Automatic behavior refers to involuntary behavior resulting from some form of impaired consciousness (Kopelman 1995; McSherry, 1998, 2003, 2004; Porter et al., 2001). The American courts have accepted evidence of automatism as

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[3] *Psychische overmacht* can be compared to 'sane' automatism. The behavior is not caused by a disorder or disease but could not be controlled because of a psychological force that is caused by an external agent or circumstance (see also Janssen and van Leeuwen, 2000). There have been reports of amnesia in cases of *psychische overmacht.*

arising from a physical blow, intoxication, sleep disorders, neurological disorders, epilepsy, hypoglycemia, or dissociation arising from extraordinary external stress (McSherry, 2003). McSherry (1998) described the case of a man who stabbed his wife to death in front of their one year old daughter after she provoked him once again. He claimed that he could not remember doing so but only vaguely remembered hearing her scream.

In a criminal trial, the prosecution must prove that the accused's conduct was voluntary (McSherry, 2003, 2004). In order to answer the question of guilt, it has to be decided whether the criminal act (actus reus) was coupled with criminal intent (mens rea). Lack of criminal intent can be decided upon when internal circumstances (insanity) or automatic behavior (sane or insane automatisms) caused the crime. If that is the case, then the behavior is defined as involuntary, but not necessarily insane (e.g., mental disease). Sane automatisms are mostly categorized as resulting from an external cause, like a blow to the head or alcohol- or drug intoxication. Insane automatisms, on the other hand, are believed to be caused by internal factors like someone's psychological make-up, or a mental disorder. However, the definition of sane and insane automatic behavior has been disputed. For example, there remains controversy about whether a psychological blow leading to automatic behavior and memory loss for the crime should be categorized as a sane or insane automatism. In this context, McSherry (1998) described the case of Mary Falconer who shot her husband. The shooting was preceded by years of physical and sexual abuse by her husband. After they separated, her husband came by and abused her once more. He then insinuated that he not only abused their daughters, but also a 9 year old girl that had been in their care. He reached out to grab her by the hair, and from that moment on, Mary remembered nothing until she found herself with the shotgun in her hand and her husband dead beside her. A standard to be applied could be that of the "normal" person: if a normal person would respond in a similar way under the same circumstances than the crime would be categorized as a sane automatism. If a normal person would not respond in a similar way, then Mary's psychological make-up could be held responsible for her (insane) automatic behavior (for a similar case see McSherry, 2004).

In cases in which automatic behavior can be taken as a well-established fact, the amnesia claim needs not to be questioned. However, a claim of amnesia is not always preceded by automatic behavior. A reason to use lack of memory as a defense strategy would be to be held incompetent to stand trial. The idea is that someone who has no memory of his act cannot defend himself. In an attempt to be held incompetent to stand trial, Rudolf Hess claimed to be amnesic for his activities during the Third Reich period at the start of the "Nuremberg" trials. A

group of prominent psychiatrists examined Hess and concluded that his amnesia was genuine. When it became clear to Hess that the amnesic role conferred a disadvantage in the sense that one cannot respond to allegations, he suddenly announced during one of the trial sessions that he had fooled the psychiatrists and feigned his amnesia (Gilbert, 1971). Although American courts have never found a defendant incompetent to stand trial solely because of amnesia, some believe that this should be reconsidered when the primary rule is that everyone is entitled to a fair trial. According to Tysse (2005): "someone who is unable to recall the facts, events and circumstances surrounding his alleged criminal act … His inability to testify to facts which may establish an effective alibi, or to offer evidence in excuse, justification or extenuation would seem to bring the amnesic clearly within the very purpose of the competency rule" (p. 336). As a result of his mental deficiency, the amnesic defendant cannot assist in his own defense and should be legally rendered incompetent to stand trial. [4] The reason for the courts to be skeptical when it comes to claims of amnesia is the probability of feigned amnesia, especially when no evidence of organic amnesia is present (Tysse, 2005).

MALINGERING

Although in the Netherlands, the term "automatism" is unknown, there are cases in which a defendant was held diminished responsible or even acquitted on the basis of an acute dissociative state and subsequent memory loss, as was the case with B.[5,6] However, one can doubt the authenticity of B's amnesia claim. Sometimes, a defendant may be tempted into simulating amnesia because of a previous experience with memory loss, which might increase his chances of credibility. In many cases, a defendant might choose to feign memory problems to minimize responsibility or reduce punishment.

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[4] In the Netherlands, according to article 16 of the Dutch Code of Criminal Procedure, the court should adjourn (not acquit) when a defendant cannot understand the charges because of severe mental disorder or intellectual disability. However, in contrast to many other countries, the Dutch courts hardly ever judge a defendant to be incompetent to stand trial.
One can question if amnesia should not be included in this article.
[5] LJN: AE3911. This was also the case in a defendant who stabbed her girlfriend while sleepwalking (LJN: AF2058, 2002), and a defendant who killed her sister's boyfriend after he sexually abused her and her sisters (LJN: AE5199, 2002).
[6] See Janssen (2002) for more Dutch examples.

A recent study by Cima (unpublished) showed that the prevalence of pre-trial amnesia (detention) is much higher than amnesia after conviction (prison). Participating in this study were 12 inmates from the house of detention and 22 prisoners. Nine house-of-detention-inmates claimed amnesia (75%), whereas only 5 prisoners (23%) claimed amnesia.[7] This supports the idea that defendants who claim amnesia do so because they believe it might be profitable.

A recent study by Pyszora, Barker, and Kopelman (2003) suggests that claims of crime-related amnesia are typical for cases in which defendants are confronted with technical evidence against them, lack an alibi, and therefore choose not to deny the offence. At first sight, simulating amnesia in such cases seems not to have benefits for the defendant in the sense of evading responsibility or reducing punishment. Why would someone who tries to evade responsibility by feigning amnesia turn himself in? According to Kopelman (1995) this provides evidence that crime-related amnesia is not always malingered. One possibility for a defendant's continuing claim of amnesia, even when he turned himself in or after conviction, might be to gain sympathy. "Even though I have committed a terrible crime, I can't remember doing it, so I'm a victim as well". Another motive to persist in a claim of amnesia once in a forensic hospital is to escape the extensive therapy sessions in which patients have to discuss their crimes. Apparently, there are numerous motivations for defendant to simulate memory problems for the crime. But what happens to crime-related memories if defendants pretend to have no recollection about the crime? The studies that will be presented in Chapter 2 and 3 of this thesis, have investigated the effect of strategic amnesia claims on crime-related memories.

ALCOHOL BLACKOUT

A type of memory loss that is frequently claimed by defendants is an alcohol blackout. Although a number of authors have emphasized that excessive alcohol or drug use may contribute to amnesia for crime (Eich, Weingartner, Stillman, & Gillin, 1975; Fillmore, Vogel-Sprott, & Gavrilescu, 1999; Goodwin, Crane, & Guze, 1969; Goodwin, 1995; Kopelman, 1987; Swihart et al., 1999), claiming a blackout may also serve a strategic goal. Since it is widely accepted that alcohol releases inhibitions, deviant behavior is often blamed on alcohol consumption. When it comes to memory, alcohol can have detrimental effects. Severe intoxication may lead to storage problems. According to the state-dependent memory theory (Bower, 1981), memory performance would be optimal if the context of encoding and retrieval of information is the same. By

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[7] This difference was significant: $X^2(1) = 8.76$; $p < 0.05$.

this view, when memories (e.g., of a crime) are encoded during an exceptional state (extreme agitation and/or intoxication), subsequent retrieval of these memories will remain difficult or even impossible as long as the original state is not reproduced. Accordingly, memories encoded during intoxication would not be accessible once blood alcohol levels have returned to normal and hence, amnesia would occur. Some authors argue that Sirhan Sirhan, who murdered Robert Kennedy, represents a good example of someone suffering from state-dependent amnesia. Sirhan claimed that he could not remember murdering Kennedy because he was in an agitated state during the murder. When he was hypnotized and brought back into that state, he suddenly remembered details of the murder (Swihart et al., 1999). Referring to confidential conversations between Sirhan and his lawyers which became later known to the public, other authors have argued that Sirhan Sirhan is, in fact, a case of simulated amnesia (Merckelbach & Jelicic, 2005; Moldea, 1995). Meanwhile, the state-dependent memory hypothesis of amnesia for crimes is not based on solid evidence. For example, Jureidini (2004; p. 263) pointed out that "when lists of meaningless words are learnt in a particular state (say, intoxication or vigorous exercise) they are more likely to be retrieved when the subject is returned to that state than when the subject is in a resting or control state. However, when other cues are available (that is when the memory tasks have more significance, and therefore have meaningful association to other memories and experiences) the 'state' effect on memory wanes." Likewise, in his book, McNally (2003a; p.42) summarized the literature on state-dependent memory and came to this conclusion: "Two points about mood-state-dependent memory warrant emphasis. First, as Eich has stressed, the effect is fragile and occurs "only within a restricted range of circumstances or conditions". (1995: p. 74). Second, even when it does occur, it does not result in outright amnesia. A more forensically relevant example comes from Wolf (1980). This author showed that inducing a state of intoxication in murderers who claimed amnesia, did not lead to a return or recovery of their crime memories.

Nevertheless, lay people often assume that alcohol releases inhibitions and makes people less responsible for their behavior (Critchlow, 1986). Consequently, alcoholic blackouts are frequently reported for crime-related memories. Alcohol amnesia is sometimes classified as an organic form of amnesia. At other times, it is treated as a form of dissociative amnesia, or as a separate type of amnesia. According to DSM-IV, alcohol-induced amnesia should be distinguished from dissociative amnesia since not a psychological blow, but a substance is responsible for the memory loss. However, this only holds when it can be objectively demonstrated that the amount of alcohol

consumed has reached levels at which an alcohol blackout might be clinically possible, and malingering can be ruled out. In cases where memory loss for a crime is attributed to alcohol intoxication, the veracity of these claims cannot always be tested. Simulation of memory loss as a strategic function should therefore be considered in claims of alcohol amnesia. The studies presented in Chapter 4 looked into the prevalence of alcohol blackouts and investigated whether and when such claims might serve a strategic goal.

VICTIMS WITH MEMORY LOSS

As said before, not only defendants but also victims of (alleged) crimes sometimes claim to have no memories of the event. In the case of amnesia for a traumatic event (e.g., sexual abuse) it can be assumed – and there is also some evidence for this assumption (Geraerts, Jelicic, & Merckelbach, in press b) - that mostly, the claimed memory loss is not feigned. Although one may doubt the reality of the memory loss or the abuse, the person reporting the amnesia is convinced that the abuse took place. The following case demonstrates how this might happen.

Juliet[8], a 25 year old woman, pressed charges against her parents and accused them of years of sexual abuse, and murder of her unborn babies. Three years prior to the charges, Juliet started treatment with a psychotherapist because she suffered from panic attacks and concentration problems. At that time, Juliet did not have any memories of a traumatic childhood. After two years of intensive therapy, Juliet's therapist started to suspect that her problems could be based on a childhood trauma. Juliet at that stage admitted to her therapist that her parents physically and sexually abused her. In the course of therapy, Juliet's memories of the trauma became stronger and more horrific. She accused her parents of incest and cannibalism. She claimed that she had been repeatedly pregnant from her own father, and that he, together with her mother, aborted the full grown fetuses violently, cut them up in pieces and buried them in the dunes. Juliet's statements were supported by her sister, who claimed to have also been sexually abused by her parents. Their parents were shocked and denied everything. The case was thoroughly investigated. Nothing was found on the spot where Juliet claimed that the bodies of her unborn babies were buried. A gynaecologist who examined Juliet could not find any scar tissue

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[8] This case vignette is based on a real Dutch case. Names were changed (Van Koppen & Merckelbach, 1998).

indicating that violent abortions had taken place. In fact, there were no indications that Juliet had ever been pregnant at all.

Many believe that traumatic events go hand in hand with (partial) amnesia for that event (Briere & Conte, 1993; Scheflin & Brown, 1996). Even psychology students believe that a memory with gaps implies that a trauma has taken place (Garry, Loftus, Brown, & DuBreuil, 1997; Read, 1997). This belief seems to be supported by an abundance of studies that found a relationship between self-reported amnesia and sexual abuse (for an overview, see Scheflin & Brown, 1996). Retrospective studies have shown that people who were sexually abused often report periods during which they had poor memory of the abuse (Briere & Conte, 1993; Chu, Frey, Ganzel, & Matthews, 1999; Elliott & Briere, 1995). Also, studies have demonstrated that the active suppression of certain memories (word pairs) results in poor accessibility of these memories (Anderson & Green, 2001). Wegner (1987), on the other hand, demonstrated that the active suppression of neutral thoughts (e.g., white bears) led to a rebound of those thoughts, indicating that it is rather difficult to actively suppress neutral material[9]. Others speculated that extensive periods of stress or fear increase the transmission of stress hormones, which leads to hippocampal damage. It is suggested that in certain individuals, this could induce memory loss for the stressful events (Bremner, 2002; Joseph, 1999). These findings seem to plead for the existence of traumatic amnesia. But there are facts that are difficult to reconcile with this idea. In a critical review of studies on reduced memory performance after acute stress, Jelicic and Bonke (2001) argue that these studies suffer from methodological shortcomings. According to the authors, attributing memory impairments and reduced hippocampal volume in trauma survivors suffering from PTSD to the effects of sustained stress appears to be problematic. For example, poor memory performance reported in the studies they discuss could be related to fatigue resulting from the stressful task. Furthermore, several studies that are discussed in their review failed to find a link between a reduced hippocampus and poor memory (Jelicic & Bonke, 2001).

That the opinions about the existence of traumatic amnesia are divergent has been demonstrated by the debate concerning the validity of the trauma-memory argument (see also Kihlstrom, 1996, 2004). Some authors believe that traumatic memories are special and fundamentally different from non-traumatic memories (Porter & Birt, 2001; Van der Kolk & Fisler, 1995; Zoellner

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[9] Similar results have been found for the suppression of trauma related thoughts in people suffering from Acute Stress Disorder (Guthrie & Bryant, 2000).

& Bittenger, 2004). According to these authors, traumatic memories are difficult to access because they were stored under stressful circumstances. The traumatic memories are said to appear in the fragmentary form of intrusive memories or images. Clinical studies on the effects of trauma on memory demonstrate that traumatic memories are in fact more difficult to forget, especially by people with PTSD (McNally, Lasko, Macklin, & Pitsman, 1995). In fact, a review of 63 studies of documented trauma victims by Pope and colleagues (Pope, Hudson, Bodkin, & Oliva, 1998) failed to find a single case of amnesia for the traumatic event that could not be explained by organic factors, ordinary forgetting or some other normal memory process. Other studies show that concentration camp survivors of WW II have no problems remembering the events. Their memories almost never fall pray to amnesia (Merckelbach, Dekkers, Wessel, & Roefs, 2003a,b; Schelach, & Nachson, 2001; Wagenaar & Groeneweg, 1990). Much the same is true for Croatian war veterans. A study by Geraerts and co-workers showed that traumatic war memories had been just as stable across time as their more neutral memories (Geraerts et al., in press c). Also, survivors of the holocaust rarely report psychogenic amnesia for their horrific war experiences (Kuch & Cox, 1992). Thus, there are two radically different points of view, with on the one hand, advocates and on the other hand, opponents of the trauma- memory argument.

The facts that amnesia claims *always* rest on a form of self-report, and that recovered memories of childhood trauma often emerge in a therapeutic setting, deserve extra attention. In the previously described Juliet case, the memories of the abuse arose when her therapist suggested that she must have been amnesic for a long time. Thus, in the eyes of lay people, amnesia, which is a pre-requisite for a recovered memory, is what makes a traumatic background more plausible. Psychotherapy is aimed at uncovering traumatic memories for the benefits of the patient's well-being. The idea is that the retrieval of those memories would help finding the cause of psychological problems, which would promote recovery. That such an approach can do more harm than good is demonstrated by cases of the Juliet-type, in which a patient develops false memories of a trauma based on an alleged amnesia and presses charges against an innocent relative (Ceci & Loftus, 1994; Health Council of the Netherlands, 2004; McNally, 2003a,b; Van Koppen & Merckelbach, 1998). Studies on false memories suggest that people are able to develop pseudo-memories that can make a very realistic impression. Especially in the presence of an authority (e.g., a therapist), fabricated memories are easily accepted to be true (Loftus, 1993; 2003; Schooler, 1994). In order to be able to make judgments about the reliability of memories of sexual abuse, it is important to determine whether the memories first

surfaced during therapy, or whether they were present before. The recovered memory debate evolves around the question whether the techniques use by psychotherapists lead to an accurate reconstruction of lost, traumatic memories or to the construction of pseudo-memories of an alleged trauma (Hyman, Husband, & Billings, 1995; Lindsay & Read, 1994; McNally, 2003a; Schooler, 1994).

THE AVAILABILITY OF MEMORIES

Apart from a therapeutic setting, self-help books (Bass & Davis, 1988) and the media can encourage people to start digging their memory in search of a traumatic past. After a period of "memory work", patients or clients may come to the conclusion that their inability to remember childhood events exceeds normal forgetting. Such a conclusion could be the result of so called *metamemory beliefs*. Metamemory beliefs are subjective beliefs people have about the functioning and quality of their own memory. These beliefs can result from the idea that certain factors (e.g., personal abilities, task demands) can influence memory performance (Cavanaugh & Perlmutter, 1982). For example, when retrieval of childhood memories is perceived as difficult, and one is explicitly asked whether "there are large parts of your childhood you can't remember", this may encourage the following type of reasoning: "I find it difficult to retrieve childhood memories because I have few childhood memories. So, why do I have few childhood memories? Perhaps something bad happened to me when I was a child which I did not want to remember." This inference can result in pseudo-memories of a trauma that never took place (Ceci & Loftus, 1994; Lindsay & Read, 1995; Read & Lindsay, 2000; Rosen, Sageman, & Loftus, 2003).

Although this effect of memory work on metamemory beliefs may seem far fetched, Belli, Winkielman, Read, Schwarz, and Lynn (1998) demonstrated that the retrieval of many childhood memories paradoxically induces the belief that memory of childhood events is poor (see also Winkielman, Schwarz, & Belli, 1998). The authors argue that the perceived difficulty of retrieving many childhood memories is responsible for the belief that one has few childhood memories. In two studies, Belli et al. (1998) instructed 152 en 157 students, respectively, to retrieve either 4, 8 or 12 childhood memories. Next, they asked the students whether "there are large parts of your childhood you can't remember". This is a question that was first recommended by Ross (1997) in a clinical interview designed to diagnose the amnesia symptoms of Dissociative Identity Disorders. It appeared that in the 4-, 8- of 12- memories conditions, respectively 26%, 33%, and 44% of the students answered "yes" to the pertinent

question. To explain why the retrieval of many childhood memories may induce the belief that memory for childhood is poor, Belli and co-workers refer to the availability heuristic (Tversky & Kahneman, 1973). That is, in judging the quality of their memories, people rely on the subjectively experienced difficulty it took to retrieve memories. A similar experiment was conducted by Winkielman and colleagues (1998) with the modification that half of the participants who had to retrieve 12 childhood memories was given the extra information that "most people find it difficult to retrieve childhood memories". The other half was given the opposite information that "most people find it easy to retrieve childhood memories". Results demonstrated that compared to the group that had to retrieve only 4 childhood memories, participants who were asked to retrieve 12 childhood memories experienced it as more difficult and blamed it on their poor childhood memory (see table 1.1). This paradoxical retrieval effect disappeared when, prior to the task, participant were told that "most people find it difficult to retrieve many childhood memories". Participants who were given that information focused on task demands: most people find it difficult, so it is a difficult task. Retrieval of childhood memories thus accesses two types of information: the content of the memories, and the ease or difficulty of retrieving that content (Schwarz et al., 1991). Participants preoccupied with the difficulty of retrieving the content and not the task demands, ascribe the difficulty to poor memory instead of task demands.

Table 1.1. Percentage "yes" responses to the question "Are there large parts of your childhood you can't remember?" (Winkielman et al., 1998, Belli et al., 1998), or, "Was there ever a period during which you remembered less or nothing about the event?" (Read & Lindsay, 2000), after moderate memory work / retrieval of 4 childhood memories, or enhanced memory work / retrieval of 12 childhood memories.

	Moderate memory work	Enhanced memory work
Winkielman et al., 1998	19%	46%
Belli et al., 1998	26%	44%
Read & Lindsay, 2000	35%	70%

HOW PLEASANT WAS YOUR CHILDHOOD?
That metamemory beliefs can be easily manipulated and subsequently affect the way people assess the *quality* of their past was demonstrated by a study of Winkielman and Schwarz (2001). In this study, participants were instructed to

retrieve either 4 or 12 childhood memories and were given the additional information (Winkielman & Schwarz, 2001; p.177): "If nothing particularly dramatic happened and life went along smoothly, there's very little to ruminate about in great detail. As a result, such relatively uneventful periods of life do not leave detailed memory traces and eventually fade away, along with other material related to them. Thus, a pleasant childhood may be difficult to remember later on." Another group was given the following information: "If a period of life was painful, sad, lonely or otherwise unpleasant, we often avoid thinking about it in great detail. As a result, the memory traces for such periods are never refreshed and eventually fade away, along with other material related to them. Thus, an unpleasant childhood may be difficult to remember later on." Next, participants were asked questions of the type: "how pleasant was your childhood?; how often did you feel sad?; how often did you feel happy?" On 7-point rating scales, participants evaluated their childhood happiness. When participants were given the information that a pleasant childhood was difficult to remember, they rated their childhood as more pleasant after the retrieval of 12 childhood memories. Participants who were given the information that an unpleasant childhood is difficult to remember, rated their childhood as more unpleasant after the taxing task of retrieving 12 childhood memories[10].

Read and Lindsay (2000) showed that the retrospective and subjective judgments about the accessibility of memories of outstanding events can be experimentally manipulated by memory work. Participants had to rate the completeness of their memory for an event (e.g., high school graduation) before and after memory work. That is, they had to report if there had ever been periods during which they could not remember the event. Participants had to do either moderate memory work (i.e., retrieve more memories of the event) or enhanced memory work (i.e., retrieve memories of the event, find pictures and discuss it with friends and family). Before the memory work, participants reported to have been amnesic for 26% of the events. After a period of enhanced memory work they reported to have been amnesic for 70% of the events. Participants who only had to do moderate memory work reported periods of amnesia for 35% of the events. Thus, in line with the results of the Belli et al. (1998) and Winkielman et al. (1998) study, intensive memory work was found

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[10] Compared to the 4-events condition, participants in the 12-events condition perceived the task as more difficult. Consequently, participants in the 12-events condition judged their childhood as more pleasant or unpleasant (consistent with the instructions that either a pleasant or an unpleasant childhood is difficult to remember) than did participants in the 4-events condition.

to produce a substantial shift in beliefs about the integrity and completeness of memory was induced. When participants in Read and Lindsay's study (2000) were asked afterwards why they reported prior periods of amnesia despite the fact that they successfully retrieved details about the target event, they responded that "they reported prior periods of remembering less about the target event simply because they had recently remembered more than they had for years" (Read & Lindsay, 2000 p. 142). Thus, the more new information is retrieved, the more prior memory is judged to have been incomplete, a metamemory belief that often does not correspond to reality. One participant in Read and Lindsay's study needed considerable debriefing before she was willing to accept the assurance that the limitations of her long term memory were not evidence of a pathologically impaired autobiographical memory. According to Read and Lindsay, it is possible that people generally overestimate their ability to recollect details of significant childhood and adolescent events, a bias that could account for the surprise about the retrieval difficulty expressed by some of their participants and for the assumption, in the literature, that "partial amnesia" is peculiar to trauma.

Apparently, not only under direct therapeutic influence, but also after some type of memory work, people may come to believe that they have few childhood memories, that they have been amnesic for past events, or that their childhood was unpleasant. This may lead to an increase of the subjective plausibility that a childhood trauma must have happened (Ceci & Loftus, 1994; Read & Lindsay, 1994). In the worst case scenario, someone may start having detailed memories of a childhood trauma.

Results of the studies described above should be interpreted with caution. Although the consequences of memory work may be far reaching, not everyone who comes to the conclusion that they have few childhood memories will draw the conclusion that they are amnesic. Even fewer people will hold a traumatic childhood experience responsible for this lack of childhood memories. Who are the people who are prone to drawing such dramatic conclusions? Different studies have shown that there is a connection between reporting traumatic amnesia and certain personality characteristics (Chu, Frey, Ganzel, & Matthews, 1999). People reporting amnesia often score high on a questionnaire measuring dissociative experiences (Dissociative Experience Scale; DES; Bernstein & Putnam, 1986). Scores on this questionnaire correlate with fantasy proneness (Wilson & Barber, 1982), as measured with the Creative Experiences Questionnaire (CEQ; Merckelbach, Horselenberg, & Muris, 2001). People with a heightened level of fantasy will report more dissociative experiences like dissociative amnesia (Merckelbach, Muris, & Rassin, 1999). According to

Merckelbach and colleagues, DES scores are associated with a positive response bias, meaning that they tend to endorse a variety of positive and negative life events (Merckelbach, Muris, Horselenberg, & Stougie, 2000). This response bias is especially to occur when highly dissociative people fill out trauma questionnaires containing vaguely formulated items, leading to a heightened correlation between dissociation and reports of trauma (Merckelbach & Jelicic, 2004).

In Chapter 5 of this thesis, a study will be presented in which we tried to replicate the finding that memory work can induce the belief that memory is poor. In addition, we were interested in whether pessimistic metamemory beliefs could subsequently undermine objective autobiographical memory performance. If so, the risk of scenarios that were sketched above would become more plausible.

EXPECTATIONS

Metamemory beliefs not only exist in an amnesia context. According to Ponds and colleagues (Ponds & Jolles, 1996, Ponds, Van Boxtel & Jolles, 2000), pessimistic expectations about memory in elderly (i.e., fear of dementia) can negatively affect their daily cognitive functioning, when in fact their objective memory performance is not different from that of younger people. Thus, although these negative expectations do not reflect actual memory capacity, they do have detrimental effects on how elderly use their everyday memory.

There are different ideas about how expectations affect disorders like dissociative amnesia. The ICD-10 (WHO, 1992) lists dissociative amnesia along with other pseudo-neurological disorders (e.g., paralysis, pseudo-seizures), and calls it dissociative conversion disorders (Holmes et al., 2005). Dissociative amnesia and conversion disorders are believed to be caused by a compartmentalization of mental systems.

Compartmentalization phenomena are characterized by a deficit in the ability to volitionally control processes or actions without there being any medical reason. This could lead to uncontrollable behavior (hallucinations or paralysis) or an inability to bring normally accessible information into conscious awareness (amnesia). This deficit cannot be reversed by free will, but is reversible in principle (Holmes et al., 2005). Reversibility was demonstrated by the fact that conversion symptoms can be directly removed by hypnotic suggestion, indicating that expectancies or beliefs may underlie the symptoms. Thus, similar to the belief of being paralyzed in a typical conversion disorder,

one can come to adopt the belief to have lost one's memory when, in fact, there is no objective medical reason for this believe (see also Jureidini, 2002, 2004). According to Jureidini, response sets or expectancies are predictive for our behavior. Response expectancy is like an intention, but differs from it in that when intended, the behavior is experienced as voluntary while for a response set it is experienced as automatic or nonvolitional. For example, when you want to get hypnotized you intend to respond (execute suggested behaviors or experience suggested experiences), but you also expect to experience the response as non-volitional (beyond your personal control or automatic). Whether we attribute behavior to voluntary of volitional processes is influenced by beliefs, schemas, and response expectancies (Jureidini, 2004; Kirsch, 2000). For example, bodily changes that occur under hypnosis are mediated by the expectancy of those changes. The question is how response expectancies produce these changes. It is commonly accepted that we see the world the way we expect it to be. According to Kirsch (2000) "Expectancies are brain activities that help us to disambiguate the world rapidly and effectively by preparing us to see it in particular ways" (p. 279). Expectancies can lead us to misperceive things. "Internal states are especially ambiguous, and for that reason, our perceptions of them are particularly prone to long lasting expectancy effects" (p. 279). In other words, our expectations about the world, our bodily functions or our memory performance is affected by how we believe or expect them to be. Some evidence for this has been found by Harrington (1997), who demonstrated that placebos produce alterations in psychological or medical symptoms (e.g., anxiety or pain) and perhaps even underlying disorders (Harrington, 1997). In addition, Assefi and Garry (2003) showed that the mere suggestion to subjects that they had consumed alcohol when in fact is was plain tonic, made them more susceptible to misleading information. Similarly, Kvavilashvili and Ellis (1999) found that subjects who received a placebo, but were told that it was a memory-impairing substance, performed less well on a memory test compared to control subjects. In all these cases expectations about the substance that was administered affected performance.

Kirsch (2000) demonstrated that also without hypnotic suggestion or placebos, behaviors that are normally considered voluntary can be experienced as automatic when a particular expectancy is adopted. In a facilitated communication experiment, participants were asked to facilitate communication of a confederate who was described as mentally disabled. Prior to the experiment, participants were misinformed about answers to questions the confederate was going to be asked. When they facilitated the confederate in giving answers by guiding the confederates hand on a keyboard, they gave

answers to the questions that were asked without being aware of generating the responses themselves. The participants gave automatic responses by adopting the response set to type answers without volitional effort, since the effort was ascribed to the other person. Their automatic behavior was prepared by their intention to facilitate, and their knowledge of the answers to the questions (see Kirsch, 2000 p. 284).

Thus, according to Jureidini (2004) and Kirsch (2000), expectancies could lead people to intentionally produce suggested or expected behavioral responses without them being aware of their intentions. This could lead people to misattribute the cause of their actions and experience it as nonvolitional or automatic. Following their line of reasoning, response expectations could also be responsible for claims of memory loss simply because in certain situations (e.g., intoxication, extreme stress or criminal behavior) that is what people expect. Although avoidance of memory may be intentional (e.g., wish it never happened), it could be experienced as nonvolitional or dissociative. Although it may appear that behaviors that are perceived as nonvolitional and automatic (e.g., dissociative states) imply a lack of attention, Jureidini (2004) argues that attentional processes could be responsible for not remembering certain information. That is, whether information stored in memory becomes available may be affected by how a person has allocated his attention. For example, someone who is interested in a house as a potential buyer may report entirely different things than when that same person is asked to describe the house from the perspective of a burglar (Anderson & Pichert, 1978). Thus, a change in psychological set can change recall. Accordingly, Jureidini (2004) states that "not remembering need not be understood in terms of dissociation, with the subject as a passive victim of some unconscious internal mechanism, but rather as the subject's active (whether witting or unwitting) diversion of attentional resources away from some focus" (p. 263). Jureidini describes dissociative symptoms (e.g., dissociative amnesia) as built out of different patterns of attention and arousal, the effect of suggestion, socially defined roles and the way in which experience is put into words. With this conceptualization he comes close to the compartmentalization theory of dissociative amnesia as described above by Holmes et al. (2005).

Although it is unclear whether dissociative amnesia results from compartmentalization, focus of attention or intentional behavior which is perceived as automatic, expectations seem to play an important role. Meanwhile, not much is known about the role of expectations in defendants who claim amnesia. Since beliefs about suppression in relation to emotional events are widespread (Crombag & Van Koppen, 1994; Merckelbach & Wessel,

1998), such naïve expectations may also underlie amnesia claims in defendants who wish the crime never took place. To the extent that placebos are able to induce positive expectations about memory, they might perhaps resolve amnesia that is based on expectations or metamemory beliefs. The study presented in Chapter 6 was conducted to investigate whether it would be possible to improve or impair memory using memory-enhancing or memory-impairing placebos. Chapter 7 presents two cases of crime-related amnesia in which we tried to reverse the (expectancy-based) amnesia using memory-enhancing placebos.

ENDPOINTS ON A CONTINUUM

The studies presented in the following chapters will demonstrate that several psychological processes may be involved in claims of crime-related amnesia. Therefore, the differentiation between genuine and simulated amnesia cannot always be made easily. Kopelman (2000; p. 608) argued that the different forms of amnesia may not be so easily distinguished and "form endpoints along a continuum rather than discrete categories".

Kopelman (2000), but also Markowitsch (1996) have tried to explain how the different forms of amnesia may overlap. Markowitsch (1996; p. 358) stated that "in the widest exegenesis, both forms of retrograde amnesia may be viewed as related to the patient's wish to avoid confrontation with his or her past autobiographical memories". With "both forms", Markowitsch refers to organic and psychogenic (dissociative) amnesia. According to this author, both organic and psychogenic amnesia may have a similar neurobiological substrate. Markowitsch believes that memory loss is the consequence of a disintegration of network systems in the brain which can be induced by a structural alteration in the brain in organic amnesia, or a self-generated desynchronization in psychogenic amnesia. Following Markowitsch's line of reasoning, we speculate that in cases of dissociative amnesia pertaining to crime or abuse, the wish to avoid memories of the event (i.e., wish it never happened) could induce a functional alteration resulting in amnesia-like phenomena.

According to Kopelman (2000; p. 604-606), it is not the neurological substrate per se but a previous experience with an organic form of amnesia that could underlie dissociative amnesia in terms of deliberate simulation. He proposed a revised model of organic and psychogenic amnesia along which he places different cases of organic and dissociative amnesia (see figure 1).

Figure 1. The different types of amnesia which may for endpoints on a continuum (from Kopelman, 2000).
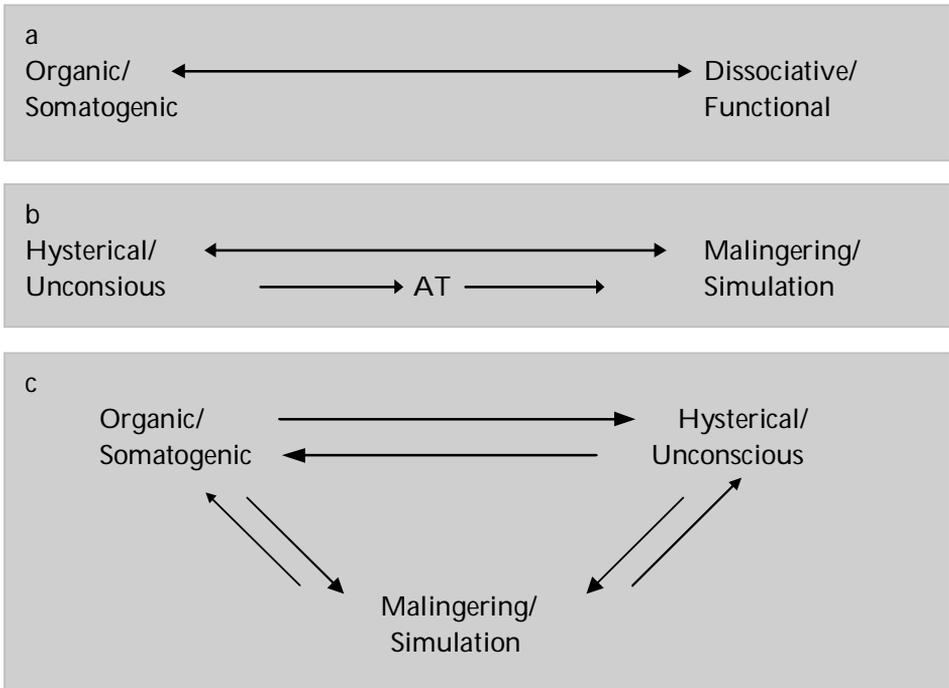
Kopelman's model suggests that there can be varying degrees of awareness in psychologically based amnesia. Some cases, where the amnesia is obviously organic, psychogenic, hysterical or simulated, can be placed on the extremes. Sometimes there is a mixture of organic and psychological factors, for example in case of a minor concussion in combination with severe psychological distress resulting from work or marriage related problems. In such cases, the amnesia may persist without any physical reason. These cases should be placed somewhere along the continuum of figure 1a. Likewise, within dissociative amnesia, the relative contribution of hysterical factors and malingering can also vary widely (figure 1b), with varying levels of awareness. Figure 1c incorporates figures 1a and 1b, and emphasizes the interaction between organic and psychological states in the phenomenon of amnesia. Kopelman (2000, p. 602) describes a patient (AT: figure 1b) who passed all tests on malingering, but evidently turned out to be an imposter. According to Kopelman, AT would best be placed somewhere in the middle between hysterical and malingered amnesia. AT appeared to have experienced a typical fugue episode following a

marital crisis, but continued to complain about autobiographical memory loss for months later. After some detective work, it appeared that in the beginning her amnesia was genuine, but after one month she simulated her amnesia. In these cases, a previous experience with (organic or hysterical) amnesia may become the basis of simulation, and the person involved may come to believe in his or her memory loss or role-playing. On a related note, Jureidini (2002; p. 126) argued that patients with hysterical symptoms could be pretending, and that pretend is not a state that can always easily be entered into or left, so that it is not surprising to find ambiguity in the awareness and intentionality of symptom production. He based this assumption on the observation of children's pretend play. To children their imaginary friends are alive and real. Similarly, hypnosis can be seen as a form of pretend play. Jureidini (2004; p. 264) opined that "one of the most interesting aspects of hypnotic responsiveness is that subjects to varying degrees, convince themselves of the reality of their experience. This would be consistent with understanding their behavior as pretending [..] pretending is an intermediate territory between deceit and real belief." This interpretation comes close to Kopelman's model on the varying levels of awareness in amnesia (See for a more detailed description of the possible interaction between brain systems and psychological and social factors Kopelman, 2000).

Thus, following Kopelman's (2000) line of reasoning, a previous experience with organic amnesia from a blow to the head or alcohol intoxication may provide useful knowledge about how to simulate amnesia when it is convenient. It is conceivable that in cases of amnesia claimed by abuse victims or defendants, psychological mechanisms may also operate and interact with brain pathology at varying levels of awareness.

OUTLINE OF THIS THESIS

The present dissertation describes a number of studies investigating the role of deliberate simulation, metamemory beliefs, and expectations in claims of dissociative amnesia. Deliberate simulation is most relevant to claims of amnesia raised by defendants of serious crimes. Metamemory beliefs and expectations about memory performance could play a role in both claims of crime-related amnesia and claims of amnesia in (sexual) abuse victims. In the following chapters, these three aspects - simulation, beliefs, and expectations- of amnesia claims are described.

As said, defendants could claim amnesia with a strategic purpose (i.e., minimize responsibility) or, based on naïve beliefs and/or expectations about suppression, they could avoid thinking about the crime because they wish it never took place. In both types of cases, the defendant at first decides to play the role of an amnesic. A study by Christianson and Bylin (1999) suggested that the deliberate simulation of amnesia for a crime-script undermined genuine memory for crime information. In *Chapter 2 and 3* we replicated and extended this study by assessing the effect of simulating amnesia on memories of a mock crime.

Defendants' often attribute their amnesia to alcohol blackouts. *Chapter 4* addresses the question whether alcohol blackouts are, indeed, a frequently occurring phenomenon or are merely used as an excuse to minimize criminal responsibility. The chapter describes three studies that assessed the incidence of alcohol blackouts in healthy samples, and how strategic goals could instigate claims of amnesia for criminally relevant behavior.

Especially in claims of amnesia for childhood events, metamemory beliefs could play an important role. *Chapter 5* describes a study in which these beliefs were experimentally manipulated. The belief that memory is poor can be induced after the retrieval of many childhood memories. The question arises whether this would extend to pessimistic beliefs about memory as a whole. Perhaps, to a similar extent that elderly ineffectively use their memory because they are convinced that it is poor, such an effect could be found in young, healthy people once they have come to believe that their memory for childhood is poor. If so, one would expect that these beliefs would negatively affect objective memory performance. Thus, in addition to previous findings on the effects of metamemory beliefs on memory completeness judgments, this study assessed whether experimentally induced metamemory beliefs that memory for childhood is poor would lead to poor memory for personal events measured with an objective memory task.

In the two chapters that follow, we describe studies in which expectations about memory were explicitly manipulated. This time, metamemory beliefs were not self-induced by some type of memory work, but were explicitly induced by placebos that were said to improve or impair memory. In *Chapter 6*, the effect of "memory-enhancing" and "memory-impairing" placebos on memory for a film fragment is described. *Chapter 7* describes two case studies in which forensic patients who claimed to be (partially) amnesic for the crime they had committed were given memory-enhancing placebos.

In *Chapter 8,* the main findings of the previous chapters are summarized, discussed, and conclusions are drawn. Implications for legal practice and recommendations for future studies are given.

2

FEIGNING AMNESIA UNDERMINES MEMORY FOR A MOCK CRIME*

INTRODUCTION

It is not uncommon for perpetrators to claim amnesia for their offences (Cima, Merckelbach, Nijman, Hollnack, & Knauer, 2002; Kopelman, 1987; Taylor & Kopelman, 1984). As a matter of fact, 25-45 % of murderers claim amnesia for their crime (Kopelman, 1995) and some authors found these rates to be even higher (Bradford & Smith, 1979; O'Connell, 1960). Although many lay people and triers of fact seem to believe that it is perfectly possible for an offender to have complete amnesia for his crime, especially when he was intoxicated during the time of the crime (Cima et al., 2002), psychological science offers little or no consensus as to the existence of crime-related amnesia (Kopelman, 1995; Schacter, 1986a, 1986c; Taylor & Kopelman, 1984). Many authors emphasize that two distinct types of amnesia should be distinguished, namely organic and dissociative (also referred to as psychogenic or functional) amnesia. Organic amnesia refers to memory loss due to brain damage, head injury, viral infections or intoxication (Bourget & Bradford, 1995; Kopelman, 1987, 1995; Schacter, 1986a, 1986b). Dissociative amnesia refers to a condition in which a person has no recollection of his own identity or behavior due to disruptions of memory and consciousness (Kanzer, 1939; O'Connell, 1960; Sadoff, 1974). Dissociative memory loss is often thought to be the result of intense stress due to marital or financial problems or traumatic childhood experiences (Arrigo & Pezdek, 1997; Loewenstein, 1991).

According to some authors, crime-related amnesia is a form of dissociative amnesia that can best be interpreted as the result of extreme emotional arousal (Kopelman, 1995; Loewenstein, 1991; Swihart et al., 1999). By this view, excessive arousal during a crime would make it difficult to retrieve memories of the event when the person regains a normal state of arousal. This would result in lack of memory for the crime. Not only extreme arousal, but also excessive alcohol intake would contribute to state dependency of crime memories and, along this pathway, contribute to dissociative amnesia for crime (Bourget & Bradford, 1995; Bower, 1981; Goodwin, 1995; Goodwin et al., 1969; Kalant, 1996; Kopelman, 1995; Swihart et al., 1999).

Apart from organic and dissociative amnesia, there is a third interpretation of cases in which perpetrators claim to have no memories of the crime. Although some authors (e.g. Gerson, 2002) opine that malingering is a rare phenomenon, there are several well-documented cases in which perpetrators feigned amnesia for the crime they committed (e.g. Denney, 1996; see also Cima et al., 2003c). The most common motive for offenders to simulate amnesia is avoidance or minimization of legal responsibility.

The issue of whether a claim of crime-related amnesia has an organic background, is dissociative in nature or is a form of malingering is not without important legal implications (e.g. Bradford & Smith, 1979; McSherry, 1998; Porter et al., 2001; Schacter, 1986a). For example, when triers of fact have the impression that such a claim is bona fide and take it as a strong indication that the perpetrator was in a dissociative state when he/she committed the crime, this might have consequences for the perpetrator's competency to stand trial (Schacter, 1986a) or it might inspire a not-guilty-by-reason-of-insanity outcome (McSherry, 1998; Porter et al., 2001). Because of these legal ramifications, the psychological literature on crime-related amnesia has been preoccupied with parameters that might discriminate between organic, dissociative, and feigned amnesia. However, as Kopelman (2000) points out, there are no robust demarcations between these forms of amnesia. Instead it is more plausible that they form the endpoints of a continuum. Thus, according to Kopelman (2000), claims of amnesia often represent a mixture of genuine and malingered components. A case in point is the experimental work by Christianson and Bylin (1999) who suggested that feigning amnesia might have a memory-undermining effect. More specifically, Christianson and Bylin (1999, see also Bylin & Christianson, 2002) found that participants instructed to simulate memory impairment for a crime narrative that they had read showed poorer overall memory for the crime story when instructed to perform as well as they could during a one-week follow-up. This suggests that simulating memory difficulties for a crime has negative effects on genuine memory for that crime.

Christianson and Bylin argue that several mechanisms might be responsible for the memory-undermining effect of feigning amnesia. One candidate is retrieval-induced forgetting (Anderson, Bjork, & Bjork, 1994; Ciranni & Shimamura, 1999; Macrae & MacLeod, 1999; Shaw, Bjork, & Handel, 1995). Retrieval of fabricated memories requires inhibition of correct information. This may lead to retrieval difficulties when one later tries to recall the correct information (Anderson et al., 1994; Christianson & Bylin, 1999; Wright, Loftus, & Hall, 2001). Another potential mechanism has to do with source monitoring. Thus, fabrication of a new version of the story may lead to confusion of this new version with the original story when asked to report honestly on the second test occasion. Perhaps, then, ex-simulators misattribute fabricated information to the original story and, in this way, make source-monitoring errors (Johnson, Hastroudi, & Lindsay, 1993; Roediger, Jacoby, & McDermott, 1996). Finally, Christianson and Bylin (1999; Bylin & Christianson, 2002) point out that the memory-undermining effect of simulated amnesia might simply reflect lack of rehearsal. Research by Turtle and Yuille (1994) has shown that initial recall is

important for later recall. This implies that performance on a follow-up memory test may benefit from previous rehearsal of information. Perhaps, then, it is not simulation per se, but lack of rehearsal that is responsible for the poor performance of ex-simulators on the second test occasion.

The present study made an attempt to replicate and extend the results found by Christianson and Bylin (1999). Thus, we wanted to test whether simulating amnesia during a first test occasion would have a negative effect on subsequent memory performance (e.g., during a second test) as claimed by Christianson and Bylin (1999). In particular, we wanted to know whether such an amnestic effect of simulation occurs when a setting is created that more closely resembles a real-life crime situation. In the Christianson and Bylin studies, participants read a story about a crime and they were instructed to imagine that they were the perpetrator. However, work by Engelkamp (1995; 1998) shows that memory for an imaginative event is different from memory for events in which one has actually participated (i.e., "enactment"). That is, enactment leads to better free recall than does standard learning (Engelkamp, 1995). With this in mind, we had participants perform a mock crime. Furthermore, by including a delayed-testing only control group, we were able to estimate the effects of being tested only at the second test occasion. This allowed us to examine to what extent the amnestic effect of simulation is a product of lack of rehearsal of critical material during the first phase of the study. A subsidiary aim of our study was to explore whether the amnestic effect of simulation is modulated by certain individual difference measures. One could argue that people high on fantasy proneness and dissociation are superior role players (Merckelbach & Rasquin, 2001). If true, one would expect a significant correlation between these traits and the memory-undermining effect of feigning amnesia. Another relevant trait in this context is social desirability. If the memory-undermining effect of feigned amnesia is strongly related to social desirability, the question arises whether this effect is genuine or reflects some people's tendency to stick to their role of simulator despite the instructions to perform as well as they can (Horselenberg et al., 2000).

METHOD

PARTICIPANTS

The sample consisted of 61 psychology undergraduates (54 women) at Maastricht University. Their mean age was 21.7 years (*SD* = 0.55). Participants

received either €10 or €20 for participation in the study, depending on the duration of the sessions.

MATERIALS

Participants were instructed to enter a fully equipped bar. They were instructed to take a pool cue that was placed against the bar and to use it for knocking down a dummy, which was sitting on a chair[11]. Next, they had to search the dummy's pockets for his wallet and take out whatever was in it, put the wallet back, leave the bar, and return to the experimenter's room. There, participants read a narrative describing a course of events in which the perpetrator (referred to as 'you') killed the victim (i.e., bar dummy) by hitting him with a pool cue after the victim had acted provocatively towards the perpetrator. The victim was portrayed as a defendant in a crime in which a little girl (closely related to 'you') was strangled, raped, and mutilated with a knife. Below is a shortened version of the narrative[12]. It begins by describing the intense relationship the participant (perpetrator/you) had with a 6-year-old neighbor girl named 'Emma' "who you watched growing up and spent time with almost every day". And then the narrative goes on like this: "One day, when you are studying, Emma's mother asks you whether you have seen her daughter who appears to be missing. The two of you start a search and after a few hours you call the police. The next morning, you hear that Emma has been found dead. She has been raped, strangled, and mutilated. You help make arrangements for her funeral. After a couple of days, the police arrest two suspects who are identified by a witness who saw them with Emma in a park on the day of the crime. One of the suspects confesses to the murder, but the other one denies involvement. You have every reason to believe that he is guilty too, but, because of a lack of evidence, the police have to release him.

Some days later, your friend picks you up in his blue Opel around nine o'clock that night and you and another friend visit a bar. After some talking, drinking, and playing darts, your friends want to play pool. Because there are three of you, you decide to wait at the bar, while your friends go into the back room where the pool table is. After a while you notice another person sitting at a table in the corner and you recognize him as the suspect at the police station. He looks at you, shows a dirty smile and says: 'She was good', and laughs. You

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[11] See for an illustrations of the scenery:

www.psychology.unimaas.nl/Base/research/Psychology&law.htm

[12] The original protocol was about two pages and is available from the first author upon request.

lose control, grab the pool cue that is leaning against the bar and hit him as hard as you can. He falls on the floor and doesn't move. You look around; there is no one there. Your friends are playing pool in the back and the bar tender is not there either. You panic when you realize the guy still doesn't move. You search his pockets for his wallet, take out the contents and put it back. You jump up and go outside. You calmly walk home. That same night the police visit you and ask you to come along to the police station. You are accused of manslaughter."

DESIGN AND PROCEDURE

Participants were randomly assigned to one of three groups: the simulation group (n=21), the honestly responding control group (n=20), and the delayed-testing only control group (n=20). Upon arrival, participants were provided with a general description of the experiment and received instructions as to what they were expected to do in the bar. No mentioning was made of any upcoming recall task. After they returned from the bar, they were given the narrative. They were instructed to read the material carefully and to try to link the bar incident to the narrative.

Next, participants rated their emotional involvement and their ability to identify with the main character of the narrative on 11-point scales (anchors: 1 = *not emotionally involved / it's extremely difficult for me to identify with the main character*; 11 = *very much involved / it's very easy for me to identify with the main character*). Participants in the delayed-testing only control group were sent home with the instruction not to talk about the experiment and were scheduled for an appointment one week later. For participants in the simulation group and honestly responding control group, a 30 min filler interval followed during which they completed several personality questionnaires. These were the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), the Creative Experience Questionnaire (CEQ; Merckelbach et al., 2001), and the Social Desirability Scale (SDS; Crowne & Marlow, 1960).

DES. The DES (Cronbach's *alpha* = 0.94) is the standard measure of dissociative experiences. It contains 28 items that address typical dissociative phenomena like feelings of derealization, depersonalization, amnesia, and identity confusion. Respondents indicate on 100 mm Visual Analogue Scales (anchored 0 = *never*; 100 = *always*) how often they experience these phenomena. Sores are averaged across items to obtain a total DES score with higher scores indicating higher levels of dissociation.

CEQ. The CEQ (Cronbach's *alpha* = 0.78) is a brief self-report measure of fantasy proneness. It contains 25 true-false items that address various features of

fantasy proneness as described by Wilson and Barber (1982). Merckelbach et al. (2001) provide evidence for the reliability and concurrent validity of the CEQ.

SDS. The SDS (Cronbach's *alpha* = 0.80) consists of 33 true/false items that measure the tendency to provide socially desirable answers. After recoding mirror items, a total SDS score can be calculated such that higher scores reflect a stronger tendency to exhibit socially desirable responses.

After participants had completed the questionnaires, they were taken to a different room. They received the following instructions: "Imagine that you are arrested because you are the prime suspect of the murder of a man who was found dead in a bar. A witness has seen you there and all the evidence points against you. The police ask you to give a statement about your involvement in the crime and what might have motivated you. You are asked to report every detail you can remember." We asked participants, about their motives so as to encourage them to identify with the main character of the story. Further instructions differed for the two groups: Simulators were told that "things do not look good for you. However, you are determined to minimize your responsibility by simulating a memory disorder. Thus, you try to describe events in such way that it looks like you have great difficulties remembering what happened. Note, however, that a witness saw you in the bar and you cannot simply deny everything." Participants in the genuine group were told that "you decide to cooperate and report in as much detail as possible everything you remember." All participants were asked whether they understood what was expected of them and whether they had any questions. Also, they were given written instructions so that they could read them in case they forgot the instructions. We did not give simulators examples about how to simulate memory difficulties since we did not want to guide them in a particular direction on how to evade responsibility.

Having received these instructions, participants were given 20 min to write down an account of what happened. Following this "free recall", participants were given a sheet with 25 open-ended questions about the narrative and bar incident (i.e., cued free recall).

Following these memory tests, participants were asked to fill out a questionnaire that served as a manipulation check and that intended to measure the extent to which they felt responsible the crime. Answers were rated on 11-point scales. Thus, they were asked whether they were responsible for what had happened (anchors: 1 = *not at all responsible*, 11 = *very responsible*), or whether they thought the victim was responsible for what happened (1 = *not at all responsible*, 11 = *very responsible*). Total duration of the first test session was

about 100 min for participants in the simulation and honestly responding control group and 30 min for delayed-testing only control participants.

After one week, all participants returned for a second test session. First, they were asked if and how much they had talked about the experiment with family or fellow students. Next, they were brought back to the test room. Simulators were told that "this time, you do not have to simulate a memory deficit. So write down every detail of the incident that you can remember." Participants in the honestly responding control group were told that "unfortunately, we lost your account and therefore we ask you once more to write down everything you remember about the incident in detail." Delayed-testing only control participants were instructed to write down the event in as much detail as possible. Next, all participants completed the cued recall task and the responsibility items described earlier. In the cued recall task, participants now also gave confidence ratings for each answer, using 3-point scales (anchors: 1= *I am sure*, 2 = *I am fairly sure*, 3 = *I am not sure*). Finally, participants were fully debriefed and paid. Total duration of the second session was about 40 min.

RESULTS

STATISTICAL ANALYSIS

Both free and cued recall data were subjected to 2 (groups: simulation versus honestly responding control group) x 2 (first versus second test occasion) Analyses of Variance (ANOVA's) with the last factor being a repeated measure. Separate one-way ANOVA's (with the three groups: ex-simulators, honestly responding, and delayed-testing only control groups, as independent factor) were conducted for the data obtained during the second test session. To identify specific differences between groups, follow-up pair-wise comparisons (LSD) were carried out. Ratings of emotional involvement, responsibility, and confidence were also evaluated with either 2 x 2 ANOVA's or one-way ANOVA's. Finally, with correlation analysis, we explored the links between individual difference measures and memory effects of simulation.

EMOTIONAL IMPACT AND SUBJECTIVE GUILTINESS RATINGS

The three groups did not differ with regard to their mean emotionality ratings of the narrative [$F(2,58) < 1$], means being 7.2 (SD = 1.4), 7.7 (SD = 1.4), and 7.7 (SD = 0.8) for simulating, honestly responding, and delayed-testing only control participants, respectively. Neither did the groups differ with regard to their

ability to identify with the main character of the story [$F_{(2,58)} < 1.0$], means being 8.0 (*SD* = 1.5), 8.1 (*SD* = 1.5), and 8.1 (*SD* = 1.6) for simulating, honestly responding, and delayed-testing only control participants, respectively.

At the first session, simulators and honestly responding participants differed with regard to responsibility ratings. Simulators rated both themselves and the victim as being less responsible for what happened relative to honestly responding participants, with $t_{(39)} = 5.89$, $p < 0.01$ for own responsibility and $t_{(39)} = 3.94$, $p < 0.01$ for victim's responsibility. Means were 3.5 (*SD* = 2.9) and 6.0 (*SD* = 3.6) for simulators and 8.3 (*SD* = 2.0) and 9.3 (*SD* = 1.2) for honestly responding participants, respectively. This indicates that the manipulation was successful. At the second test session, the groups did not differ with regard to own responsibility [$F_{(2, 58)} = 1.88$; $p = 0.16$] and victim's responsibility [$F_{(2,58)} < 1.0$]. All participants now rated both themselves and the victim as being highly responsible for what had happened. Overall means were 8.1 (*SD* =1.9) and 8.7 (*SD* = 1.5), respectively.

FREE RECALL

A scoring device was developed to evaluate participants' free recall. The experimenter and two independent raters identified 137 critical information units in the narrative. A critical unit was defined as a piece of information that would be useful for police investigation (e.g., "I went to the bar with friends"). For every reported unit, participants received 1 point. To obtain a total free recall score, the number of correctly reported information units was summed (maximum = 137)[13]. To allow for comparison with the Christianson and Bylin (1999) study, free recall scores were transformed into proportions[14]. We also

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[13] One could counter that not every information unit reported would be equally relevant to a police investigation. Thus, participants recalling less important information might have a recall scores similar to participants recalling more important information. To control for this possibility, we re-scored the free recall protocols using a weighted procedure such that information units that were considered more crucial ("black hat") received more points than units that were considered less crucial ("played pool"). However, this method yielded essentially similar results as the unweighted procedure.

[14] In addition, we calculated a free recall ratio score by subtracting the number of commission errors from the number of correctly reported informational units divided by the maximum obtainable score [e.g. (30 correct elements – 5 commissions) / 137 = 0.18]. This was done so as to obtain a measure of free recall hits corrected for commissions. An ANOVA performed on these ratios yielded

calculated the number of commission errors. A commission error was defined as the introduction of new information, e.g., information that was not part of the bar incident or the narrative (e.g., "The defendant was smoking a cigarette") or distorted information.

Free recall accounts were scored by the first author. A second rater, who was blind as to the group status, scored 20 free recall stories from both test occasions. Pearson correlations between both raters were .97 for number of correctly recalled items and .66 for number of commission errors (both p's < 0.01).

Proportions of correctly recalled information, omissions, and number of commission errors are shown in table 2.1. For proportion correctly recalled information, a 2 (groups) x 2 (test occasion) ANOVA yielded a significant main effect of groups: $F(1,39) = 35.84$, $p < 0.01$. Thus, overall, simulating participants recalled less correct information than honestly responding controls. Also, a significant main effect of test occasion emerged: $F(1,39) = 37.59$, $p < 0.01$, indicating that both groups recalled more correct information after the one-week time interval. Most importantly, a significant interaction of group by test occasion was found: $F(1,39) = 17.23$, $p < 0.01$. That is, across test sessions, simulators exhibited a steeper increase in memory performance than did honestly responding participants. However a one-way ANOVA for the one-week follow-up data revealed significant overall between group differences $F(2,58) = 5.70$, $p < 0.005$. Post-hoc analysis showed that honestly responding controls recalled more correct information than either ex-simulators [$t(39) = 2.52$, $p < 0.05$] or delayed-testing only controls [$t(38) = 3.71$, $p < 0.05$], with the latter two groups not differing from each other [$t(39) < 1.0$].

A 2 (groups) x 2 (test occasion) ANOVA performed on commission errors only revealed that during both sessions, simulators made significantly more commission errors than honestly responding controls: $F(1,39) = 41.20$, $p < 0.005$. In keeping with their instructions, simulators made more commission errors during the first test occasion than honestly responding controls, [$t(39) = 8.51$, $p <0.005$]. Yet, at the one-week follow-up, number of commission errors of the simulators no longer differed from those of the other two groups $F(2,58) = 1.38$, $p = 0.26$.

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main effects of group [$F(1,39) = 54.73$, $p < 0.01$] and test occasion [$F(1,39)= 53.21$, $p< 0.01$], and the critical interaction effect [$F(1,39) = 40.90$, $p < 0.01$]. This pattern is basically the same as that found for simple proportions.

We also calculated proportion of same commission errors (PSE)[15]. Mean proportion of same commission errors were 10% and 13% for the simulating and honestly responding participants, respectively, a difference that fell short of significance: $t(39) = {<}1.0$.

Table 2.1. Mean proportion of correctly reported free recall information, proportion omissions, and number of commissions of participants in the simulating (n = 21), honestly responding (n = 20) and delayed-testing only (n = 20) condition during the first (T1) and second (T2) test occasion. Standard deviations appear between parentheses.

Proportion	Simulating Ss		Honestly responding Ss		Delayed-testing only Ss
	T1	T2	T1	T2	T2
Correct	0.09 (0.07)[a]	0.25 (0.10)[d]	0.29 (0.10)	0.32 (0.08)[b,d]	0.23 (0.06)[c]
Omissions	0.91 (0.05)[a]	0.75 (0.11)[d]	0.71 (0.14)	0.68 (0.08)[b,d]	0.76 (0.06)[c]
Commissions*	11.5 (5.2)[a]	4.7 (3.9)[d]	1.1 (1.5)	3.5 (2.3)[d]	3.4 (1.9)

a = p <0.05 between groups at T1

b = p <0.05 between simulating and honestly responding groups at T2

c = p <0.05 between honestly responding and delayed-testing only group at T2

d = p <0.05 within groups between T1 and T2

*commission errors are displayed in absolute numbers

CUED RECALL

Answers to cued recall questions might include several correct details. For each correctly reported detail 1 point was assigned. For example, if a participant would respond to the item "Describe what Emma looked like" with "dark curls and blue eyes", he or she would receive 2 points for that answer. When only "blue eyes" was reported, the participant would receive 1 point. In this way, a maximum score of 65 points could be obtained for cued free recall. Cued free recall scores were expressed as proportions. Table 2.2 summarizes cued recall data. As expected, during session 1 simulators had significantly lower correct cued recall scores than honestly responding participants [$t(36) = 5.84$, $p < 0.01$]. Interestingly, at the second session, this difference was maintained [$t(39) = 2.17$,

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[15] PSE was computed by summing for each person the number of commission errors from the first test occasion that were repeated at the second test occasion divided by total number of commissions during the second test occasion.

$p < 0.05$]. Likewise, simulators omitted more information than the honestly responding participants [t (39) = 2.17, $p < 0.05$].

A one-way ANOVA for session 2 showed that groups differed with regard to their cued recall performance [$F(2,58) = 4.98$, $p < 0.05$]. Post-hoc tests made it clear that delayed-testing only controls had similar correct cued recall proportions as ex-simulators [$t(39) = 1.13$, $p = 0.27$], but performed significantly worse than honestly responding participants [$t(38) = 3.23$, $p < 0.005$]. No group differences were found for number of commission errors during cued recall at the second test occasion: $F(2,58) < 1.0$

A one-way ANOVA performed on confidence ratings obtained at the second test occasion (see table 2.2) revealed that delayed-testing only controls had confidence ratings that were significantly below those of the other two groups [$F(2,58) = 4.79$, $p < 0.05$]. Simulators and honestly responding participants did not differ with regard to their confidence ratings [$t(39) < 1.0$; see table 2.2].

Table 2.2. Mean proportion correctly reported cued free recall information, proportion omissions, and number of commissions on the first (T1) and second (T2) test occasion of participants in the simulating ($n = 21$), honestly responding ($n = 20$) and delayed-testing only ($n = 20$) condition. For T2 confidence ratings (1 = very sure, 3 = not sure) are displayed. Standard deviations appear between parentheses.

Proportion	Simulating Ss		Honestly responding Ss		Delayed-testing only Ss
	T1	T2	T1	T2	T2
Correct	0.32 (0.11)[a]	0.48 (0.10)[d]	0.50 (0.07)	0.54 (0.08)[b,d]	0.44 (0.11)[c]
Omissions	0.68 (0.10)[a]	0.52 (0.10)[d]	0.50 (0.08)	0.46 (0.08)[b,d]	0.56 (0.11)[c]
Commissions*	5.6 (3.4)[a]	2.4 (1.6)[d]	2.0 (1.8)	2.3 (2.9)	2.5 (1.6)
Confidence		1.49 (0.22)		1.49 (0.29)	1.70 (0.22)[c,e]

a = $p < 0.005$ between groups at T1

b = $p < 0.05$ between simulating and honestly responding group at T2

c = $p < 0.05$ between honestly responding and delayed-testing only group at T2

d = $p < 0.05$ within group between T1 and T2

e = $p < 0.05$ between simulating and delayed-testing only group at T2

*commission errors are displayed in absolute numbers

INDIVIDUAL DIFFERENCE MEASURES AND MEMORY EFFECTS FOR SIMULATORS

Mean DES, CEQ, and SDS scores in the subsample of simulators were 18.60 (*SD* = 14.1), 6.43 (*SD* = 3.8) and 15.05 (*SD* = 7.1), respectively. It is noteworthy that these scores come close to the scores that have previously been reported for undergraduate samples (e.g., Horselenberg et al., 2000).

To explore whether memory undermining effects of simulation are modulated by individual differences, we calculated for each simulator's free recall and cued free recall performance a difference score (Δfree recall = free recall test 2 – free recall test 1; Δcued free recall = cued free recall test 2 – cued free recall test 1). If dissociation, fantasy proneness, and/or social desirability are related to the memory-undermining effect, one would anticipate that they would correlate negatively with these difference indices. Table 2.3 shows the relevant correlations. As can be seen, no significant correlations were found between individual difference measures and memory indices.

Table 2.3. Correlations between Δ free recall and Δ cued free recall and dissociation (DES), fantasy proneness (CEQ), and social desirability (SDS) for the simulating participants (*n*=21).

	Δ Free recall	Δ Cued free recall
DES	-.09	-.22
CEQ	.07	.39
SDS	-.20	.04

* *p* < 0.05

DISCUSSION

The main findings of the current study can be summarized as follows. To begin with, we replicated Christianson and Bylin's (1999) finding that simulating amnesia has memory-undermining effects. Secondly, these effects were evident for both free recall and cued free recall. Thirdly, in many respects memory performance of delayed-testing only participants resembled that of ex-simulators. Finally, the memory-undermining effect of simulation was not related to individual differences in dissociation, fantasy proneness or social desirability.

It is important to emphasize that we went to great lengths in trying to create a setting that would more closely approach a real-life crime situation than the procedure employed by Christianson and Bylin (1999). Thus, we expected that participants would be better able to enter the role of the main character when they had actually participated in the story and not only read about it. That our manipulation was successful is supported by participants' emotionality ratings, which were quite high. Our manipulation check ratings further suggest that participants were very well able to identify with the perpetrator in the narrative. As well, participants instructed to simulate memory difficulties in order to minimize responsibility for the crime reported less information during the first session relative to honestly responding participants. This indicates that simulators adhered to their instructions. Only for the first test occasion, simulators had lower responsibility ratings than honestly responding participants. Again, this indicates that simulators behaved in line with their instructions. The fact that ex-simulators and honestly responding controls did not differ with regard to their confidence ratings on the cued recall task during the second session, also suggests that ex-simulators had given up their role and followed instructions. Interestingly, even though confidence ratings were highly similar for ex-simulators and honestly responding controls, the former group performed worse on cued recall, which is in line with the memory-undermining effect of feigning amnesia. This overconfidence of ex-simulators is reminiscent of the literature on imperfect accuracy-confidence relations (Sporer, Penrod, Read, & Cutler 1995; Lindsay, Read, & Sharma, 1998). Delayed-testing only participants had the lowest confidence ratings, which were more in line with their cued recall performance than those of ex-simulators. We have no ready explanation as to why confidence ratings of ex-simulators were higher than those of delayed-testing only participants, except that ex-simulators were familiar with the task, which might have promoted their subjective confidence.

Even though they had been engaged in a mock crime, participants instructed to simulate memory difficulties on the first session reported less correct information about the crime and surrounding circumstances one week later relative to honestly responding participants. This memory-undermining effect was evident for both free recall and cued free recall, suggesting that the effect is quite robust. Christianson and Bylin (1999) suggested that this memory-undermining effect of feigning amnesia might be a rehearsal phenomenon. That is to say, feigning amnesia might interfere with the beneficial memory effects of rehearsing information. A second explanation offered by Christianson and Bylin (1999) for the memory-undermining effects of simulation is retrieval-induced forgetting (Anderson et al., 1994; Ciranni & Shimamura, 1999; Shaw et

al., 1995). By this view, reconstruction and rehearsal of false information in the first test results in recall difficulties of correct information during the second test (Anderson et al., 1994; Macrae & MacLeod, 1999). A third explanation for the memory-undermining effect of feigned amnesia assumes that feigning produces source-monitoring errors. Simulators who made up a new version of the story in the first session in order to minimize responsibility might later confuse their new version with the true story when they are instructed to report honestly.

To test the empirical credibility of the rehearsal-effect explanation, we included a delayed-testing only control group. Results showed that during the second test occasion, objective memory performance of this control group was very similar to that of ex-simulators. Apparently, then, lack of rehearsal is one mechanism behind the memory-undermining effects of feigning amnesia.

Our findings are inconsistent with a retrieval-induced forgetting interpretation of the memory-undermining effect. It is true that there are some fine examples in the literature of retrieval-induced forgetting in eyewitness accounts. For example, Wright et al. (2001) showed that when participants are instructed to omit certain details, they fail to retrieve these details on a later test occasion. However, in the current experiment, performance of ex-simulators closely resembled that of delayed-testing only participants. The latter group had not been instructed to withhold information and so lack of rehearsal rather than retrieval-induced forgetting provides the more parsimonious explanation for the pattern of findings in our study.

The source-monitoring error interpretation also fails as an adequate interpretation of our data. A detailed comparison of commission errors during the first test and those on the second test revealed that ex-simulators did not persist more in their commissions than honestly responding participants. In fact, for both groups, proportions of persistent (i.e., repeated) commission errors were well below 30% for free and cued-free recall. Thus, even though simulating participants were encouraged to make up different stories during the first session, this did not lead to a heightened frequency of persistent commission errors that would reflect source-monitoring problems. One limitation of our commission data, however, is that rater agreement about what counted as commission errors was fairly low. This indicates that raters found it extremely difficult to define this type of error. Clearly, more strict definitions would enhance higher interrater agreement. Thus, it might be worthwhile for future studies to address this issue in more detail.

Our individual difference data suggest that the memory-undermining effect of feigning amnesia is not modulated by dissociativity or fantasy proneness. Even

more important was the finding that this effect does not depend on social desirability (e.g., sensitivity to demand characteristics). Thus, there is little ground for suspecting that memory-undermining effects occur because simulators stick to their role during the second session.

Our study was subject to several limitations. First, our sample consisted mainly of female undergraduates. This might reduce the generalizability of the results, since women may be less able to identify with the role of a murderer. It is worthy to note, though, that our results replicate those of Christianson and Bylin (1999), whose study relied on male undergraduates. Also, female undergraduates were able to identify with the murderer in our study, as shown by our manipulation check data. Nevertheless, undergraduate students are not representative of the typical person being charged with a serious crime. A second limitation of our study has to do with the fact that it relied on one specific order of events: participants first committed the mock crime and then read about the rationale behind the mock crime. We used this order because it corresponds with the finding that crimes for which amnesia is claimed are often not premeditated (Taylor & Kopelman, 1984; Swihart et al., 1999). Nevertheless, this order might have affected the memorability of the events and this point needs to be addressed by future studies on the effects of feigning amnesia. A third limitation concerns the strategy that simulators used to feign amnesia. Our manipulation check data show that simulators followed their instructions, but we do not know which strategies they adopted. Future studies should look at this issue more carefully, for example by conducting exit interviews in which ex-simulators are explicitly asked about how they played their role. Kopelman (1995) suggested that people who are familiar with amnestic periods (e.g., due to head injury) might be good in feigning amnesia and this would be interesting to explore in such exit interviews.

In sum, then, we may conclude that ex-simulators' memory performance during the second test occasion can best be explained in terms of lack of rehearsal. In more general terms, our data add to the studies showing that there is a continuum between feigning amnesia and real forgetting (Christianson & Bylin, 1999; Kopelman, 2000). Note that this position contradicts the tendency in the literature to treat simulated amnesia and real psychogenic amnesia as completely different categories. Simulating amnesia for a crime apparently has detrimental effects on genuine memory. This stresses the importance of creating during the first interrogation a climate in which the perpetrator is willing to talk about the crime he has committed (Holmberg & Christianson, 2002).

3

SIMULATING AMNESIA AND MEMORIES OF A MOCK CRIME*

INTRODUCTION

Quite often perpetrators claim to find it difficult remembering the crime they have committed. Several studies have shown that approximately 25% of the perpetrators claim amnesia for violent crimes such as murder and manslaughter (Cima, Merckelbach, Nijman, Knauer, & Hollnack, 2002; Cima, Nijman, Merckelbach, Kremer, & Hollnack, 2004; Kopelman, 1995; Bradford & Smith, 1979). Sometimes, crime-related amnesia may have an organic background. In these cases, memory loss is caused by structural brain damage or severe intoxication by alcohol or drugs (Bourget & Bradford, 1995; Kopelman, 1995; Kalant, 1996). In most cases, however, amnesia claimed by offenders is said to be of the dissociative type. Many authors (e.g., Kopelman, 1995; Swihart, Yuille & Porter, 1999) believe that dissociative memory loss is the result of extreme emotional arousal during crime. The idea here is that crime details become inaccessible when the offender later finds himself in a more calm state. This type of dissociative amnesia has also been termed red-out (Swihart, Yuille & Porter, 1999).

Apart from organic and dissociative amnesia, the phenomenon of feigned or malingered amnesia has attracted some attention in recent literature (Denney, 1996; Cima, Merckelbach, Hollnack, & Knauer, 2003c; Christianson & Merckelbach, 2004). Feigning amnesia may be an attractive strategy to minimize criminal responsibility (Cima et al., 2002). An historic example from Italy is the case of the Collegno amnesic (Zago, Sartori & Scarlato, 2004). In 1926, a man was admitted to the Collegno alsylum in Turin. He was taken there by the police who had arrested him for trying to steal a copper vase from a cemetery tomb. The man claimed to have no autobiographical memories. After his picture had appeared in the newspaper one year later, a mrs. Canella identified him as her lost husband, professor Canella, who had disappeared during the war in 1916. The Collegno amnesic continued his life as professor Canella, with the additional advantage that his wife's family was very rich. However, when another woman claimed that the Collegno amnesic was her husband Mario Bruneri, a man who was wanted for fraud, a new investigation was started. It turned out that the Collegno amnesic feigned his amnesia. He was, indeed, Mario Bruneri. By feigning amnesia, he not only escaped being convicted for robbery and fraud, but also became a very rich man thanks to the Canella widow, who for her own reasons claimed to be his wife.

The prospect of not being held responsible for the crime or to gain sympathy is probably the main motive for malingering crime-related amnesia (Christianson & Merckelbach, 2004). For a defendant, claiming amnesia is also an elegant and

sympathetic way of using the right to remain silent. In many cases, defendants attribute their memory loss to intoxication during the crime (Cima et al., 2002; Porter, Birt, Yuille, & Hervé, 2001). Of course, alcohol blackout is a widely accepted phenomenon. In recent population surveys, 50-70% of the respondents claimed to have experienced an alcohol blackout at least once in their lives (Van Oorsouw, Merckelbach, Nijman, Ravelli, & Mekking-Pompen, 2004). Thus, attributing violent behavior and an apparent lack of memories for this behavior to excessive drug or alcohol use is a self-evident strategy to many offenders. However, according to Cima and colleagues (2003c), in the majority of these cases, claims of crime-related amnesia are likely to be feigned. Cima et al. (2003c) employed the Structured Inventory of Malingered Symptomatology (SIMS: Smith & Burger, 1997; Merckelbach & Smith, 2003) to detect feigned amnesia. This is a self-report instrument measuring the tendency to endorse bizarre and non-existing symptoms. Cima et al. (2003) found that criminals who claimed amnesia for their violent acts more often scored above the clinical cut-off of the SIMS than those without amnesia claims. Although the SIMS includes a subscale tapping bizarre complaints about memory, it focuses on other symptom domains as well (e.g., psychosis and neurological complaints).

A more specific test to detect simulated memory loss is the Symptom Validity Test (SVT: Denney, 1996; Merckelbach, Hauer & Rassin, 2002; Jelicic, Merckelbach, & Van Bergen, 2004a, b). The SVT is a task rather than a self-report instrument. More specifically, it consists of a forced-choice procedure in which defendants have to answer questions about the crime. Each question has two equally plausible alternatives, of which only one is correct. The rationale behind this test is that someone with genuine organic or dissociative amnesia for a crime would randomly endorse correct and incorrect alternatives. Thus, this person would perform at chance level, i.e., would answer about 50% of the questions correct. Someone performing below chance level is suspected of deliberately choosing the incorrect answer more often than the correct answer, which is a strong indicator for malingering of amnesia. Jelicic and co-workers (2004a) had participants simulate amnesia for a mock crime (e.g., steal an envelope in a library café) and instructed them to imagine that they were suspects in a criminal investigation. They were instructed to answer the SVT questions in such a way that it seemed as if they had no recollections of being near the café. Forty percent of their participants performed below chance level and were therefore identified as malingerers. None of the participants guessed the rationale behind the SVT.

There are reasons to believe that feigning amnesia may have detrimental effects on genuine memory for a crime. Several studies found that participants who are

initially instructed to simulate amnesia for a mock crime later have worse memory for the crime when asked to respond honestly compared to control participants who are instructed to respond honestly during both test occasions (Christianson & Bylin, 1999; Bylin & Christianson, 2002; Van Oorsouw & Merckelbach, 2004). In the studies by Christianson and Bylin (1999) and Van Oorsouw and Merckelbach (2004), memory for a mock crime was tested using a free recall and a cued recall. These recall tasks were administered during a simulated interrogation. In this context, simulating amnesia may be considered as a creative way of lying. That simulating amnesia has a memory-undermining effect suggests that lying undermines true memory of the crime. This would imply that in order to prevent important crime-related information getting lost in the process of simulating amnesia, it is important to encourage a defendant either to tell the truth or to remain silent. Further evidence for this comes from a recent study by Polage (2004) who found that when participants are instructed to lie about an event that never happened (i.e., "tell it did happen"), 10 -16% of the participants afterwards come to believe the event actually took place. These participants seem to have convinced themselves that their lie is true. Following this line of reasoning, one expects that when a SVT is administered to a defendant and he or she deliberately gives incorrect answers, this might also undermine his or her memories of the crime.

In the present study, we were interested in whether participants instructed to feign memory problems for a mock crime could be detected with the SVT. A recent study by Pyszora, Barker, and Kopelman (2003) suggest that claims of crime-related amnesia are typical for cases in which defendants are confronted with technical evidence against them (e.g., in crimes of passion), lack an alibi and therefore choose not to deny the offence. In contrast to previous studies (Jelicic et al., 2004a, b) in which participants were told to pretend to have no recollection of being near the crime-scene, our participants were told to imagine that a witness saw them near the crime-scene, which made a simple denial impossible and required an alternative strategy. We were also interested in whether we could replicate the memory-undermining effect when participants were instructed to respond honestly one week later. More precisely, we examined whether the memory-undermining effect of simulating amnesia would be evident on both free recall and SVT measures. If such a memory-undermining effect on a two-choice SVT would take the form of random performance, this would imply that simulating amnesia may lead to genuine amnesia.

METHOD

PARTICIPANTS

Sixty undergraduate psychology students (47 women) participated in this study. Their mean age was 21.0 years ($SD = 1.9$). Participants received 2 course credit hours in exchange for their participation. The experiment was approved by the standing ethical committee of our faculty.

MOCK CRIME

Participants were instructed to enter a small room and read the instructions that were written down on a piece of paper on the table. The instructions on the table were as follows: "In the corner of this room you see a backpack. Inside the backpack is a rope. Try to imagine that you are a perpetrator. You are going to rob a bar. Take the rope to the bar around the corner and make sure nobody notices you entering the bar. When you enter the bar, take some time to look around. You will see someone sitting at the bar. Take the broom which is standing in a corner. Hit the person[16] sitting at the bar and tie him up with the rope. Search his pockets for a key. Try to find a money-box somewhere behind the bar. Open the money box, take out the money and return to this room."

SVT ITEM SELECTION

Using a Doob and Kirschenbaum (1973) pilot procedure, 21 critical SVT items were selected from a larger pool of 33 items. In this pilot, these 33 items were given to 22 naïve age-matched controls who had never visited the bar before, and did not participate in the experiment proper. Pilot participants were asked to select the most plausible alternative for each item. Binomial probabilities were calculated for each alternative. Items were removed from the set when they had alternatives with probabilities below .3 or above .7. This resulted in 21 unbiased SVT items about the bar, defendant, victim, and robbery (see for examples below).

PROCEDURE AND MATERIAL

Participants were randomly assigned to one of two groups: the simulating group (n=30) and the honestly responding control group (n=30). Upon arrival and after having signed an informed consent form, participants were instructed to perform the mock crime. The mock crime took place in a real bar that is located at our faculty building. After the mock crime, emotional involvement

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[16] This is not a real person but a dummy.

and ability to identify with being a robber was rated on 11-point scales (anchors: 1 = *not emotionally involved/ extremely difficult to identify*, 11 = *very emotionally involved/ very easy to identify*).

Next, participants received the following instructions: "Imagine that you are arrested because you are suspected of a robbery that took place in a bar. You are now going to be interrogated by the police and you will be asked about your involvement in the crime." Further instructions differed for the two groups. Simulators were told that "in order to evade responsibility for the crime, you are going to simulate amnesia. Thus, try to describe the events in such a way that it looks as if you have great difficulty remembering what happened in the bar. Note, however, that a witness saw you near the bar and you cannot simply deny that you have been there." Honestly responding participants were told that "you decide to cooperate and report everything you remember in as much detail as possible." All participants were asked whether they understood what was expected of them and whether they had any questions.

With these instructions in mind, participants were asked to write down an account of what happened. Following this free recall test, participants were given the 21 pilot-selected SVT items intermixed with 19 two-choice bogus items included to counteract random performance. Typical test-items were: "What kind of weapon was used? (1) a broom or (2) a billiard cue", and "Were there glasses on the bar? (1) yes or (2) no." A typical bogus item was "What was the temperature within the bar? (1) 20°C or (2) 21°C." The experimenter read each item out loud and participants were asked to choose one of the alternatives keeping their roles as simulating or honestly responding suspects in mind.

After completion of the SVT, participants were scheduled for return one week later and sent home. No mention was made about any upcoming test. One week later, all participants returned for a follow-up test session. They were brought to the same "interrogation room", where they were given the following instructions: "New evidence has turned up and we would like to interrogate you one more time." The honestly responding participants again received the instructions to report as many details as possible about the robbery and assault and their involvement in it. The participants who had previously simulated amnesia now were instructed that "You decide to give up simulating memory problems and cooperate with the investigation. You are going to report everything you remember about the robbery and assault and your involvement in it in as much detail as possible." Again, all participants received a piece of paper and wrote down an account of what happened. Following this, the

instructions to respond honestly were given once more and then the SVT was administered a second time. Finally, simulating participants were asked about the strategy they had used to simulate amnesia. After this, they were fully debriefed and thanked for their cooperation.

RESULTS

Three participants were removed from the analyses because they did not understand the simulation instructions. All participants followed instructions and committed the mock crime. The simulating and honestly responding participants did not differ with regard to their emotional involvement in committing the mock crime [$t(54) < 1.0$], means being 4.3 ($SD = 2.8$) and 4.7 ($SD = 2.2$), respectively. Neither did the simulating and honestly responding participants differ with regard to their ability to identify with being a robber [$t(54) < 1.0$], means being 5.2 ($SD = 2.6$) and 5.3 ($SD = 2.3$), respectively.

To evaluate free recall, the first author and an independent rater defined 30 critical details of the mock crime that could be reported during free recall. A critical item was defined as a piece of information that might be relevant for police investigation, but also referred to participants' memories of environmental details (e.g., "the victim was wearing jeans" received one point, and "there were heart shaped lamps on the wall" received two points: one for heart shaped and one for lamp). For each reported item, the participant received one point with a maximum score of 30. Commission errors were defined as a piece of newly introduced information (e.g., "the victim was wearing a hat", when in fact he wasn't) or distorted information (e.g., "the statue on the bar was Charlie Chaplin's", when in fact it was Marilyn Monroe's). Free recall narratives were scored by two independent raters who were blind as to group status. Pearson's correlations between the two raters were 0.97 for number of critical details mentioned during free recall and 0.65 for commission errors during free recall (both p's < 0.05). For the final analysis, commission errors were defined in a conservative manner. That is, only when a free recall item was categorized as a commission by both raters, was it treated as a commission.

As for free recall, proportions of correctly recalled information and commission errors were calculated for both test occasions and are summarized in table 3.1. For session one, significant group differences were found for the proportion correctly reported information [$t (55) = 12.98$, $p < 0.01$] and number of commission errors [$t (55) = 7.20$, $p < 0.01$]. That is, simulating participants

reported less correct information and made more commission errors than did honestly responding participants, indicating that the simulating participants followed the instruction to simulate memory problems. More interestingly, on the second test occasion, when both groups were told to respond honestly, previously simulating participants still recalled less correct information [t (55) = 2.62, p < 0.01] and made more commission errors [t (55) = 2.69, p < 0.01] than did honestly responding participants. This shows that simulating amnesia has a memory-undermining effect. We also calculated proportions of same commission errors (PSE)[17], that is, commission errors that were repeated across the two test occasions. Mean proportions of same commission errors were 5% for simulating and 17% for honestly responding participants, respectively. This difference was not significant [$t(55)=1.64$, $p= 0.11$].

Table 3.1. Mean proportion of correctly reported free recall information, proportion of omissions, number of commission errors, and SVT scores of simulating (n = 27) and honestly responding (n = 30) participants, during the first (T1) and second (T2) test occasion. Standard deviations appear between parentheses.

Proportion	Simulating Ss		Honestly responding Ss	
	T1	T2	T1	T2
Free recall correct	0.11 (0.09)a	0.49 (0.11)c	0.57 (0.16)	0.57 (0.11)b
Free recall omissions	0.89 (0.09)a	0.51 (0.11)c	0.43 (0.16)	0.43 (0.11)b
Free recall commissions*	7.89 (5.35)a	2.37(2.13)c	0.70 (1.08)	1.20 (0.99)b,c

a = p<0.05 between groups at T1
b = p<0.05 between groups at T2
c = p<0.05 within groups between T1 and T2
*commission errors are displayed in absolute numbers

The distribution of SVT scores obtained during the first and second test session is summarized in 3.2. Using the Siegel and Castellan (1988; p. 43) binomial formula, we analyzed the SVT data obtained during the first test session. Only 2 of the simulating participants (7%) had total SVT scores significantly below chance level (i.e., total SVT < 7, p < 0.05). This indicates that only a minority of

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[17] PSE was computed by summing for each person the number of commission errors from the first test occasion that were repeated at the second test occasion, divided by total number of commissions during the second test occasion.

the simulating participants could be detected with the SVT. Sixteen simulating participants (59%) performed at chance level, while 9 (33%) scored above chance level indicating that they were unable to feign memory problems on the SVT. As for the second test session, none of the ex-simulators performed below chance, while only one of them performed at chance.

We calculated the proportion of correctly recalled information on the SVT by dividing the total SVT score by the maximum obtainable score of 21. A significant difference between the two groups was found for first test session in that simulators performed worse than honest responders [t(55) = 7.69, $p < 0.01$]. This, again, merely shows that simulating participants adhered to the instructions of simulating amnesia. However, on the second test occasion, when all participants had been instructed to respond honestly, the formerly simulating participants still produced fewer correct SVT answers than honestly responding participants [t(55) = 3.14, $p < 0.01$]. We also calculated proportions of same errors to see whether participants who deliberately gave wrong answers on the first SVT, would persist in these incorrect answers when asked to respond honestly. On the second SVT, previously simulating participants repeated 54% of their wrong answers, while honestly responding controls repeated 60% of their errors. This difference fell short of significance [t(52)<1.0].

Table 3.2. Distribution of total SVT scores during the fist (SVT1) and second (SVT2) test session of (ex-) simulating and honestly responding participants. Proportions appear between parentheses. Mean proportions of correctly recalled items on SVT are also displayed (SVT score). Standard deviations appear between parentheses.

Items Correct	Simulating Ss		Honestly responding Ss	
	SVT 1	SVT 2	SVT 1	SVT 2
<7	2 (0.07)	0 (0)	0 (0)	0 (0)
7 -- 14	16 (0.60)	1(0.04)	3 (0.10)	0 (0)
>14	9 (0.33)	26 (0.96)	27 (0.90)	30 (1.0)
SVT score	0.58 (0.16)a	0.82 (0.09)c	0.85 (0.10)	0.89 (0.07)b,c

a = p <0.05 between groups at T1

b = p <0.05 between groups at T2

c = p <0.05 within groups between T1 and T2

When asked about the strategy simulating participants used to feign amnesia, one third of them (9) said that they chose to report an alternative story; another

third (9) said that they deliberately tried to give wrong answers on the SVT, and a final third (9) said that they tried to perform at chance level on the SVT. We also analyzed the free recall narratives of simulators obtained during the first session. Twenty-three out of 27 participants (85%) pretended to have some type of memory loss, of which 4 (17%) claimed to have had an alcohol blackout. Three participants (11%) pretended to have witnessed the crime and to have been hit on the head themselves, and 1 participant (4%) completely denied being involved in the crime. All participants admitted to have been in the bar at the day of the crime.

DISCUSSION

The main findings of the current study can be summarized as follows. To begin with, using a free recall task, we were able to replicate the memory-undermining effect of simulating amnesia. That is, previously simulating participants were less complete and made more commission errors than did honestly responding controls. Together with earlier studies (Christianson & Bylin, 1999; Van Oorsouw & Merckelbach, 2004), this shows that the memory-undermining effect of simulation is a robust effect. Second, unlike previous studies (Jelicic et al., 2004a, b), only a small minority of simulating participants could be detected with the SVT. Third, the memory-undermining effect was also found on the follow-up SVT, but it did not take the form of chance performance. That is, the memory-undermining effect of simulation is not so powerful that it can readily produce genuine amnesia.

The fact that we replicated the memory-undermining effect of simulating amnesia for a mock crime demonstrates how robust this effect is. Even when participants admit having been near the crime scene, but describe the events in a way suggesting they have trouble remembering what really happened there, true memory for the event gets corrupted. Thus, formerly simulating participants are 8% less complete, than participants who told the truth from the start. Ex-simulators also make more commission errors than honestly responding controls.

As far as the SVT is concerned, only 7% of the simulating participants could be detected during the first test-session. In contrast, Jelicic et al. (2004 a, b) found hit rates of 40-60%. We suspect that our low hit rate has to do with a carry-over effect from free recall to SVT. Instructions given to the participants emphasized that they should take into account that a witness saw them "near" the bar. Accordingly, all participants stated in their first free recall that they had been *in*

the bar on the day of the crime. Of course, in order to make a consistent impression, simulating participants subsequently answered many SVT items about the bar correctly. For example questions like "were the lights in the bar heart-shaped or lip-shaped?" were answered correctly by many simulating participants who, during the preceding free recall, had admitted to have been in the bar. In future SVT studies, such potential carry-over effects should be taken into account when selecting SVT items.

In forensic practice, the SVT is recommended when a defendant claims to have no recollection of a crime whatsoever and a suspicion of malingering arises (e.g., Denney, 1996). In the current study, most simulating participants made free recall statements about their presence in the bar. Thus, these participants claimed partial amnesia. In such cases, SVT should preferably contain items about crime details of which the defendant claims to have no memory. Altogether, our findings demonstrate that there are clear limits to the applicability of the SVT as a forensic tool. That is, extensive interrogations in which free recalls from the defendant are solicited will create carry-over effects that undermine the accuracy of a subsequent SVT. However, from a theoretical point of view, it is interesting that during the follow-up test previously simulating participants answered fewer SVT items (7%) correctly that did honestly responding controls. This indicates that simulating amnesia on a SVT by deliberately choosing the incorrect alternative leads participants to forget correct alternatives when they are later asked to respond honestly. Meanwhile, only one out of 27 ex-simulators performed at chance level when asked to respond honestly on the follow-up SVT. This indicates that the memory-undermining effect of simulating amnesia does not take the form of genuine amnesia.

Whereas we had expected a decrease in memory performance over time, the honestly responding control group had higher scores on the second than on the first SVT. We are reluctant to speculate about the origins of this increase, but two explanations suggest themselves. One is the hypermnesia phenomenon (Roediger, McDermott & Goff, 1997), which refers to an increase of total recall over successive retrieval attempts.. Another and perhaps more plausible possibility is that participants talked about the experiment between test trials leading to the recovery of details that were not reported during the first SVT trial.

Pyszora et al. (2003) noted that offenders who claim amnesia are significantly less likely to deny the offence than offenders without such claims. By telling our participants that a witness saw them near the bar, we wanted to encourage participants to feign amnesia in a more elaborated way than just saying "I can't

remember" or "I was not there". Accordingly, simulating participants in the present study made up an alternative scenario about what happened. Apparently, suspects find it difficult to remain silent, especially when they are confronted with evidence against them and feel the need to come up with a statement (see also Kassin, 2005). As a result, they make up an alternative scenario which consists of a mixture of lies and claims about memory problems. Our results show that this strategy does not induce a genuine amnesia, but it may have detrimental effects on true memory for a crime.

There are several mechanisms that might explain the memory-undermining effect of simulating amnesia. One mechanism is source-monitoring confusion (Johnson, Hashtroudi, & Lindsay, 1993; Mazzoni, Vannucci, & Loftus, 1999). That is, their making up an alternative story could subsequently lead simulating participants them to confuse this alternative version with the true story. If the memory-undermining effect we found is a product of such source-monitoring confusion, one would expect that commission errors made by simulating participants would persist when instructed to tell the truth. However, a detailed comparison of commission errors during the first test and those on the second, revealed that ex-simulators and honestly responding participants did not differ in the extent to which they persisted in their commission errors. This makes an interpretation of our results in terms of source-monitoring confusion unlikely. Proportions of repeated commission errors were below 20% in both groups for the free recall of the crime. On the SVT, however, proportions of repeated commission errors were substantially higher, circling around 60% in both groups. This high percentage of repeated errors might reflect students' tendency to repeat the same mistake on multiple choice questions when tested again if there initially was no feedback that the answer was incorrect. Yet, while the absence of corrective feedback might explain the overall high levels of repeated errors (see for the role of feedback, Dawes, 1999), it does not illuminate the memory-undermining effect of simulating amnesia.

Another possible explanation for the memory-undermining effect is retrieval-induced forgetting (Anderson, Bjork, & Bjork, 1994; Wright, Loftus, & Hall, 2001). Thus, fabricating false information on the first test might have resulted in recall difficulties of correct information on the second test. In our previous study (Van Oorsouw & Merckelbach, 2004), we included a delayed-testing only control group to examine effects on fabricating false scenarios on forgetting of the true story. Our results showed that delayed-testing only had a similar memory undermining effect as did simulating amnesia. This suggests that the memory undermining effect of simulating is the result of lack of rehearsal

rather than retrieval-induced forgetting. Nevertheless, the absence of a delayed-testing only control group is a limitation of the current study. The issue of how lack of rehearsal and, possibly, retrieval induced forgetting might produce the memory undermining effect warrants further study.

Our study suggests that once defendants start fabricating statement about their memory loss, genuine memory for the crime is undermined and valuable crime-related information may get lost. Not only is genuine memory for crime details desirable to reconstruct the offense, it is also important for relapse prevention and treatment benefits (Marshall, Serran, Mashall, & Fernandez, 2005). When a defendant is not cooperative, we would recommend to police officers to create a climate in which the defendant feels comfortable to remain silent rather than feels pressed to fabricate an amnesia story. Another point of consideration for people working within the legal system concerns the applicability of the SVT. Whilst several studies have shown that the SVT is an effective tool in identifying simulated amnesia, our study indicates that there are clear limits to its practical use. In particular, the diagnosticity of the SVT is hampered by carry-over effects created by previous free recall during interrogation.

4

ALCOHOLIC BLACKOUT FOR CRIMINALLY RELEVANT BEHAVIOR*

INTRODUCTION

The following vignette is based on a real case.

Amsterdam 1999. A 30-year-old man consumed a considerable amount of alcohol in a bar and decided to drive home. After the police had tried to stop him for his suspicious driving behavior, he turned off the car lights and fled. While exceeding the maximum speed limit, he hit and killed three bicyclers who were on their way home after a night out. Afterward, the defendant claimed that he had no memory of the tragic accident. The judge ruled that "by drinking and driving the defendant deliberately accepted the chance that his driving behavior could lead to the death of the aforementioned bicyclers… ", and found the defendant guilty of manslaughter. He was sentenced to 7 years in prison.

In both the United States and the Netherlands, on average 20 to 30% of offenders claim a form of amnesia after having commited a crime (Taylor & Kopelman, 1986; O'Connell, 1960). In a substantial number of these cases, defendants invoke excessive alcohol consumption as an explanation for their amnesia (Cima, Nijman, Merckelbach, Kremer, & Hollnack, 2004; Bourget & Bradford, 1995). For example, Bourget and Bradford found that 80% of the defendants who claimed amnesia reported to be intoxicated during the crime. In a study by Cima and colleagues, this percentage was 24%. Other studies have found percentages in the range of 30 to 40% (for an overview see Kopelman, 1995). Many defendants who say they were intoxicated during their crime do, indeed, have a history of alcohol problems (Hopwood & Snell, 1933; Bradford & Smith, 1969; Gudjonsson, Hannesdottir & Peturson, 1999). However, claiming an alcohol blackout may also be an attractive strategy for minimizing legal responsibility for criminal behavior (Swihart, Yuille & Porter, 1999).
An alcoholic blackout implies a form of amnesia for events that happened during a heavy drinking period (Goodwin, 1995). The consumption of large amounts of alcohol may induce a so-called "dissociative state". Dissociation is defined as a disruption of the normally integrated functions of consciousness, memory, identity and motor behavior, without necessarily clouding consciousness (Good, 1989). During the blackout, the person is awake and conscious, may be engaged in any type of activity or conversation, and may appear to the observer to be perfectly oriented (Kalant, 1996). Memory loss due to blackout may be extensive, but is not always irreversible. Thus, sometimes

the event is recalled later, either spontaneously or when alluded to by someone else.

For a long time, alcohol-induced blackouts were merely studied as a predictor for future alcoholism. Several studies have suggested that the occurrence of blackout may be an early diagnostic sign of alcoholism (Jellinek, 1946; Goodwin, 1995). However, surveys indicate that not only alcoholics, but also undergraduate students report blackouts on a nontrivial scale. It appears that around 25% of healthy college students report being familiar with alcohol blackouts (Anthenelli, Klein, Tsuang, Smith & Schuckit, 1994; Goodwin, 1995; White, Jamieson Drake & Swarzwelder, 2002). In the e-mail survey among American college students conducted by White et al. (2002), 51% of the students reported that they had had at least one blackout. Blackouts were reported during such activities as money spending (27%), sexual activity (24%), fights (16%), vandalism (16%), unprotected intercourse (6%), and driving a car (3%). Thus, a significant amount of students were engaged in a range of potentially hazardous activities during blackouts. Also, these blackouts were associated with lower academic grade point averages and other indicators of problem drinking. Although some types of deviant behaviors were reported, the emphasis on the study by White et al. (2002) was on blackouts as a predictor for college students' health and future alcoholism.

Two biological mechanisms may underlie alcohol blackout. The first focuses on an encoding deficit. The active substance of alcohol, ethanol, is known to temporarily inhibit biochemical brain processes, which are necessary to form new memory traces (Kalant, 1996; White, Matthews, & Best, 2000; White, 2003). The other mechanism emphasizes state-dependent retrieval deficits (Goodwin, 1995; Kopelman, 1987). That is, information stored in memory during an intoxicated state would be inaccessible when sober (Fillmore, Vogel-Sprott & Gavrilescu, 1999; Goodwin, Crane & Guze, 1969; Wolf, 1980).

Ethanol affects not only memory, but also the activity of neurons involved in motor coordination, behavioral inhibition, and consciousness (Kalant, 1996; Critchlow, 1986). At high blood alcohol concentrations (BACs), this is manifested in behavioral symptoms like slurred speech and shaky legs. This raises the question whether a person who is so drunk that his memory does not function appropriately, is physically able to perform complex motor actions needed for criminal behavior (Neal, Scott, & Grimsbo, 1993; Critchlow, 1986). According to Kalant (1996; p. 368) this would seem impossible: "the typical action of alcohol on the brain (...) is to progressively decrease all types of nerve cell activity, including those involved in coordinated movements and those involved in consciousness and memory, more or less *in parallel*" (our italics). By

this view, it is highly unlikely that a person has a blackout for complex behavior like robbery, murder or rape.

Apart from biological mechanisms, attribution and expectancy effects may play an important role in blackout reports. Inappropriate or embarrassing behavior could be excused by blaming it on alcohol intoxication. Alcohol expectancies may contribute to behavioral effects of alcohol, and even induce a self-fulfilling prophecy (Critchlow, 1986; Hull & Bond, 1986; Assefi & Garry, 2003). Studies have shown that young adults who experienced blackouts in the past, have more positive alcohol expectancies (Buelow & Harbin, 1996), but also experience more detrimental effects of future alcohol consumption on memory than people who had no past experience with blackouts (Harzler & Fromme, 2003). This suggests that blackout experiences shape future alcohol expectancies, which in turn may affect how attention and effort are allocated in retrieving memories of events stored during alcohol intoxication.

Some investigators have described cases in which alcohol blackouts are related to loss of criminal intent or automatic behavior (Kalant, 1996; Crombag, 2002). This issue received much attention in the Canadian court case R v Daviault (1994). Here, the Supreme Court ruled that a defendant, who claimed to have no memory of his crime due to alcohol intoxication, should be acquitted. This decision was based on expert testimony that linked automatism to blackout. In Dutch courts, such an acquittal would be inconceivable because of the "culpa in causa" doctrine in Dutch criminal law. According to this doctrine, the suspect is expected to know the consequences of excessive alcohol use and thus is held fully responsible for his behavior while under influence. Although alcohol impairs short term memory, which may interfere with storing information about ongoing behavior, remote memory remains intact (Good, 1989; White et al., 2002; Wolf, 1980). Thus, even during a blackout, a person should be perfectly able to retrieve rules of conduct, and be aware that what he is about to do is wrong.

With these considerations in mind, we wondered to what extent alcohol blackouts are reported outside the court. And, if they are, what types of behaviors fall prey to blackout? Is it possible to engage in complex activities while under the influence of alcohol, and later on have no recollection of it? Do defendants who say that they completely forgot their complex criminal behaviors raise a plausible claim? Or are blackout reports merely a convenient, but highly specific way to minimize responsibility for crime-related behavior? Perhaps they represent a widespread, expectancy-based attribution of deviant behavior. If the latter is true, blackouts for such deviant behavior should be common in the general population. In that case, it would be interesting to learn

how much alcohol people report having consumed before a blackout occurred. To explore these issues, we administered a questionnaire about alcohol consumption and blackout experiences to a community sample.

STUDY 1: SURVEY OF HEALTHY RESPONDENTS

METHOD

A questionnaire was distributed among 178 women and 78 men aged 18-82 years. The study was approved by the standing ethical committee of our faculty. To obtain a mixed sample of heterogeneous groups, our respondents were university students and visitors of a public library. By recruiting individuals in these settings and age ranges, we made sure that we had a sample where illiteracy and very low IQ did not play a role. Undergraduate students were asked during classes to fill out a 12-item questionnaire which would take approximately 10 minutes. Library visitors were asked during their library visit whether they were willing to complete this questionnaire. Note that the Netherlands is the European country with the highest rate of library subscriptions, with 275 per 1000 inhabitants being a member of their community library.

Respondents were asked about their drinking behavior (i.e., number of times a month they drank more than 5 alcoholic beverages per occasion) and blackout experience. Blackouts were defined as: "a failure to remember (parts of) events that happened while you were drinking alcohol." When respondents indicated that they had ever experienced a blackout, they were asked about the details of the situation. They were asked about their physical condition, drug use, and eating behavior prior to the blackout. Other questions were about the number of drinks, time frame within which the drinking took place, and body weight. Information about body weight was needed in order to calculate estimated BACs. A drink was defined as a standard glass of beer, wine or spirits. A bottle of beer contained 1.5 glasses. BAC calculations served as a rough indicator of blood alcohol concentrations that accompanied the reported blackouts, but, of course, they are highly dependent on subjective estimates of drinking behavior. Mean BACs were calculated using the following formula: (number of drinks X 10 grams)/ (body weight X gender) – (consumption time X 0.15). The constant value of 0.15 is an index for breakdown speed. Constant values for gender were

0.66 and 0.72 for women and men, respectively.[18] The definition of standard drinks varies substantially among different countries (Dufour, 1999). The Dutch standard is 10 grams of alcohol per drink.[19]

Respondents were also asked about the types of events they later found out had occurred during the blackout and the duration of the blackout. Finally, respondents were asked whether the memory of the event later had returned, and if so, whether this memory-recovery occurred spontaneously or when others told them about it. When the forgotten event could not be remembered afterwards, neither cued nor spontaneously, it was considered to be an irreversible blackout.

Blackout and non-blackout groups were compared for interval data using two-tailed independent samples t-tests, with p set at < 0.05.

RESULTS

Forty-four of the 256 respondents (17%) never drank alcohol. These respondents were excluded from further analyses. The remaining group of 212 respondents consisted of 138 women and 74 men. Mean age was 25 years (SD = 11). Sixty-seven percent of this group (142 participants, 84 women) reported to have had at least one blackout in their lives. The average number of reported drinks consumed before blackout occurred was 15 within a mean time frame of 4 hours. The corresponding BAC estimate was 260 mg/100ml (SD = 130). Twenty-two percent of the respondents used drugs or had not eaten on the day of the blackout, which may have contributed to the occurrence of their blackout. However, in the large majority (78%), these circumstances did not play a role.

Fourteen respondents failed to indicate the number of drinks consumed prior to the blackout experience. In the blackout group (n = 142), men reported to drink more often [t (140) = 2.26, $p < 0.05$], and reported to consume more drinks [t (126) = 5.63, $p < 0.05$] than did women. On the average, men reported to drink 6 times a month 19 drinks per occasion and reached an average BAC of 300 mg/100ml. Women reported to drink 4 times a month an average of 12 drinks per occasion and reached an average BAC of 230 mg/100ml. This suggests that women are more sensitive to blackouts and experience blackouts at lower BACs than men.

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[18] BAC Calculator: Via LexisNexis Software, November 10, 2004. Available at http://www.anse.de/promille.php

[19] Note that according to the Dutch Vehicle and Traffic Law, persons are legally intoxicated at BACs of 50 mg/100 mL or more.

Blackout duration ranged from 15 minutes to one hour. When asked about the types of events for which blackout occurred, the following events were reported most frequently: the person(s) spoken to (23%), how one got somewhere (31%), to have fallen (10%), or to have embarrassed oneself or someone else (13%). Fifteen percent of the blackouts concerned more serious and criminally relevant issues like misconduct, fights, arguments, or vandalism. Such deviant behavior was reported by 22% of the respondents. Corresponding BACs in this group were 288 mg/100ml.

When asked if and how the memories returned, 46% answered that the memory of the forgotten event returned spontaneously. Fifty-three percent reported that their memory returned when others told them about their behavior. Interestingly, 34% of the respondents said that their memory did not return at all. Twenty-three percent of these respondents said that they knew that their total blackout pertained to criminally relevant behavior.

When drinking pattern of respondents reporting blackouts was compared to that of respondents who never had had a blackout, it appeared that the latter group drank less frequently: $t(210) = 2.94$, $p<0.001$. More specifically, the blackout group drank on average 5 times a month more than the criterion that is used for binge drinking ($SD = 4.3$). The group without blackouts drank on average 3 times a month ($SD = 2.7$).

To sum up, then, blackouts are frequently reported in a Dutch general population sample. Our data also show that in a minority (15%), blackouts pertained to criminally relevant behavior, like arguments, misconduct, fights, and vandalism. However, there is of course the possibility that this is an underestimation of the true base rate of blackouts for criminally relevant behavior. After all, respondents may be reluctant to report about the true nature of their blackouts because it concerns themselves. We expected that types of blackouts would be reported in a more straightforward fashion when they concern others. Therefore, we conducted a second survey.

STUDY 2: SURVEY OF HEALTHY RESPONDENTS

METHOD

A short questionnaire was distributed among another 100 respondents (20 men, 80 women). Their mean age was 21.0 years. The survey was approved by the standing ethical committee of our faculty. Again, respondents were recruited from the general population by asking students and visitors of a public library to complete the questionnaire. In this 12-item questionnaire, respondents were asked about blackouts they had witnessed in friends or acquaintances.

Respondents were asked whether it ever happened to them "that they were with a friend who could not remember (parts of) events that happened to this friend when this friend had been drinking." When respondents indicated to be familiar with this type of experience, they were asked to give an estimate of the number of drinks that this friend had consumed prior to the blackout. Finally, they were asked what types of behavior occurred during the event for which there existed a blackout and whether the friend's memory returned after he or she was told about the details of the event. As for the behavior for which blackout was claimed, the following options were given: hurting someone, argument, fight, vandalism, misbehavior, falling, embarrassing oneself or others, kissing, car driving or "other". The reason we selected these options was that we were primarily interested in potentially criminally relevant behavior. Respondents could check the "other" category when they only had witnessed harmless behavior during blackouts.

RESULTS

Seventy-six percent of the respondents reported to have witnessed a friend who had a blackout experience due to the consumption of alcohol. The mean estimated number of alcoholic beverages consumed on a particular occasion for which a blackout occurred, was 14.5 glasses (SD = 4.9). Behavior of friends who had a blackout were described as follows: embarrassing oneself or others (30%), falling (16%), kissing (11%), car driving (5%), and deviant behavior (i.e., hurting someone, argument, fight, vandalism, misbehavior, 28%). Thus, 28% of the reported blackouts witnessed in friends concerned criminally relevant behavior. When car driving under the influence of alcohol is also considered as a serious form of deviant behavior, this percentage is 33%. Blackouts for deviant behavior were reported by 41% of the respondents. In 55% of the cases, the friend's memory of the forgotten event returned. Twenty percent of the respondents who had witnessed a blackout for deviant behavior said that their friend's blackout was irreversible (i.e., memories did not return).

To sum up, the results of our second survey again suggest that reports of blackouts for criminally relevant behavior do occur on a non-trivial scale. As a matter of fact, 33% of the blackout events witnessed by our respondents involved deviant behavior against 15% in our previous survey. In both surveys, the estimated mean number of drinks prior to blackout was 15.

Even though these results seem to indicate that blackouts for criminally relevant behavior do exist, the problem remains that our survey data on blackouts, number of drinks, and corresponding BACs are based on subjective judgments.

To obtain more objective data on alcohol dosage for blackout claiming individuals, a third study was conducted. In this study, people who had been stopped in a traffic-control for suspicious driving behavior or for involvement in car-accidents were afterwards asked whether they had a blackout for the control or the accident. To learn more about corresponding BACs, blood samples were taken immediately after the traffic-control or the accident. In this way, self-reported blackouts could be related to objectively established BACs.

STUDY 3: DUI SUSPECTS

METHOD

In collaboration with the Dutch Drivers-licensing Authority (Centraal Bureau Rijvaardigheidsbewijzen; CBR), 100 consecutive individuals (93 men) who were stopped for driving under influence (DUI) were evaluated. Mean age was 41 years (range: 21 – 69 years, SD = 11). The drivers were stopped during standard alcohol-control actions carried out by the Dutch police (n = 48), because of suspicious driving behavior (n = 10), or because of their involvement in a road accident (n = 42). In all cases, blood samples were taken and analyzed. Several months later (range: 1-6 months), these offenders had to undergo a psychiatric examination conducted by a psychiatrist (D.R.), who was appointed by the CBR. The psychiatrist evaluated each offender's driving-capacity. Psychiatric assessment concerned prior violations, alcohol problems, and medication use. Offenders were also asked whether they had a blackout for the traffic-control or road accident and whether they had ever experienced a blackout before. In this study, we were mainly interested in the relationship between alcohol use and blackout reports.

Drivers who claimed an alcohol blackout for the traffic-control or accident were compared to those who did not claim blackout using two-tailed independent samples t-tests. Chi-square tests were used for categorical data on road accidents and blackout claims.

RESULTS

Blood test results showed that the mean BAC of the offenders when stopped, was 190 mg/100ml (SD = 53; range 66-350 mg/100ml). Of the 100 individuals, 14 (14%) claimed to have (had) an alcohol blackout for the traffic-control or accident. BACs of offenders claiming blackout did not differ from those of offenders without blackout claims [t (91) < 1.0, n.s.], mean BACs being 180 mg/100ml, and 190 mg/100ml, respectively. There was, however, an interesting

difference between the two groups. As can be seen in Table 4.1, 85% of the blackout-claiming offenders (12) had caused an accident, whereas only 35% of the offenders without blackout claims had caused an accident: X^2 = 12.9, df = 1 p < 0.002. Mean BACs for both accident-causing groups (i.e., those who did and did not claim blackout) were exactly the same: 204 mg/100ml [t (39) < 1.0, n.s.]. When asked whether they had ever experienced an alcohol blackout before, this question was answered affirmatively by only 15% of the offenders.

Table 4.1. Number (and percentage) of offenders who did or did not claim blackout and who did or did not cause an accident.

	blackout	no blackout	total
accident	12 (85%)	30 (35%)	42
no accident	2 (15%)	56 (65%)	58
total	14 (14%)	86 (86%)	100

GENERAL DISCUSSION

Our results can be summarized as follows: To begin with, in Dutch community samples, blackouts are reported frequently (67% and 76%, for self and others, respectively). In fact, they are reported more frequently than in American surveys (Anthenelli et al., 1994; White et al., 2002). The average number of drinks respondents said they had consumed before blackout occurred was 15 within 4 hours. Secondly, in 15% of the cases, respondents said their blackouts involved deviant behavior. When blackouts concerned others, 33% of the reported blackouts pertained to deviant behavior. Thirdly, in about 20% of the respondents who reported to have blackouts for deviant behavior or to have witnessed such behaviors in others, memory loss was irreversible. Fourthly, average estimated BACs of individuals reporting blackouts were in the range of 260 mg/100ml. Fifthly, blackouts were also reported in a traffic control, albeit less frequently (i.e., by 14% of the participants). Corresponding BACs were 180 mg/100ml. Reports of blackouts were especially common among drivers who had caused an accident (85%).

Our results suggest that people are capable of forgetting deviant behavior after the consumption of large amounts of alcohol. In line with Jellinek's (1946) ideas about blackouts and problem drinking, this forgetting seems to be related to drinking behavior in that people reporting blackouts more habitually consume alcohol than those who never have experienced blackouts. Based on subjective

reports, estimated BACs for blackout episodes in our first survey were extremely high (260 mg/100ml). Although these BACs reached levels at which a blackout is clinically possible, these reports should be interpreted with caution. There is a serious possibility that reported alcohol dosage was overestimated, since it pertained to an occasion for which the person said to have a blackout. Another problem is that respondents may have made an error when attributing the fact that they have no memory, or have not thought about certain events, to the consumption of large amounts of alcohol. Such causal attribution may lead to a subsequent overestimation of the corresponding dosage. This "effort after meaning" is, of course, a well-known obstacle in many retrospective self-report studies (Pope & Hudson, 1995).

One thing that can be concluded from our surveys with some confidence is that blackout reports cannot always be accounted for in terms of an excuse for deviant behavior. Admittedly, participants in our first survey might have given biased answers to certain survey questions. For example, it is conceivable that they were reluctant to report on their deviant behavior. The intention of our second survey was to eliminate such reporting bias by asking about blackouts of others. As expected, blackouts for deviant behavior were reported more frequently (33%) in the second survey. Although we did not ask about the details of the deviant behavior and therefore do not know whether subtle motor-control was needed for it, our results suggest that people are, indeed, able to forget deviant and criminally relevant behavior while under the influence of alcohol. But does this mean that any claim of alcohol blackout should be considered credible?

The results of our traffic-control study suggest otherwise. As a matter of fact, they demonstrate that strategic goals may motivate blackout claims. The fact that BACs of drivers claiming blackouts did not differ from drivers without blackout is rather suspicious. Also, BACs of blackout-claiming offenders were far below those obtained in our first survey (180 vs. 260 mg/100ml). Another finding that underlines the motivational aspect of blackout claims is that 85% of the blackout-claiming individuals had caused a road accident. Thus, there are good reasons to believe that at least some claims of blackout in this group are a form of faking-bad in order to minimize responsibility (Cima, 2003a). However, when asked about previous blackouts, only a minority (15%) reported to be familiar with blackouts. This is difficult to reconcile with Harzler and Frommes (2003), who found that precisely those people who *do* report past blackout experiences may also have expectancy-based problems retrieving events that occurred during intoxication.

An explanation for the low frequency of past blackout experience reported by the participants in our traffic-control study may be that a psychiatrist had to decide about offenders' driving competency and return of license. In this context, failing to report previous blackout experience may also serve a strategic goal. It would constitute a form of fake-good so as in order to prevent losing one's drivers' license because of a negative psychiatric advice (Cima et al., 2003b).

In order to determine whether a blackout claim is bona fide, several factors should be taken into account. To begin with, if possible, blood samples should be taken immediately after the offense to determine whether potential blackout claims are biologically plausible. At BACs lower than 250 mg/100ml, the plausibility of blackout claims is doubtful (Kalant, 1996). In our first survey, only 19% of the respondents who reported blackouts for criminally relevant behavior had BACs below 250 mg/100ml. In our traffic control study, 83% of the blackout claiming offenders who had caused an accident had BACs below 250 mg/100ml. Furthermore, in the absence of objective BAC data, the precise type of behavior for which blackout is claimed should be examined. Since fine motor-coordination is disrupted during the early stages of alcohol consumption, blackouts for events requiring fine motor-operations (i.e., firing a weapon at a distant target) are unlikely (Kalant, 1996).

In conclusion, our survey data suggest that *bona fide* blackouts for criminally relevant behavior do exist. Yet, they also show that outside the courts such claims are in a minority of cases raised by people who had BACs below 250mg/100ml. Things are quite different in a legal context, as our traffic control study demonstrates. Here, the majority of those who raise blackout claims had BACs below 250 mg/100ml and were also involved in road accidents. There is every reason to treat their claims with skepticism.

5

WHEN REMEMBERING CAUSES FORGETTING: THE PARADOXICAL EFFECT OF REMEMBERING *

INTRODUCTION

Over the past few years, a number of studies have looked at how memory work can influence participants' self-evaluation of their memory. In one of these studies, Belli, Winkielman, Read, Schwarz, and Lynn (1998) instructed participants to retrieve either 4 or 12 childhood events. Next, they were asked the metamemory question whether there "are large parts of your childhood after age 5 which you can't remember" (Ross, 1997). Response options were "yes", "no", and "unsure". The authors found that participants instructed to retrieve 12 childhood events more often said that there were large parts of their childhood they couldn't remember than participants instructed to retrieved 4 childhood events. More specifically, in the 12-events group, 44% answered "yes" to the critical question, while in the 4-events group only 26% said "yes". Winkielman, Schwarz, and Belli (1998) replicated this phenomenon and found 45% "yes" responses in the 12-events group and 19% in the 4-events group. More recently, Merckelbach, Wiers, Horselenberg, and Wessel (2001) noted that this effect does also occur when participants are instructed to retrieve negative childhood events.

The studies cited above all demonstrate a paradoxical effect of retrieval. That is, attempts to recall many childhood memories induce the belief that childhood memory is poor, even though the task is performed successfully. Referring to Tversky and Kahneman's (1973) availability heuristic, Winkielman et al. (1998; see also Winkielman & Schwarz, 2001) argued that this effect originates from participants attributing the ease (4-events) or difficulty (12-events) of retrieval to the availability of childhood memories.

According to Belli and co-workers (1998), the paradoxical effect of retrieval casts doubts on the validity of patients' reports of childhood amnesia that often occur after they have undergone extensive memory work during therapy. However, Brewin and Stokou (2002) investigated whether self-ratings of poor childhood memory correspond with data obtained during an autobiographical memory interview (AMI). Their results showed that relative to controls, participants who judged their childhood memory as poor (i.e., incomplete) did, indeed, perform worse on the personal semantic memory subscale as well as the autobiographical incidents subscale of the AMI. The authors concluded that self-reports of poor childhood memory do have certain integrity. In other words, clinical reports of poor childhood memory may reflect genuine individual differences in autobiographical memory performance and do not necessarily reflect therapy-induced metamemory beliefs about amnesia. According to Brewin (2003; p.148) his findings "suggest that some people have

genuine deficits in their memory for their childhoods and that memory judgments do have some basis in reality." However, the study of Brewin and Stokou (2002) differs in one important aspect from the Belli et al. (1998) and Winkielman et al. (1998) studies. Participants in the Brewin and Stokou (2002) study said that they had poor childhood memory *before* they participated in the experiment. Thus, their poor performance on the AMI may well reflect a general memory deficit that is not restricted to childhood memory. Alternatively, their beliefs about poor childhood memories and their poor AMI performance might both reflect pessimistic expectations about their ability to retrieve memories. In any case, it is questionable whether people with a priori negative ideas about their memory can be compared to people who come to adopt the belief that childhood memory is poor *after having successfully* retrieved many childhood memories. With this in mind, it would be interesting to measure autobiographical memory performance in individuals who have come to adopt the metamemory belief that their childhood memory is poor as a result of retrieving many childhood memories. If retrieval of many childhood memories and subsequent metamemory judgements about unavailability of childhood memory result in poor autobiographical memory performance, Brewin and Stokou's (2003) claim regarding the integrity of self-reports about poor memory is premature.

In the current experiment, we explored whether retrieval attempts affect metamemory judgements about memory availability. Next, we were interested in two related issues. One is to what extent metamemory beliefs, as found in previous studies, are merely an effect of "asking the question" and, thus, only occur when participants are confronted with explicit questions about unavailability of their childhood memories. The other issue is whether retrieval-induced metamemory beliefs would affect subsequent performance on autobiographical memory tasks. Thus, we examined whether the paradoxical effects of retrieval may undermine objective performance on memory tasks. If true, this would be difficult to interpret in terms of genuine memory deficits (Brewin & Stokou, 2003), but would rather point in the direction of an expectancy effect. If metamemory beliefs only emerge when they are triggered by explicit questions, one would expect that potential metamemory effects on autobiographical memory performance are, at best, weak and only occur for this "explicit" condition. On the other hand, if metamemory beliefs also occur when they are not triggered by explicit questions, they might be strong enough to undermine subsequent performance on objective memory tasks.

METHOD

PARTICIPANTS
One-hundred undergraduate students (85 women) participated in the experiment. Their mean age was 21.5 years (range: 18-29 years). Undergraduates received € 7,50 or € 12,50 for participation, depending on the duration of the experimental session.

PROCEDURE
Participants were randomly assigned to one of two groups. In group 1, participants were instructed to retrieve and write down 3 childhood memories from age 4-12 years. In group 2, participants were instructed to retrieve 9 childhood memories from this period. All participants were instructed to write down briefly "what" the memory was about, "when" it happened, "where" it happened, and "who" was with them. Next, half of both groups were explicitly asked about the unavailability of childhood memory. To this end, we gave them the item that has been used in previous studies and clinical interviews: "are there large parts of your childhood after age 5 you can't remember?" (see Ross, 1997; Winkielman et al., 1998). Response options were "yes", "no", and "unsure". Below, this subgroup will be referred to as the "critical question-present condition". The other half of both groups were not asked about memory availability. They will be referred to as the "critical question-absent condition".

Following this, all participants were given the Semantic Autobiographical Memory Test (SAMT; Meesters, Merckelbach, Muris & Wessel, 2000) and the Autobiographical Memory Test (AMT; Williams & Broadbent, 1986). The SAMT consists of 22 items that measure self-referent semantic knowledge about childhood (i.e., autobiographical facts). An example of a SAMT item is: "Do you remember the name of your elementary school?" If respondents answered affirmatively, they were asked to write down the correct answer and to rate on a 100 mm Visual Analogue Scale (anchors: 0 = *not sure*, 100 = *very sure*) how certain they were about their answer. The AMT measures the ability to retrieve specific autobiographical memories to positive and negative cue words. After some practice trials, participants are given 5 positive (happy, safe, interested, successful, and surprised) and 5 negative (sorry, angry, clumsy, hurt, and lonely) cue words. They are instructed to retrieve the first specific, cue-related autobiographical memory that comes to their mind within 30 sec. This may be a childhood memory or a more recent memory. However, it has to be the first one that comes to mind. For example, a specific response to the cue word "happy"

would be: "I felt happy when I had dinner with my entire family last Christmas". A non-specific response would be: "I'm always happy when I'm with my boyfriend". For each specific memory retrieved within 30 sec 1 point was given. Non-specific responses or responses after 30 sec were give no point. The total number of specific responses to cue words was calculated. To this end, two blind raters, the first author and a research assistant, evaluated protocols. Interrater-agreement was sufficient: r = .92. Rater-disagreements were resolved by averaging both raters' scores. Using a single 100-mm VAS item, participants were also asked about their mood: "How are you feeling right now?" (anchors: 0 = *very down*, 100 = *very happy*). Finally, participants were asked to complete the 33-item Social Desirability Scale (SDS; Crowne & Marlow, 1960; Cronbach alpha = .77). This questionnaire measures the tendency to provide socially desirable answers.

RESULTS

CHILDHOOD METAMEMORY JUDGEMENTS

One participant was excluded from the analysis because she did not follow the instructions provided by the experimenter, leaving 49 participants in the 3-events group and 50 participants in the 9-events group. All others successfully retrieved the number of memories they were instructed to retrieve. All memories retrieved were equally specific in that each memory contained a what, when, and where element.

When asked about memory unavailability, participants who retrieved 9 childhood events more often answered "yes" to the critical question than did participants who had retrieved 3 childhood events. In the 9-events group, 40% of the participants answered "yes" to the critical question compared to only 12.5% in the 3-events group, X^2= 4.75, df = 1, p < .05. Thus, a larger proportion of participants who had retrieved 9 childhood memories judged their childhood memories to be unavailable than did participants in the 3-events group. Note that these percentages come close to those reported by Winkielman et al. (1998), indicating that our manipulation was successful. Note also that those who answered the pertinent question about childhood memory unavailability with "yes" did not have higher SDS scores than those who said "no" or "don't know".

MEMORY TESTING

Table 5.1 shows mean SAMT and AMT scores for participants in the 3-events and the 9-events groups. A 2 (question: present vs. absent) x 2 (group: retrieving 3 or 9 childhood memories) Analysis of Variance (ANOVA) revealed no main effect of group for number of responses to SAMT items or certainty ratings for these responses: Both F's (1,97) < 1.0. Likewise, the main effects of presence or absence of explicit questions on the SAMT parameters did not reach significance: F's (1,97) < 1.0. Neither was there an interaction between group and presence or absence of explicit questions: F (1,97) <1.0. Apparently, performance on the SAMT was not affected by retrieving 3- or 9 childhood memories, or by asking about the unavailability of childhood memories.

For AMT performance, a main effect of group was found: $F(1,97) = 5.61$, $p < .01$. That is, participants in the 9-events group retrieved less specific autobiographical memories than did participants in the 3-events group. Participants in the 9-events group retrieved less specific memories to negative cue words than did participants in the 3-events group: $t(97) = 3.31$. $p < .01$, two-tailed. For positive cue words, no group differences emerged: $t(97) = 1.3$, $p = 0.21$. The main effect of presence or absence of explicit questions on AMT specificity did not attain significance: $F(1,97) < 1.0$. Follow-up t-tests showed that participants in the 9-events group were less specific on the AMT than were participants in the 3-events group and this difference was evident for both the critical question-present and the critical question-absent condition: both t (97)'s > 1.65, p's < 0.05. This shows that AMT performance differed between the two groups, whether or not beliefs were made explicit by asking about the unavailability of childhood memories. No significant interaction of group with presence or absence of explicit questions was found: $F(1,97) < 1.0$.

Table 5.1. Mean SAMT responses (max 22), SAMT certainty ratings, and AMT scores in the 3-events group ($n = 49$) and 9-events group ($n = 50$).

	Condition	
	3 events	9 events
SAMT responses (range 0-1)	17.5 (2.3)	17.0 (2.7)
SAMT certainty ratings (range 0-100)	81.8 (10.4)	80.6 (11.7)
AMT (range 0-10)	8.1 (1.6)	7.1 (1.9)*

* p < .05

Note. Standard deviations are given in parentheses.

Mean mood scores for the 3-event and 9-event groups were 70 (SD = 17.1) and 74 (SD = 13.9), respectively. No correlation was found between mood and AMT performance [r = -.18, p = .07], indicating that depressed mood was not responsible for poor AMT performance.

DISCUSSION

The findings of this study can be summarized as follows. First of all, like earlier studies, we found that retrieving many childhood memories induces in a substantial proportion of participants the metamemory belief that memory for childhood is poor. Secondly, retrieval of 9 memories resulted in worse performance on the AMT compared to retrieval of only 3 memories. Thirdly, poor autobiographical memory performance in this group was found for participants who were explicitly asked about memory availability, but also for the condition in which participants were not asked such explicit questions. This indicates that metamemory beliefs are not merely an effect of "asking the question", but that they also occur when such questions are absent.

The percentages of "yes" responses we found in the 3-events and 9-events groups (12.5% vs. 40%, respectively) are similar to the percentages reported by previous studies (Winkielman et al., 1998). This indicates that retrieval induced metamemory beliefs are a rather robust phenomenon. In the current study, however, we tried to take this effect one step further. Our primary interest was in the potential memory-undermining effect that retrieval-induced metamemory beliefs might have. What happens to memory after people have successfully retrieved 3 or 9 childhood events, and come to believe that their childhood memory is poor? As our results show, such beliefs do not undermine semantic memory (SAMT), but they do undermine the specificity of episodic autobiographical memory (AMT).

Interestingly, in pure cases of dissociative amnesia, episodic memory is lost but self-referent semantic knowledge is spared (e.g., Kihlstrom & Schacter, 1995). This is a consequence of the fact that semantic autobiographical knowledge has been well rehearsed and is relatively easy to retrieve. Our findings are in stark contrast to the findings of Brewin and Stokou (2002), who did find poor performance on the semantic component of the AMI. These authors found that people who thought they had a poor memory for childhood did, indeed, score worse on autobiographical memory tasks. Brewin and Stokou argued that such metamemory beliefs reflect genuine memory deficits, but our results make plain that a completely different interpretation is possible: metamemory beliefs

about poor childhood memory may induce pessimistic expectations about ones ability to retrieve autobiographical events. This, in turn, may undermine performance on tasks like the AMT. To the extent that covert or overt metamemory beliefs generate the expectancy that effortful retrieval will not be very successful, such beliefs will undermine retrieval of specific episodes rather than semantic memories. From that perspective, it may not be very surprising that semantic autobiographical memory is unaffected by metamemory beliefs. A possible explanation for why Brewin and Stokou found an effect on semantic memory could be because they chose people with a chronic belief about the incompleteness of their memory. These people may be more reluctant to guess compared to our participants, who have a more transient belief about the incompleteness of memory. Altogether, we believe that Brewin and Stokou's as well as our findings of poor autobiographical memory performance may be based on participants' expectations about poor childhood memory.

One could argue that fatigue effects are responsible for the paradoxical retrieval effects on AMT. However, if tiredness would have played a role, we should have found significant differences between the 3- and 9-events groups on SAMT. Even though semantic knowledge is easily accessible and more resistant to metamemory effects, tiredness should have led to fewer responses and/or to lower certainty ratings. Yet, the 3-events and 9-events group did not differ with regard to these parameters. Furthermore, tiredness would have exerted an effect on the mood ratings, but, again, there were no group differences in this respect.

To our knowledge, AMT studies with non-clinical samples have never found a compromised ability to retrieve specific memories (i.e., overgeneral memories) in such groups (but see for an exception Hauer, Wessel, & Merckelbach, 2006). Previously, only people with depression or Post- Traumatic Stress Disorder (PTSD) have been found to display overgereral memories on the AMT (McNally, Lasko, Macklin, & Pitman, 1995; Wessel, Meeren, Peeters, Arntz, & Merckelbach, 2001). Even though participants in the 9-events group were certainly not as overgeneral as clinical samples, they were 10% less specific than participants in the 3-events group. This is important because, if retrieval of many childhood events leads to less specific autobiographical memories, patients may develop the idea that they suffer from psychogenic amnesia and they may be more vulnerable to suggestion. In a therapeutic setting, lack of specific memories may more easily lead to the development of false memories. According to the principle of discrepancy detection (Schooler & Loftus, 1986), people who believe they only have vague memories about an event are especially vulnerable to misleading information about that event, simply

because they are not able to detect the discrepancies between what really happened and what is suggested.

In sum, our findings replicate the paradoxical effect of retrieval: individuals who retrieved many childhood events more often said that their childhood memories were unavailable than those who retrieved only a few childhood events. More importantly, those who previously retrieved many childhood events found it more difficult to describe specific autobiographical events on the AMT than those who previously retrieved few childhood events. Apparently, the paradoxical effect of retrieval is more than just an inert by-product. It may affect subsequent performance on an autobiographical memory task. The most likely explanation for this is that memory work induces beliefs and expectancies that, in turn, modulate memory performance. That such beliefs and expectancies are not dependent on explicit questions about memory availability is suggested by the fact that lowered AMT specificity is also found in persons who retrieved many childhood events, but who were not explicitly asked about memory availability. All in all, our findings demonstrate that memory work has a number of considerable effects that therapists should take into account.

6

EXPECTANCIES AND MEMORY FOR AN EMOTIONAL FILM FRAGMENT: A PLACEBO STUDY*

INTRODUCTION

Several studies suggest that expectancies can affect memory performance. According to Ponds, Van Boxtel, and Jolles (2000), elderly often evaluate their cognitive functioning more negatively than younger people, when in fact there is no substantial difference between these groups in their performance on objective memory tasks. Meanwhile, the pessimistic expectations of elderly people (e.g., fear of dementia) may undermine their daily memory functioning in cognitive demanding situations. Other studies found that beliefs about memory functioning - so called metamemory beliefs - can be experimentally manipulated such that people come to evaluate their memories to be less available. For example, Winkielman, Schwarz, and Belli (1998) have shown that successful retrieval of many childhood memories can paradoxically induce the belief in participants that their memory for childhood is poor. This paradoxical effect has to do with participants attributing the cognitive effort required for memory retrieval to the quality of their childhood memories (see also Belli, Winkielman, Read, Schwarz, & Lynn, 1998; Winkielman & Schwarz, 2001). Van Oorsouw and Merckelbach (in preparation) found that the paradoxical effect of memory retrieval is not an inert side-effect, but can undermine subsequent performance on an autobiographical memory task.

Expectancy effects have been investigated by the use of placebos (Brown, 1998). A placebo is an inactive substance which is presented to participants or patients as an active drug. In pharmacological studies, a placebo condition is usually employed to differentiate between genuine effects related to the pharmacological properties of a drug and the expectancy effects that occur when patients are administered a drug. When the patient's health improves after administration of a placebo, this improvement is not attributable to the intrinsic properties of the drug, but to explicit beliefs or expectancies about the effects of the placebo. While this is often called the placebo effect, in a strict sense, such effect can only be established when patients in a placebo condition improve more than those in a no-treatment control group (Kirsch & Lynn, 1999; Stewart-Williams & Podd, 2004).

Although in clinical trials, physiological (e.g., blood pressure) and emotional (e.g., pain sensation) placebo effects have been well documented (e.g., De Craen, Kaptchuk, Tijssen, & Kleijnen, 1999; De Jong, Van Baast, Arntz, & Merckelbach, 1996; Pope & McNally, 2002), placebo effects on cognitive functioning (e.g., memory) have been studied less well. One exception is the study of Assefi and Garry (2003), who found that the belief of having consumed alcohol, when in fact the drink was a non-alcoholic beverage, made participants

more susceptible to misleading post-event information. Assefi and Garry argued that the social context is critical to the placebo effect they found, because no effect of the alcohol placebo was found on memory for control events (i.e., no misinformation). That is, the mere belief that they had consumed alcohol in combination with suggested misinformation may have increased participants' tendency to accept misinformation from the experimenter. Accordingly, Assefi and Garry (2003, p.79) concluded that "alcohol placebos did not affect memory per se, but influenced participants' tendency to capitulate to suggestions made by the experimenter."

Another study in this domain is that by Kvavilashvili and Ellis (1999), who investigated the placebo effect on cognitive performance in a design that did not include social suggestions provided by others. These authors gave participants a placebo capsule and told them explicitly that it would improve or impair their memory for a list of words. They only found significant effects on actual performance in the condition where "memory impairment" expectancies had been created. Here, participants recalled fewer previously learned words than participants in the control or positive placebo condition (i.e., a memory quantity effect) and they also tended to make more commission errors (i.e., a memory accuracy effect). For participants who had received "memory improving" instructions, no positive placebo effect on memory performance was evident. In contrast, Green, Taylor, Elliman, and Rhodes (2001) did find a positive placebo effect when studying the effects of glucose on cognitive functioning. Participants who received glucose performed better than participants who were given a placebo and were told it was a placebo. However, another group, which was given a placebo but was told it was glucose, also performed better than the told-placebo group. This indicates that the mere suggestion of receiving glucose when in fact it is a placebo may improve cognitive functioning.

So far, the published studies on placebos and memory heavily relied on static memory material (e.g., word lists; slides). The aim of the present study was to investigate expectancy effects of "memory-enhancing" and "memory-impairing" placebos on memory for an emotional film fragment. Based on previous studies examining placebo effects and memory, we predicted that in comparison to a no-treatment control group, "memory-enhancing" placebos would improve memory for the film fragment (i.e., more correctly recalled details and less commission and distortion errors compared to the other groups), whereas "memory-impairing" placebos would worsen memory for the film fragment (i.e., less correctly recalled details and more commissions and distortions compared to the other groups). We measured three types of

dependent variables: objective memory performance, subjective memory estimates, and subjective memory effort. The last variable was included so as to control for reversed placebo effects. These occur when positive placebos impair and negative placebos improve participants' memory as a result of decreased or increased effort in retrieving information (Kvavilashvili & Ellis, 1999). If reverse placebo effects would occur, one would also expect group differences in the amount of effort with the "positive" placebo group reporting less effort than the "negative" placebo group.

The scarce experimental literature on placebos and memory shows that one has to differentiate between two levels at which effects might occur. One level is that of objective performance, e.g., memory performance on a word list task. The other level is that of expected or perceived efficacy of the placebo, and has more to do with subjective beliefs and expectancies (i.e., metamemory). Both levels might be partially or completely dissociated. For example, in the Kvavilashvili and Ellis (1999) study, those who had a "positive" placebo tended to report that it had improved their performance, whereas those who had a "negative" placebo tended to report that it had undermined their performance. Yet, at the level of objective memory performance, only "negative" placebos were found to undermine free recall of learned words. Likewise, in a study by Greenwald, Spangenberg, Pratkanis, and Eskenazi (1991), participants who were given subliminal self-help tapes to improve their memory subsequently indicated that their memory had improved while this was not reflected in objective measures of memory. Although subjective and objective placebo effects might be dissociated, one may safely assume that objective placebo effects only occur to the extent that participants believe that the placebo will be or has been effective to begin with. Assuming that objective placebo effects critically depend on subjective expectancies, the current study included participants on basis of the latter variable. That is, only participants who believed the placebo to be effective were included in the main analysis.

Previous placebo studies (Assefi & Garry, 2003; Kvavilashvili & Ellis, 1999) manipulated expectancies at or before encoding. In such design, beliefs about "memory-enhancing" or "memory-impairing" drugs could affect encoding, retrieval or both. In the current study, we administered placebos after encoding of the emotional film material. The reason for doing so was our interest in real-life situations like, for example, eyewitnesses who have to report about a crime that they saw. In the forensic literature, one can find many examples of authors claiming that drugs such as barbiturates may help eyewitnesses or defendants to recover previously lost memories about an emotional event (see for a review,

Kihlstrom, 1998). One simple explanation for these memory facilitating phenomena is that they reflect positive placebo effects.

METHOD

DESIGN AND PROCEDURE

The study was approved by the standing Ethical Committee of the Faculty of Psychology, Maastricht University. Participants (N = 90; 73 women), who were all undergraduate students, volunteered to participate in an experiment that was announced as a study on memory improving and memory impairing drugs. Participants were first screened by telephone. This telephone interview was conducted to enhance the belief that real drugs were being tested. Thus, during the telephone interview, participants were asked whether they were pregnant, suffered from epilepsy or depression, and were currently using medication (see for a similar procedure Kvavilashvili & Ellis, 1999). When all these questions were answered negatively, they were allowed to participate in the study. Participants were instructed not to drink beverages containing alcohol or caffeine up to 4 hrs prior to the experiment since this could affect memory performance. Further information about the participants is given in the results section below, as we explicitly selected participants who believed the placebo instructions.

When participants came to the lab some days later, they were informed about the procedure. They were told that they might be assigned to one of the two groups that were going to test a new drug, but they might also be assigned to a control group that would not test any drugs. Participants filled out informed consent forms, and were asked if they had any questions regarding the drugs they might be asked to take. The first part of the experiment, the encoding phase, consisted of watching a film fragment. Participants were told that they were about to watch an emotional film fragment. Nothing was mentioned about any upcoming memory tests for this fragment. Next, expectations about memory were manipulated by administering the memory-enhancing (positive) or memory-impairing (negative) placebos (see below). Finally, memory for the encoded material was tested.

The film fragment (duration about 3 min) was an emotional scene taken from the movie *American History X.* The fragment was about a neo-Nazi shooting two black persons who were trying to steal his car. This film fragment has been used in previous studies in our lab (Giesbrecht, Geraerts, & Merckelbach, submitted;

Smeets, Candel, & Merckelbach, 2004). On the basis of this previous work, we have developed a scoring protocol for evaluating memory data about the fragment. After participants had seen the fragment, they were asked to rate on two 100 mm Visual Analogue Scales (VAS; anchors 1= *not emotional/realistic*, 100 = *very emotional/realistic*) how emotional and realistic they thought the fragment was. Next, participants were randomly assigned to one of the three groups by drawing an envelope from a box. The experimenter was blind for the content of the envelopes. The envelope contained instructions and a placebo capsule in the experimental groups, or only instructions in the control group. Participants were asked to open the envelope, read the instructions, and take the capsule with some water when the envelope contained a capsule. In the positive placebo group, instructions were as follows: "You are in the memory-enhancing group. You are testing a homeopathic drug, called MEMOLIN, which is known to stimulate memory performance. It increases the transmission of serotonin and acetylcholine in the brain, compounds that are important for memory processes." The negative placebo group received the following instructions: "You are in the memory-impairing condition. You are testing a food supplement, called SERUNUL (from Kvavilashvili & Ellis, 1999), of which the most important side effect is that it briefly suppresses memory performance. It reduces the transmission of serotonin and acetylcholine in the brain, compounds that are important for memory processes." The following instructions were similar for both groups: "The drug has no bodily side-effects we know of. However, if you do experience any side effects, we ask you to report them in the exit interview. It takes approximately 30 minutes for the drug to cross the blood-brain barrier. So, after 30 minutes from now we will start with the memory testing. After two to three hours, the drug will lose its effect. Please take the capsule orally with some water and fill out the question below and close the envelope. Do not tell the experimenter in which condition you are." After participants had read the instructions, they answered a question that was on the instruction form. The question was about how much effect they expected the capsule to have on their memory performance. Instructions in the envelope the control groups received read as follows: "You are in the control group, which means that you are not testing any drugs. However, similar to participants in the other two groups you are asked to wait for 30 minutes. After 30 minutes the memory testing will start."

After participants had closed the envelope, an interval of 30 min followed. During the interval, all participants filled out a few questionnaires that were not related to memory and that therefore will not be considered here further. When participants had finished the questionnaires within the 30 min period, they

were asked to remain in the room and were given some magazines to read. During this stage of the experiment, participants were never told that the memory test would pertain to the film fragment. To enhance the belief that real drugs were used, blood pressure was measured immediately before the placebo was administered (baseline), and a second time after the 30 min interval had elapsed, when the drugs had supposedly crossed the brain barrier. Participants were told that it was necessary to closely monitor their physiological responses to the drug or that blood pressure served as a control measure in case they would not receive a drug (i.e., in the control group). Thus, baseline blood pressure was measured for all participants and *before* they knew to which group they were assigned. During the 30 min interval, the experimenter stayed in the room with the participant, who was told that this was done so that quick action could be taken in case he or she would experience any 'side effects'. After 30 min had passed, participants' were told that their memory for the film fragment was tested. They were asked to write down everything they could remember of the film fragment. Participants were instructed to describe the events, persons, and surroundings in as much detail as possible. Finally, participants underwent an exit interview. As part of this interview, they completed questions about how much effort they had put into completing the memory test (anchors: 0 = *no effort*, 7 = *very much effort*), how effective (i.e. influence) they judged the drug to have been in affecting their memory (anchors: 0 = *no effect*, 7 = *very powerful*), and whether they had any ideas about the research questions. Following this, participants were fully debriefed and were given their credit hour.

STATISTICAL ANALYSIS

Blood pressure was analyzed using a 3 (groups) x 2 (baseline versus follow-up) Analysis of Variance (ANOVA) with repeated measure on the last factor. Free recalls of the film fragment were subjected to a one-way ANOVA with the three groups (i.e., positive placebo, negative placebo and control group) as independent factor. To identify specific differences between groups, follow-up pair-wise comparison t-tests with Bonferroni corrections (α = .01) were carried out. Ratings of emotionality and realism of the film fragment, expected effect and experienced influence were evaluated with one-way ANOVA's or independent samples t-tests in case comparisons only involved the two experimental groups.

RESULTS

PARTICIPANTS

In total, 90 undergraduate students (73 women) participated in the experiment. Their mean age was 19.7 years (SD = 2.5, range: 17-32 years). Participants received 1 course credit hour for their participation. Only participants who expected the drug to be more than slightly effective (ratings > 3; see below) were included in the main analysis. Participants who did not believe in the memory-enhancing or memory-impairing properties of the placebos were excluded.[20] Indeed, there was a significant interaction effect between beliefs about the placebo's effectiveness (ratings $\leq$ 3 or ratings > 3) and the placebo groups' (positive or negative) free recall performance [F(1, 58) = 7.37, p < 0.05]. This shows that the placebo's effect on objective memory performance was dependent on the a priori beliefs that participants held. Therefore, further analyses were based on participants who expected the placebo to be effective. More specifically, there were 13 participants[21] in the positive placebo group, 15 in the negative placebo group, and 30 in the control group. The mean expected effect (anchors: 0 = *no effect*, 7 = *very powerful*) was 4.4 (SD = 0.5) and 4.5 (SD = 0.5) in the memory-enhancing and memory-impairing groups, respectively [t(26) < 1.0].

BLOOD PRESSURE

Although blood pressure was primarily measured to create the impression that real drugs were being administered, it was also employed as a measure of arousal. To examine whether blood pressure changed as a result of placebo administration, a repeated measurement ANOVA was conducted for systolic and diastolic parameters separately. We found a main effect of time for systolic

[20] A subsequent analysis of memory performance of the remainder of participants who did not expect the drugs to be effective (n = 15 in the positive placebo group and n =15 in the negative placebo group) yielded no between group differences on proportions correctly recalled information [t(28) < 1.0], number of commission errors [t(28) < 1.0] or number of distortion errors [t(28) = 1.12, p = 0.27]. This shows that beliefs people have about placebos are a crucial factor when it comes to the effectiveness they attribute to them.

[21] Two participants did not answer the question about how effective they believed the placebo would be. They were excluded from further analyses.

pressure [$F_{(1,54)}$ = 14.56, $p < 0.05$] and diastolic pressure [$F_{(1,54)}$ = 5.81, $p < 0.05$], but no interaction effect (group x time) for systolic [$F_{(2,54)}$ < 1.0] or diastolic [$F_{(2,54)}$ = 1.97, $p = 0.15$] pressure.[22] Neither did we find main effects of group, both F's $_{(1,54)}$ < 1.0. That is, the two placebo groups and the control group displayed a decrease in blood pressure over time, but this decrease was not modulated by the treatment given to participants.

MEMORY FOR THE FILM FRAGMENT

The groups did not differ with regard to their emotionality [$F_{(2,57)}$ < 1.0] or realism [$F_{(2,57)}$ < 1.0] ratings of the film fragment. The mean emotionality and realism ratings of all groups were above 75 on the 100 mm VAS.

Based on extensive previous work in our lab with the stimulus material (see e.g., Giesbrecht, Geraerts, & Merckelbach, submitted; Smeets, Candel, & Merckelbach, 2004), a scoring device was used to evaluate participants' free recall. Two independent raters, who were blind as to the treatments given to each participant, coded free recall protocols for the presence of 38 crucial pieces of information in the film fragment that would be important for a police investigation (e.g., "The neo-Nazi shoots", "The brother was watching", "The men shot down were black" etc.). For every correctly reported piece of information, participants received 1 point. To obtain a total free recall score, the number of correctly reported pieces of information was summed (maximum = 38). Free recall scores were transformed into proportions. Also, the number of commission and distortion errors was calculated. Following the definitions that can be found in Gudjonsson and Clare's (1995) work on false memories and suggestibility, a commission error was defined as the introduction of an entirely new but incorrect element, i.e., an element that was not part of the film fragment (e.g., "the neo-Nazi pulled one of the men out of the car", when in fact the car got away). A distortion error was defined as a major change in details of an existing event (e.g., "the neo-Nazi had a swastika tattooed on his upper arm", when in fact a swastika was tattooed on his chest, or, "the younger brother was wearing shorts", when in fact he was wearing long pants). The total number of distortion and commission errors was summed.

Free recall accounts were coded by the first author and a research assistant. Pearson correlations between both raters were .86 for number of correctly recalled items, .68 for number of commission errors, and .75 for distortion errors (all p's < 0.01). Because interrater correlations for errors were relatively low, we

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[22] Blood pressure measures for one participant were missing because of equipment failure.

only included commission and distortion errors in our analyses that were identified by both raters.

Proportions of correctly recalled information and number of commissions and distortions are shown in table 6.1. For proportion correctly recalled information, a one-way ANOVA yielded a significant main effect of groups: $F(2,57) = 8.03$, $p < 0.01$, $\eta_p^2 = 0.23$. Bonferroni corrected post-hoc tests ($\alpha = 0.01$) showed that participants in the positive placebo group recalled more correct information than either participants in the negative placebo group [$t(26) = 2.91$, $p = 0.01$], or participants in the control group [$t(41) = 3.59$, $p = 0.001$]. The negative placebo and control group did not differ from each other [$t(43) < 1.0$]. No group differences were found for number of commission errors [$F(2,57) < 1.0$, $\eta_p^2 = 0.03$], indicating that positive or negative expectations about memory did not lead to more or less commissions than when no such expectations were induced. For distortion errors, however, significant group differences did occur [$F(2,57) = 3.62$, $p < 0.05$, $\eta_p^2 = 0.12$]. Participants in the negative placebo group made more distortion errors than control participants [$t(43) = 2.44$, $p = 0.02$, two tailed] and tended to make more distortion errors than the positive placebo group [$t(26) = 1.84$, $p = 0.04$; one-tailed]. The positive placebo group and control group did not differ from each other in terms of distortion errors [$t(26) < 1.0$]. [23]

SELF-REPORT MEASURES
At the end of the experiment, when participants were asked to evaluate how the drug had influenced their memory, both placebo groups rated the drug as having been effective in the suggested direction. There were no group differences in this respect [$t (26) = 1.12$, $p = 0.27$], means being 3.1 ($SD = 1.5$) and 2.5 ($SD = 1.0$) for the positive and negative placebo group, respectively. Neither did the groups differ in the amount of effort they put into completing the

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[23] Since both experimental groups were rather small, one could argue that the effects on free recall or distortion errors could have been caused by one or two participants with extreme free recall or distortion scores. To this end, z-scores were calculated to locate participants with extreme scores ($z < -2$ or >2). When the two individuals with extreme scores were excluded from the analysis, free recall scores were unaffected ($p = 0.02$, 2-tailed). We did not remove outliers from our analyses of distortions because all participants made 0, 1, 2, or 3 distortion errors. Against this background, any definition of an outlier would be arbitrary.

memory tasks [$F(2,57) = 1.69$, $p = 0.19$], means being 4.8 ($SD = 1.6$), 4.0 ($SD = 1.4$), and 4.2 ($SD = 1.5$) in the positive, control and negative group, respectively.

There were no significant correlations between the effect that participants *a priori* ascribed to the drug and the influence on memory that was ascribed to the placebo *a posteriori* [$r = .10$, $p = 0.60$]. Thus, it was not the case that participants automatically reported an effect on memory when they expected the drug to be effective.[24]

Table 6.1. Proportions of correct free recall and number of commission and distortion errors for the positive placebo group ($n = 13$), negative placebo group ($n = 15$), and control group ($n = 30$). Standard deviations appear between parentheses.

	Positive placebo	Negative placebo	Controls
Proportion free recall	0.50 (0.11)[a,b]	0.41 (0.05)	0.38 (0.09)
Number of commissions	0.38 (0.50)	0.73 (0.96)	0.56 (0.68)
Number of distortions	0.69 (0.63)[a]	1.33 (1.11)[c]	0.66 (0.71)

a = $p < 0.05$ between positive placebo and negative placebo group

b = $p < 0.05$ between positive placebo and control group

c = $p < 0.05$ between negative placebo and control group

DISCUSSION

The results of this study can be summarized as follows. Firstly, taking a placebo capsule had no physiological effects on blood pressure. Secondly, positive placebos had an effect on memory quantity in the sense that participants in the positive placebo group recalled more correct information about the film fragment compared to participants in the negative placebo or control group. Thirdly, although groups did not differ in number of commission errors,

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[24] Interestingly, the opposite was true for the group that was excluded from the analysis because they did not believe the drug would be effective. In this group, there was a significant correlation between expected effect and reported effect [$r = .60$, $p < 0.01$]. That is, pessimistic beliefs about the drug's effectiveness in this group did affect their reports afterwards.

participants in the negative placebo group tended to make more distortion errors than participants in the positive placebo or control group. Thus, negative placebos had a limited effect on memory accuracy.

Our results show that the mere suggestion that a drug improves memory has a positive effect on memory performance. Participants in the "memory-enhancing" placebo group recalled 9% more correct information than participants in the "memory-impairing" placebo group and 12% more than control participants. As for self-reported changes (i.e., the memory effect participants ascribed to the placebo afterwards), we found both positive and negative placebos to be mildly effective. Participants who received memory-enhancing instructions (i.e., positive placebo group) reported an increase in memory performance to the same extent as participants in the negative placebo group reported a decrease in memory performance. Thus, like Kvavilashvili and Ellis (1999), we found placebo effects in terms of self-reported changes in memory. However, in contrast to Kvavilashvili and Ellis (1999), we found the positive placebo group to have increased levels of correct recall, rather than the negative placebo group to have lowered levels of correct recall. That we could not replicate the negative placebo effect on memory quantity reported by Kvavilashvili and Ellis may have to do with the fact that we administered the placebo after encoding, whereas Kvavilashvili and Ellis (1999) gave it before encoding. The memory-undermining effect of negative placebos in their study may have been caused by a decrease in attention, affecting memory encoding and consolidation. In our study, participants did not know what type of "drug" they would receive when the film fragment was shown to them. Therefore, it is impossible that expectancies about the placebo interfered with their encoding of the stimulus material. Perhaps, then, negative placebos only undermine memory quantity to the extent that they interfere with encoding, whereas positive placebos only improve quantity tot the extent that they enhance retrieval. This issue of how different types of placebos interfere with different memory stages requires further study.

Our results replicate those of Kvavilashvili and Ellis (1999) in that we too found that negative placebos tend to compromise memory accuracy. It has to be added, though, that the memory-undermining effect on accuracy that we found was restricted to distortions and was not apparent for commission errors. Furthermore, the effect of negative placebos on distortions errors was only borderline significant when Bonferroni corrections were made. Another explanation as to why we were unable to find a memory-undermining effect of negative placebos on recall or commission errors may have to do with the type of stimulus material that we used. Although we have no articulated ideas about

how stimulus material might interact with placebo expectancies, the fact remains that our stimulus material was rather emotional and dynamic, while that of Kvavilashvili and Ellis (1999) was neutral and static (i.e., word lists). Perhaps, the highly effective encoding of emotional material (Dolan, 2002; Hamann, 2001) may have been a safeguard against full-blown commission errors and this might explain why we were not able to detect a connection between negative placebos and commissions. Clifasefi, Garry, Harper, Sharman, and Sutherland (under review) also argue that placebo effects depend on the type of stimulus material. Clearly, the precise interactions between placebo effects, expectancies, and memory for different types of stimulus material deserve further research.

We can only speculate about the mechanisms that are responsible for the memory quantity effect of positive placebos and the memory accuracy effect of negative placebos. There were no differences in subjectively reported retrieval effort and, therefore, this factor cannot explain differential memory performance. Although it is often argued that drug effects on memory are caused by increases or decreases in arousal and attention (Tinkelberg & Taylor, 1984), these factors are unlikely to be responsible for the placebo effects on actual memory performance obtained in the current study. After all, there were no differences in arousal (i.e., blood pressure) between the two placebo groups after administration of the capsules, indicating that manipulating expectations about the drug did not have any differential effects on arousal. Before and after placebo administration, the average blood pressure for all groups was within the normal range (i.e. systolic pressure < 130, diastolic pressure < 80), although all three groups displayed raised blood pressure during the first session. One explanation for this higher blood pressure could be the emotional film fragment, because negative emotional stimuli are known to increase cardiovascular responses (Honda, Masaki, & Yamazaki, 2003). Another explanation for the higher blood pressure prior to placebo administration could be the anticipation of potential drug intake. In any case, the decrease in arousal over time was not caused by the placebo per se. With these considerations in mind, we suspect that the placebo effects on actual memory performance can best be understood in terms of cognitive expectancy, attribution, and source monitoring (see for a review Kirsch & Lynn, 1999). For example, in the negative placebo group, participants might have felt that distortion errors are acceptable because of the memory-undermining drug they had had. A similar pattern was reported in Assefi and Garry's (2003) study in which participants who had had an "alcohol" placebo were more likely to accept incorrect information. In a recent study, Clifasefi et al. (under review) noted that when participants had

been given "memory-enhancing" placebos (told-drug), they were less susceptible to misleading information compared to participants who had been told they received a placebo (told-placebo). These authors argued that their positive placebo findings are the product of more stringent source monitoring which would make it easier to detect misleading information and to resist misleading suggestions and false memories.

Admittedly, an expectancy interpretation does not fully account for the whole range of findings in our study. The fact that negative placebos tended to have an undermining effect on memory accuracy rather than memory quantity suggests that apart from expectancies, other factors play a role in how placebos affect objective memory performance. As mentioned before, one such factor could be the extent to which placebos interact with encoding, retrieval, and source monitoring.

Several limitations of the current study deserve brief comment. To begin with, it is possible that in the positive placebo group, participants rehearsed material of the film fragment, thereby leading to superior memory performance. On the other hand, during the 30 min interval, participants did not yet know that the upcoming memory test would be about the film fragment. Nevertheless, as we did not use a demanding filler task, we cannot exclude the possibility that our groups differed in their rehearsal activities. Secondly, the placebos in our study were harmless looking sugar capsules. Although our analyses only included participants who said they believed the placebo had been effective, a more powerful manipulation of expectancies might occur when one would administer placebos with a distinct taste or a genuine but harmless side-effect (Kirsch & Lynn, 1999). By creating stronger expectancies, fewer participants would have to be excluded resulting in larger groups and more powerful tests. Thirdly, in our study, memory testing was done within one and the same session. It would be important to know how persistent placebo effects on actual memory performance are. To this end, a study involving multiple test sessions would be required. Fourthly, our work as well as that of others (Kvavilashvili & Ellis, 1999; Green et al., 2001) makes plain that expectancies set up by placebos may affect objective memory performance, but it does little to explain how these effects might occur. For example, in our study we did not include confidence ratings as an index of source-monitoring decisions. Meanwhile, it is conceivable that placebo-induced expectancies primarily affect the confidence that people have in their memory reports. Obviously, this issue warrants further study.

In sum then, placebo participants in our study felt that the placebo had affected their memory (i.e., self-reported memory improvement or impairment was

evident). Thus, *a posteriori*, participants reported a slight improvement (i.e., positive placebo) or impairment (i.e., negative placebo). As Kvavilashvili and Ellis (1999) noted, self-reported effects for both types of placebos are not uncommon. Indeed, placebo effects reported in pharmacological studies are more often revealed with subjective reports of changes in mood or pain, and less so with objective physiological changes (Ross & Olson, 1981). From a clinical point of view, subjective metamemory effects are of some importance. For example, our finding that the mere expectation of memory impairment or improvement leads to corresponding changes in self-reported memory performance bears relevance to the treatment of elderly people who have pessimistic ideas about their memory. Effect sizes for our placebo effects on subjective and actual memory performance were in the small-to-medium range. However, our participants were healthy and intelligent undergraduates. It might well be the case that placebo effects on memory performance become more powerful in heterogeneous samples (e.g., people with health complaints). With this in mind, it would be both interesting and important to conduct placebo-memory studies in clinical groups. Consider elderly people who ruminate about their fear of Alzheimer disease (e.g., Ponds et al., 2000) or depressive people who have undergone ECT (e.g., Coleman, Sackeim, Prudic, Devanand, McElhiney, & Moody, 1996). In these groups, firm beliefs that something is wrong with one's memory might result in a self-fulfilling prophecy. Our findings lead one to wonder whether such self-fulfilling prophecy can be reversed by giving these individuals positive placebos. Or consider perpetrators who report amnesia for the crime they have committed. If their amnesia is expectancy-based (i.e., the perpetrator has convinced himself that his amnesia is profound), then changing these expectations using a "memory-enhancing" placebo could perhaps resolve the amnesia. Finally, placebos could be used in eyewitnesses who have difficulties remembering what they have seen. Our results suggest that positive placebos may lead to better retrieval of the witnessed event, without compromising memory accuracy. These practical issues deserve further investigation.

7

PLACEBOS, EXPECTANCIES AND CRIME-RELATED AMNESIA: TWO CASE-STUDIES*

INTRODUCTION

Offenders of serious crimes regularly claim to have no memory of the crime they committed. This type of memory loss is called amnesia. In the Netherlands and Germany, percentages of forensic patients claiming amnesia circle around 25 % (Cima, Merckelbach, Hollnack, & Knauer, 2003c, Cima, Nijman, Merckelbach, Kremer, & Hollnack, 2004). Sometimes, a claim of amnesia may have certain benefits for a defendant (see for examples Merckelbach, Van Oorsouw, Van Koppen, & Jelicic, 2005). Based on diagnoses in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; APA, 1994), forensic experts often relate amnesia to Dissociative Identity Disorder or Post Traumatic Stress Disorder. These disorders are sometimes associated with diminished responsibility. According to some authors, crime-related amnesia may imply that the crime was committed in a state of acute dissociation (Janssen & Van Leeuwen, 2000). These authors believe that such a state may be induced by extreme emotions, which in turn may consequently dissociate the normally integrated functions of consciousness and memory and could result in a complete loss of the sense of actions. In criminal trials where the issue of acute dissociation (also called automatism; McSherry, 1998) is brought up, a psychiatrist is often asked to assess the defendant's mental state at the time of the crime and reflect on the reliability of the claimed memory loss.

Several experimental studies have shown that beliefs people have about the quality of their memory, - so called metamemory beliefs-, can affect memory performance. Winkielman and colleagues (1998, 2001) made clear that when healthy adults have to retrieve many childhood memories, they easily come to adopt the belief that their memory for childhood is poor. This paradoxical effect has to do with the cognitive effort it requires to retrieve childhood memories. Participants attribute the perceived difficulty of this "memory work" to the availability of their childhood memories. A recent study showed that this paradoxical retrieval phenomenon can subsequently affect performance on an objective memory task (Van Oorsouw & Merckelbach, Chapter 5). In that study it was found that the more memories participants had to retrieve, the poorer they judged their own memory, and the worse they performed on a subsequent memory task.

Similarly, a study of Ponds and colleague's (2000) showed that elderly tend to judge their memory to be worse compared to younger people, even when their actual memory performance did not differ from that of young people. Because of such pessimistic expectations about their memory capacity, elderly may use their memory less efficiently. A similar finding was reported for patients who

had undergone Electro Convulsive Therapy (ECT): they overestimated their memory problems which might induce a self-fulfilling prophecy (Squire, Wetzel, & Slater, 1979). In short, pessimistic expectations about ones own memory can negatively affect memory performance.

Although there is an abundance of research on how ageing, memory work, and ECT affects metamemory beliefs of adults, not much is known about the role of these beliefs in defendants or perpetrators who claim amnesia for the crime they have committed. There are two reasons why the study of metamemory beliefs in this context is useful. One is the widespread belief of repressed memories among lay people. One may safely assume that such beliefs are also held by perpetrators of serious crimes (Crombag & Van Koppen, 1994; Merckelbach & Wessel, 1998). A second reason is that naïve beliefs about suppression can be convenient when a perpetrator wishes the crime never happened.[25] Although speculative, it is conceivable that metamemory beliefs of perpetrators could undermine their memory and in some extreme cases could take the form of dissociative amnesia. If true, one may expect that the amnesia would clear up when their metamemories are affected in a positive way.

Placebo treatments may affect expectations patients have about their cognitive functioning. Consider treatments where pills are administered with the instruction that they have the properties of a genuine medicine, when in fact they do not contain active constituents. Kvavilashvilli and Ellis (1999) showed that when people believe that their memory deteriorates because of a "memory-impairing" placebo, their objective memory performance becomes worse. A positive effect of "memory-enhancing" placebos was not found by these authors. A positive placebo effect was, however, found in our own study, where memory for an emotional film fragment was tested (see Chapter 6). Participants who were given a "memory-enhancing" placebo remembered more correct details of the film fragment than did a group that was given a "memory-impairing" placebo or a control group (Van Oorsouw & Merckelbach, in press). Research on alcohol placebos makes clear that when people think they have consumed alcohol, when in fact the drink contained no alcohol, they become more susceptible to misleading information about an event they have witnessed (Assefi & Garry, 2003). In a more recent study (Clifasefi, Garry, Harper, Sharman, & Sutherland, under review) demonstrated that when participants believed they were given a memory-enhancing drug when in fact is was a

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[25] The old German psychopathologists in this context spoke of "nicht-wahr-haben-wollen" ["not wanting to accept"] and they believed this especially occurred in subordinates who killed their superiors.

placebo, they were less sensitive for misleading information than when they were told they were given a placebo. Because expectancies clearly affect on symptoms and cognitive performance, pharmacological research on the effects of medical treatments always contains a placebo condition.

If, based on explicit beliefs, a forensic patient convinced himself that he can't remember the crime, a "memory-enhancing" placebo could perhaps counter these beliefs and restore memories of the crime. In an explorative way, we investigated this hypothesis by offering a placebo treatment to two forensic patients who claimed amnesia for their crime. The patients were told that the treatment would help them retrieve crime-related memories. Of course, we realize the shortcomings of this approach in that it is conceivable that a memory-enhancing placebo has no effect when the amnesia is feigned. In order to determine the possibility of feigned amnesia, we administered tests that can be used to assess feigning of psychiatric problems.

PATIENTS

Two forensic patients who claimed to be (partially) amnesic for their crime participated in our study. Our first patient, Mr. Son, stayed in a forensic institution in Germany. This 28-year old man had been convicted for armed robbery and assault. After extensive forensic-psychiatric evaluation, he was diagnosed with a dissociative disorder and antisocial personality disorder, combined with substance abuse. Our patient claimed to have no recollection of the crime he committed. It is important to note, though, that he read his file and, thus, knew about the crime details. There are, at least, two possible explanations for his memory loss. To begin with, his amnesia could be bona fide in the sense that his memory expectancies could play a role. If so, a placebo treatment could have promising effects. Another possibility is that he feigned his amnesia. In the latter case, the placebo treatment can only be "effective" when the patient decides to give up his role of an amnesic, e.g., to become eligible for probationary leave.

Our second patient, Mr. Maen, stayed in a forensic institution in Belgium. He was a 40-year old man who was convicted for armed robbery and attempt at murder. After extensive evaluation he was diagnosed with a schizoid personality disorder. Mr. Y claimed to have no memory about parts of the crime. Similar to Mr. Son, it is possible that Mr. Maen's memory loss is bona fide or feigned. To determine whether the patients displayed a tendency to feign memory problems, the Structured Inventory of Malingered Symptomatology (SIMS; Smith & Burger, 1997) and the Symptom Validity Test

(SVT; Denney, 1996) were administered. Both instruments will be discussed in more detail below. Note that in the current study, the SVT served as a memory test of the crime rather than as an instrument to assess malingering per se.

PROCEDURE

Before and after the treatment, a short psychiatric evaluation was conducted so as to assess orientation in time and place. Also, the two patients were asked on both occasions for a free recall of the crime. Prior to the treatment, several questionnaires and the SVT (pre-treatment assessment) were administered. After the treatment, the SVT was administered a second time (post-treatment assessment).

TREATMENT

Inspired by the "subliminal treatment" of Greenwald and colleagues (1991), our treatment consisted of placebo tea (fennel tea) and placebo music (sounds of the humpback whale). Patients were given the following instructions: "In a minute you will be given a cup of tea. After that you will be listening to some music. It concerns a homeopathic tea which is known to have a calming effect and improves attention and concentration. The tea will bring you into a state of mind in which the music will have an optimal effect. The music contains subliminal messages. Subliminal means that it is below your level of conscious perception. The messages in the music, combined with the ingredients in the tea will activate certain substances in the brain which are important for memory. No side effects are to be expected. If you, nevertheless, experience any side effects (e.g., feel nauseous, tired or dizzy), please report them".
Before intake of the tea, patients were asked whether they expected the treatment to be effective. Afterwards, patients were asked whether they thought the treatment had been effective. The treatment procedures were approved by the standing ethical committee of our faculty.

MEASURES

SYMPTOM VALIDITY TEST (SVT)
To assess the effectiveness of the placebos an SVT was administered. This memory test was first designed by Denney (1996) in order to detect malingerers (Merckelbach, Hauer, & Rassin, 2002; Jelicic, Merckelbach, & Van Bergen,

2004a,b). The SVT consists of a minimum of 15 two-choice questions about the crime the patient or defendant had been involved in. The person has to choose one of two options, of which only one is true. Questions are of the type: "the murder weapon was a) a knife or b) a gun". The rationale behind this test is that when someone has genuine amnesia for the crime, he will answer the questions randomly and give about the same number of right and wrong answers. That is, the person will perform at chance level. Someone scoring far below chance level is deliberately avoiding the right answer, which proves that he/she possesses knowledge of the correct answer. In that case, the amnesia is feigned. The SVT contains relevant items, that pertain to details that can be found in the file, but also bogus items. These items, to which the correct answer is unknown, are meant to counter random performance. An example of a bogus item is: "the room temperature was a) 20°C of b) 21°C".

Several studies have shown that SVT is capable of detecting 40 to 60% of a group of instructed malingerers (Jelicic et al. 2004a, b). Because one of our patients had knowledge about his file and the other claimed only partial amnesia, we took the possibility into consideration that both would perform above chance level during pre-treatment assessment. Not only would that make it impossible to detect whether they were simulating their memory problems, it would also make it difficult to detect differences in memory before and after the treatment. For that reason, we asked patients for each item whether they truly "remembered" the correct answer, or only "knew" the correct answer because they read it in the file. In this way, we were able to measure whether patients answered more questions correct and rated it more often as a true memory after the treatment (than before the treatment).

PSYCHOPATHIC PERSONALITY INVENTORY (PPI)

The PPI is a self-report questionnaire that can be used to assess psychopathic traits (Lilienfeld & Andrews, 1996; Edens, Poythress, & Watkins, 2001; Jelicic, Merckelbach, Timmermans, & Candel, 2004c). The questionnaire consists of 187 items of the type: "the opposite sex thinks I'm sexy and attractive". Questions are answered on a 4-point scale from 1 (*not true*) to 4 (*true*) after which scores are summed. Internal consistency (α = 0.92), test-retest reliability (0.99), and validity of the PPI are good (see Jelicic et al., 2004c). Because the PPI is an instrument that measures psychopathic traits that are represented in everyone in some degree, there is no absolute cut-off. Nevertheless can PPI scores exceeding 330 points –the average score of controls (Jelicic et al., 2004c)- be considered indicative of a psychopathic personality.

STRUCTURED INVENTORY OF MALINGERED SYMPTOMATOLOGY (SIMS)

The SIMS (Smith & Burger, 1997; Merckelbach & Smith, 2003) is a questionnaire that can be used to assess whether someone deliberately feigns psychiatric symptoms. It is a self-report questionnaire consisting of 75 yes-no items about bizarre and non-existing symptoms. It contains subscales that address not only memory complaints, but also low intelligence, psychotic, neurological, and mood complaints. Illustrative questions are: "sometimes I lose all feeling in my hand so that it is as if I have a glove on" and "I find lately that I suffer from headaches and dizziness just before I forget something." Yes-answers are summed to obtain a total score. The SIMS has adequate internal consistency (α = 0.72), test-retest reliability (0.72), and validity (see Merckelbach & Smith, 2003). When the total SIMS score exceeds the cut-off of 16, the person is suspected of malingering or exaggerating certain psychiatric symptoms. The cut-off of the subscale addressing only memory complaints is 2. Individuals scoring above 2 are suspected of malingering memory problems (Smith & Burger, 1997).

SUPERNORMALITY SCALE-REVISED (SS-R)

The SS-R is a revised version of a self-report scale that was designed to determine whether a patient wants to present himself in a more healthy way that he actually is (Cima et al., 2003b; Cima, Van Bergen, & Kremer, submitted). In that case the patient denies having everyday psychopathology symptoms that healthy individuals experience on a regular basis. The SS-R contains 50 items of the type: "I have done something illegal" and "There are important aspects of my live I can't remember". Answering options vary from 1 (*never happens to me*) to 4 (*always happens to me*). Someone who wants to make a more healthy impression, will score below the mean level of a control group, which circles around 60 (Cima, et al., submitted). Test-retest reliability (0.86), internal consistency (α = 0.76), and validity are good (Cima et al., submitted).

COGNITIVE FAILURES QUESTIONNAIRE (CFQ)

The CFQ is a self-report questionnaire consisting of 25 items concerned with how often a patient suffers from everyday perception, memory, and motor problems (Broadbent, Cooper, FitzGerald, & Parkes, 1982). Sample questions are: "do you fail to notice signposts on the road?", and "do you forget appointments?", and "do you bump into people?" Answer options vary from 0 (*never*) to 4 (*very often*). From previous research it is known how patients with serious cognitive deficits (e.g., dementia) score on this list. Scores that exceed the level of these patients are for that reason suspicious (Wagle et al., 1999).

Thus, high scores indicate absent-mindedness; low scores indicate a denial of that. Scores of healthy controls circle around 30 (Merckelbach, Muris, Nijman, & De Jong, 1996). Internal consistency (α = 0.81), test-retest reliability (0. 83) and validity of this test are sufficient (Merckelbach et al., 1996).

EXPECTANCIES AND MEMORY

By using a brief questionnaire, Maen's beliefs about the phenomenon of memory loss were assessed. The questionnaire contained 8 items of the type: "it is possible for someone who committed a crime to have no recollection of it afterwards". Answering options were "yes" and "no". High scores (many "yes" responses) indicate pronounced beliefs about crime-related memory loss. Because the questionnaire was not yet available when Son was evaluated, no data with this instrument were collected in this case.

RESULTS

MR. SON

Mr. Son's orientation was good. He claimed to have no memories of the crime. He said that prior to the crime, he had no memory problems. He had no idea about the origins of his amnesia and just wanted his memory back. He had no clear expectations about the treatment. He drank the tea and listened to the music for 30 minutes. During the second psychiatric interview, he was again asked about his memories of the crime. Son claimed that he still couldn't remember the crime. When asked about how effective he believed the treatment had been, he claimed that nothing had changed. His reason to participate was to increase his chances to leave the clinic; he believed that this treatment might help him. As a side effect he reported to feel very tired.

The memory task that was administered before and after the placebo – the SVT – contained 15 crime-relevant items about crime details from the patient's files (file-questions), but also 6 crime-relevant items for which the answers were not in the file (no-file questions). These were questions like: "where was the cash register? a) in the office or b) behind the front desk", and "was the hotel fully booked? a) yes or b) no". If our patient suffered from genuine amnesia, than he could not know the correct answer to these questions. Before the treatment, Mr. Son answered all 15 relevant file questions and 4 relevant no-file questions correctly. For 13 relevant file questions he said to "know" the answer because he had read it in his file. He did the same for 2 of the questions to which the answer could not be found in the file. After the treatment Mr. Son answered 14

out of 15 questions correctly. Of 13 he claimed to "know" the answer from the file. This time he again answered 4 out of the 6 no-file questions correctly, but never claimed to "know" it from his file. Thus, although Mr. Son did not perform as an imposter on the SVT by performing below chance level, his pattern of "remember" and "know" responses on this task were rather ambiguous. He gives 4 times a correct answer to questions to which he could not know the correct answer in case of genuine memory loss. Although his performance could be explained by random chance, it is at least conspicuous that for 2 of the correctly answered no-file questions he claimed he knew the answers from reading the file, which is, of course, impossible.

Mr. Son's scores on the different questionnaires can be found in table 7.1. His PPI score is far above that of forensic patients (Poythress, Edens, & Watkins, 2001), indicating that he possessed psychopathic traits (see also figure 1). On SIMS, his total score did not exceed the cut-off of 17. Thus, there is no reason to believe that Son tried to feign a broad variety of psychiatric symptoms. However, on the amnesia subscale of the SIMS, our patient scored above the cut-off, which is an indication that he feigned at least his memory problems. On the scale that measures supernormal behavior (SS-R), Son scored with 52 points below the average of forensic patients, and healthy controls. This indicates that except for his amnesia claim, he tried to present himself as an individual healthier than is plausible. Also, on the CFQ, Son scored below normal controls, which on average have a score of 35 points on this questionnaire, which again suggests that he wants to make a healthy impression.

Table 7.1. Scores of Mr. Son and Mr. Maen on PPI (psychopathy), SIMS (simulation), SS-R (supernormality), and CFQ (cognitive failures).

	PPI	SIMS total	SIMS amnesia	SS-R	CFQ
	cut-off > 330	cut-off >16	cut-off >2	cut-off <60	mean = 35
Mr. Son	390	11	4	52	18
Mr. Maen	309	7	1	51	20

Figure 1. PPI en SS-R scores of Mr. Son and Mr. Maen compared to healthy controls and forensic patients.
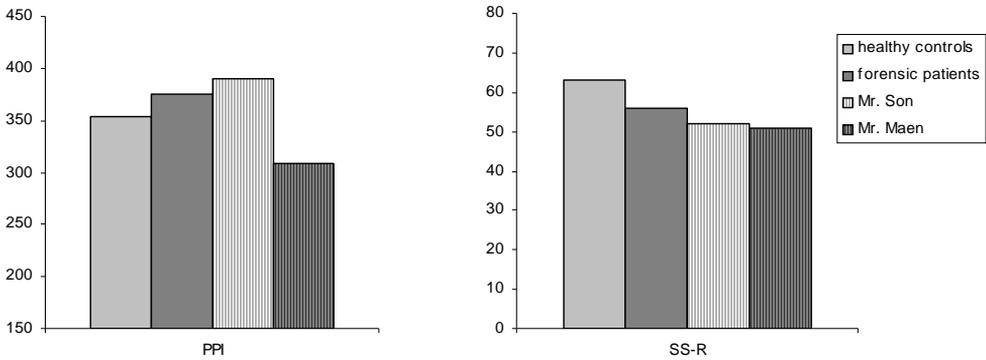
MR. MAEN

Mr Maen's case history showed that his orientation in time and place was good. He claimed to be partially amnesic for the crime he committed. When asked to give a free recall of the crime, he said he remembered entering and leaving a store. He could not recall the time in between, where he stabbed the girl in the shop in the neck with a knife. According to Maen, he had always had a bad memory because he was hit on the head with a hammer when he was a child. Examples he gave of his bad memory included having trouble remembering details of movies he watched and inability to remember where he put things. He had no idea about to what to expect of the treatment.

When Maen was asked for another free recall after the treatment, he reported details that he did not report the first time. One detail was that when he tried to rob the store, the shop-girl's husband came down and he had to flee. When asked about the treatment's effect afterwards, Maen claimed that he believed that the treatment had been successful,I but that he could not really remember anything more.

The SVT that was constructed for Maen contained apart from bogus items, 15 relevant file questions. At pre-treatment, Mr. Maen obtained the maximum score of 15. He remembered all answers to the relevant questions about what happened prior to the crime and after the crime. He answered questions about the stabbing correctly, but claimed that he could not really "remember" the correct answers. After the treatment, Mr. Maen obtained again the maximum SVT score. Interestingly, he now claimed to "remember" the correct answers to

questions about the stabbing. Furthermore, he said that he could now remember that the shop-girl looked like his mother.

Mr. Maen's scores on the questionnaires are also given in table 7.1. His PPI score was below that of healthy controls and forensic patients (Edens, Buffington, & Tomicic, 2000; Poythress et al., 2001), indicating that Mr. Maen does not possess any psychopathic traits. His total SIMS score was 7. This is far below the cut-off, indicating that Mr. Maen did not feign psychiatric symptoms. As well, on the amnesia subscale of the SIMS, his score was within the normal range. Thus, there is no reason to believe that Maen feigned his memory problems. On the supernormality scale (SS-R), Maen scored 51 which is well below the average of forensic patients, and healthy controls. On the CFQ, Maen scored below a group of healthy controls. Finally, Maen answered 7 out of the 8 questions about memory loss in relation to crime affirmatively. Control persons on average only answer 4 out of 8 questions affirmatively. This indicates that Mr. Maen had strong beliefs about crime and memory loss. It appears that Maen did not deliberately feign his amnesia, but had strong expectations about how little he could remember of the crime. It is not unlikely that for that reason, the placebo treatment was partially successful.

DISCUSSION AND CONCLUSION

In this study, we explored in a tentative way whether expectations about memory may affect claims of amnesia in psychiatric inmates. The two patients who participated in our study displayed divergent responses to the placebo treatment. Mr. Son did not respond to the placebo treatment, while it was partially successful in Mr. Maen. Although it is difficult to determine to what extent the amnesia claims in our patients were based on expectations, the results presented above lead tot the following, admittedly speculative, conclusions. To begin with, Mr. Son performed odd on the SVT because he "knew" crime information that was not in the file he read. This weakens his claim of amnesia. In addition, his scores on the amnesia subscale of the SIMS suggest that he feigned his amnesia. Furthermore, he displayed psychopathic traits and, on our measures of supernormal behavior and cognitive lapses and blunders, he wanted to create the impression being a healthy man. Mr. Maen, who said to have memory loss for parts of the crime, showed a different response pattern. After the treatment, he claimed to remember certain details that he had not remembered earlier. His scores on the various tests do not suggest that he is a malingerer. On the SIMS as a whole, but also on the amnesia

subscale, he performed within the normal range. He did not display any psychopathic traits. He did, just like Mr. Son, perform healthier on questionnaires about supernormality or cognitive failures than normal people would. These findings are not uncommon in this patient group. Patients in a forensic institution tend to score below the cut-off of the SS-R (Cima et al., 2003b). This "fake-good" behavior has to do with these patients wanting to make a healthy impression as to acquire the permission to leave the clinic as soon as possible. This motivation could also play a role in the case of Son and Maen.

Note that in forensic literature (e.g., Edens et al., 2001; Cima, 2003a) it is suggested that depending on the circumstances and benefits, psychopaths have the tendency to "fake bad" Feigning amnesia is an often used "fake-bad" strategy in order to reduce punishment or prevent having to participate in extensive discussions about the crime in therapy (Cima et al., 2003b; Marshall, Serran, Marshall, & Fernandez, 2005). When you can't remember anything about the crime, you don't have to discuss it. Both patients show a different pattern when it comes to faking-bad. Son's displayed high scores on the amnesia subscale of the SIMS and on the PPI. These scores suggest that it may be possible that Son feigned memory problems to avoid extensive discussions about his crime during therapy. Mr.Maen, on the other hand, does not display any signs of faking-bad. His answers on the questionnaire about expectations and memory show that he had pronounced expectations about memory loss for crime. His patient files already alluded to his opinion that his own memory was poor. He claimed that he regularly forgets where he put things and can't remember movie details. Although this sort of forgetfulness is a normal phenomenon for healthy controls, Mr. Maen used it as a diagnostic sign of his bad memory. It seems like his pessimistic expectations made an important contribution to his claim of amnesia, and this could also explain why the memory-improving placebo treatment seemed to be effective.

Since we included no control group in our study, our results are very preliminay. Nevertheless, they suggest that the effect of a placebo-treatment in cases of amnesia is dependent on the type of memory loss. It appears that such treatment is not very effective for patients who simulate their memory loss, but could be useful when pessimistic beliefs about memory underlie a claim of amnesia.

For a successful treatment of forensic patients, it is important that they remember, or at least say they remember, the crime. Someone who claims to be amnesic cannot discuss his crime in therapy. Meanwhile, an important aspect of treatment is so called crime-scenario discussions with the therapist. During this

part of the treatment, the crime and its preceding events are discussed step by step, in order to deal with the events and prevent recidivism. Marshall and colleague's (2005) showed that for patients claiming amnesia, different techniques can be used to discuss their crime-related memories. Marshall et al. (2005) used principles from cognitive psychology to gain access to crime-related memories in 22 patients with "amnesia". In 16 patients (73%) this strategy appeared successful. Expectations could play a role here too. When patients believe that certain techniques have the power to make their crime memories re-accessible, the application of those techniques often results in a "dissolving" of the amnesia.

A memory enhancing placebo might therefore contribute to the treatment of patients who claim amnesia for their crime. Because it is important to gain insight into the patient's personality and tendency to simulate memory loss, instruments like the SIMS and SS-R have an important additional value in this context.

8

GENERAL DISCUSSION

INTRODUCTION

Although there is no reason to doubt a claim of amnesia when there is brain damage in areas that are necessary for the formation or retrieval of memories, when dissociative amnesia is claimed caution is warranted. When there is some profit to gain and no structural damage can be found, a claim of amnesia should be treated with skepticism.

Different views about the possible biological and psychological substrate of dissociative amnesia can be found in the literature. Also DSM-IV and ICD-10 provide a different interpretation of dissociative amnesia. The DSM-IV treats dissociative amnesia as a dissociative disorder, whereas ICD-10 groups this type of amnesia together with the conversion disorders. Kopelman (2000), Markowitsch (1996), but also Jureidini (2004) point out that the various types of amnesia may not be readily distinguishable. That is, organic amnesia may develop into dissociative amnesia or feigned amnesia may develop in genuine amnesia. Possibly, the pure forms of organic and dissociative amnesia form endpoints on a continuum (see also figure 1 in Chapter 1).

In this thesis, we described studies that investigated the role of simulation, metamemory beliefs, and expectations in amnesia claims related to crime or criminally relevant behavior. By examining the role of these factors in claims of amnesia, an attempt was made to shed more light on the phenomenon of dissociative amnesia. In this final chapter, the major findings of the studies that were presented in the previous chapters will be summarized and their implications will be discussed. Also, some findings from recent studies will be presented and directions for future research will be discussed.

DEFENDANTS WITH MEMORY LOSS

FEIGNED AMNESIA

In the Netherlands, about 25% of the defendants claim amnesia. Although a claim of amnesia does not often lead to an actual reduction of punishment, we already argued that the belief that it may reduce punishment or may help to gain sympathy may be the driving force behind amnesia claims. In addition, it is an elegant way for defendants to use their right to remain silent. Some preliminary findings of Cima (unpublished) have suggested that amnesia is, indeed, more often claimed pre-trial than after conviction. This supports the idea that claiming memory loss during the early stages of trial may serve strategic purposes to obtain reduction of punishment.

Several studies in this thesis demonstrated that feigning amnesia may have detrimental effects on memory of a mock crime. For example, the results presented in Chapter 2 show that simulation of amnesia for a mock crime undermines memory for the actual event. Similar findings were reported in Chapter 3. In both chapters it appeared that compared to honestly responding controls, ex-simulators were less complete in their recall and made more commission errors when asked to respond honestly on the second session. Also, we found that participants who, as part of their role of a simulator, deliberately gave more incorrect answers on a Symptom Validity Test (SVT), continued to give more incorrect answers when asked to respond honestly. Although ex-simulators' performance on the SVT did not reach chance level, in which case simulation would have resulted in full-blown amnesia, free recall scores indicated that in both studies simulation undermined memory.

MEMORY-UNDERMINING MECHANISMS

How does simulation undermine memory? Several possible explanations for this memory-undermining effect have been offered in the literature. One is source-monitoring confusion (Johnson, Hastroudi, & Lindsay, 1993). According to this view, the fabrication of an alternative story in the simulating condition could have led to confusion between this new version and the true story. To test this hypothesis, we looked at repeated commission errors. If source-monitoring confusion is the mechanism behind the memory-undermining effect, there should have been some repeating of details of the fabricated story during the second recall when participants were instructed to report honestly. However, our findings in both Chapter 2 and 3 showed that ex-simulators did not make more repeated commission errors than honestly responding controls. Thus, it was not the case that ex-simulators mixed up their fabricated version with the true version of the mock-crime, which makes source-monitoring confusion an inplausible explanation for the memory-undermining effect. In a way, our findings contradict those of Polage (2004) who found that 10-16% of participants who had to fabricate an event that never took place (i.e., lie about it and tell it did happen) came to believe that the event took place.

Another possible explanation for the memory-undermining effect that has been offered in the literature is retrieval-induced forgetting (Anderson, Bjork, & Bjork, 1994). By this view, recalling information from long-term memory can impair the longterm retention of related representations. In the our study this would imply that when simulators make-up a new story, thereby ignoring crucial details of the original story this would interfere with the retrieval of the original story when asked to respond honestly on the second test. If retrieval-

induced forgetting would explain the memory-undermining effect, than the simulating participants should perform worse than participants who had not simulated and were only tested for the first time on session 2 (delayed-testing only control group). However, our results show that ex-simulators' performance resembled that of the delayed-testing only control group that had not fabricated or omitted information. These findings seem to exclude source monitoring confusion and retrieval-induced forgetting as driving mechanisms behind the memory-undermining effect of simulation, leaving only one alternative explanation: lack of rehearsal. That is, simulating memory problems by omitting crime-related details or fabricating an alternative story undermines memory to a similar extent as delayed reporting about the event after one week does.

STRATEGY

The results presented in Chapter 3 indicate that when participants were instructed to minimize responsibility for the crime by feigning memory problems they all adopted a similar strategy. That is, when participants were confronted with evidence against them, they all admitted to have been near the crime-scene and made up some fabricated amnesia story about their involvement in the crime. The majority (85%) of participants in the simulation studies claimed to have some type of memory loss. A closer look at the reasons they gave for their memory loss showed that in the first study (Chapter 2) 25% and in the second study (Chapter 3) 17% of the participants blamed it on alcohol or drug intoxication. Attributing memory loss to intoxication seems to be popular. Not only our simulation studies, but also the studies on alcohol blackouts that were presented in Chapter 4, have demonstrated that an alcohol blackout for deviant behavior is frequently claimed. Although it appeared that alcohol blackouts occur regularly in the general population (67% and 76%, respectively in the two surveys presented in Chapter 4), claiming blackouts also serves a strategic goal. The traffic control study made clear that 85% of the drivers who claimed an alcohol blackout had been involved in a motor vehicle accident. Interestingly, their blood alcohol levels were similar to those of drivers who did not claim amnesia. This suggests that the drivers who had caused an accident claimed a blackout in an attempt to reduce responsibility or to gain sympathy. Apparently, the beliefs about the effects of alcohol are not only limited to behavior (e.g., release of inhibitions and increase of aggression), but also extend to memory for that behavior (blackout) (Critchlow, 1986, Room, 2001).

Apart from referring to intoxication, 10% of participants in the simulation studies attributed their memory loss to some type of organic amnesia (e.g., a blow to the head from the actual perpetrator). Most of the others claimed to have a sudden, unexplainable (dissociative) form of memory loss. None of the participants denied to have been near the crime scene and all made a statement. Although we told participants that a witness saw them *near* the crime-scene, and that a simple denial would not appear trustworthy, they could have claimed that they had not been there or could not remember anything. The fact that *all* participants admitted to have been *at* the crime scene demonstrates that suspects find it difficult to remain silent, especially when they are confronted with evidence against them. Obviously, claiming memory loss and attributing this memory loss to external agents like alcohol, is an attractive and frequently used strategy. By doing so, it is not uncommon to make up an alternative story in an attempt to excuse the behavior. Once this strategy has been chosen, it is difficult to come up with a new story later on and make a trustworthy impression at the same time. In Chapter 4, we pointed out that when a tool like the SVT is considered to test the veracity of an amnesia claim, such carry-over effects of earlier statements should be taken into account. Once a defendant has made a statement about his involvement in a crime and in that statement admits to have been at the crime scene, SVT-questions about the crime scene will be answered correctly and will become useless if the defendant decides to maintain with his earlier statement. With that, he may perform at or above chance level while he is still simulating memory loss. In such a situation, the applicability of SVT to detect feigning of amnesia is compromised.

METAMEMORY BELIEFS AND EXPECTANCIES

Our finding that simulating amnesia undermines memory supports the idea of Kopelman (2000) that it is not always a matter of simulated or genuine amnesia, because these different types of amnesia form endpoints on a continuum. Although in our studies the memory-undermining effect did not take the contours of full-blown amnesia, Kopelman's explanation may have much to recommend it. That is, what started as simulation may lead to actual poor memory. In our Introduction, we hypothesized that expectancies about memory may also play a role in claims of amnesia. In the studies presented in Chapters 2 and 3, we did not explicitly ask participants what their expectancies were about the effects of simulating amnesia on memory. It may well be that they had a priori beliefs about the memory-undermining effect of simulating amnesia or about memory loss in relation to crime, which may have affected their performance. If so, such beliefs would, even to a greater extent, be expected in

defendants. To gain some insight in general beliefs people have about causes of memory loss, we developed a metamemory questionnaire in which we asked students about their beliefs about different memory phenomena. We asked them about their beliefs about memory in relation to alcohol, anger and crime, memory in relation to organic damage and ageing, and memory in relation to traumatic events. The aim of the questionnaire was to assess how different samples think about memory in relation to these factors. Although the questionnaire is still in development and has not yet been subjected to extensive psychometric testing, some preliminary findings on beliefs about memory in relation to alcohol, anger and crime will be presented below.

We hypothesized that perpetrators who claim amnesia would have more pronounced expectancies about memory loss for to crime and anger than students. The subscale that asked about their beliefs about memory loss related to alcohol, anger, and crime contained 10 items. Items were of the type: "the use of large amounts of alcohol can induce memory loss for the events that took place during the blackout", and, "extreme anger can blind you to a degree that afterwards you have no memory of that anger", and, "it is possible that someone committed a crime and later on has no memory of it." We administered the questionnaire to 220 first year psychology students and to 33 perpetrators who stayed in the house of detention in Maastricht. When we looked at this particular subscale, it appeared that there were no differences in the beliefs students or perpetrators had about memory in relation to alcohol, anger, and crime. Both students and perpetrators (with and without alleged amnesia) agreed with the statements about the possibility of memory loss on 7 out of 10 items [$t(251) < 1.0$]. Interestingly, when we looked at the scale that measured beliefs about memory loss in relation to traumatic events (e.g., abuse, unpleasant childhood, war, and repression), students scored higher than perpetrators. That is, students agreed with the statements about memory loss in relation to trauma on 5 out of 10 items, compared to perpetrators who, on the average, agreed with 3 out of 10 items [$t(249) = 3.44$, $p < 0.01$]. As was mentioned in our Introduction, beliefs about memory loss in relation to trauma are widespread, especially among psychology students. Perhaps perpetrators, who are more likely to have experienced a traumatic past (Hamalainen & Haapasalo, 1996), have no problems remembering this past and therefore find it less likely that traumatic events can be forgotten. In any case, beliefs about memory loss in relation to crime are extensive and they may underlie the expectancy that it is possible to forget an emotional event like a crime. This may explain why claiming memory loss is a frequently used strategy among perpetrators, but also among students when they engage in unacceptable behavior during

intoxication (see also Chapter 4). In Chapters 6 and 7, it was demonstrated that manipulating expectancies by using memory enhancing placebos may have a positive effect on memory performance without necessarily compromising memory accuracy. We have to admit that the placebo study in Chapter 6 only relied on small samples and the results of our placebo study using psychiatric inmates was only based on two participants. Nevertheless, the use of memory-enhancing placebos may help to counter the memory-undermining effect of simulated amnesia or help perpetrators with expectancy-based amnesia to "remember."

In the sample of perpetrators (n = 33), we also asked if they had ever experienced memory loss before. According to Kopelman (2000, p.603), a previous experience with memory loss may form the basis of simulation. We hypothesized that perpetrators who now claimed amnesia for their crime (n = 14) would more often report a previous experience with memory loss than perpetrators who did not currently claim amnesia (n = 19). As expected, 43% of the perpetrators who claimed amnesia reported to have had a previous experience with memory loss, against 16% of the perpetrators who did not claim amnesia. Given the small sample size, this difference was only borderline significant, X^2 = 3.19, df = 1 p = 0.07. In the amnesia group, 28% of previous amnesia experiences concerned alcohol- or drug-induced amnesia, against 5% in the group that did not claim amnesia. Interestingly, perpetrators who claimed amnesia more often scored above the cut-off on the SIMS than perpetrators who did not claim amnesia, X^2 = 4.94, df = 1 p < 0.05. It is likely that their previous experience with memory loss (e.g., alcohol blackout), motivated perpetrators to simulate amnesia in a situation where they thought this would reduce responsibility.

Thus, not only can simulation contribute to memory loss, but also memory loss can inspire simulation

VICTIMS WITH MEMORY LOSS

Chapters 2, 3, and 4 mainly focused on amnesia claims in offenders. However, the latest report of the Dutch expert group on special abuse cases (2001) showed that another group in which amnesia is regularly claimed is that of victims of (alleged) crimes. This report pointed out that in 67% of the cases that were presented to this group, reports were based on recovered memories of sexual abuse. In our Introduction, we shortly outlined the debate that has been going on in literature about the reality of amnesia claims in sexual abuse victims. On

the one hand, there is some evidence that traumatic experiences or extreme levels of stress that accompany these experiences (e.g., an abuse situation) could impair memory (e.g., Bremner, 2002; Porter & Birt, 2001; Van der Kolk & Fisler, 1995). On the other hand, there are findings suggesting that traumatic events are difficult to forget (e.g., Geraerts et al., in press c; McNally, Lasko, Macklin, & Pitsman, 1995; Merckelbach, Dekkers, Wessel, & Roefs, 1990).

The context in which a memory of sexual abuse first arose is important when deciding upon the veracity of an abuse claim. A report of the Health Council of the Netherlands that appeared in 2004, pointed out that true recovered memories and false memories are difficult to distinguish. The council argued that, although a forgotten traumatic event might become re-accessible years later when the victim is in a safe situation (e.g., in a therapist's office), the possibility of false memories of sexual abuse should be taken into account. Geraerts et al. (submitted) made obvious that in cases where the memory first emerged during therapy, there was less corroborative evidence for the abuse events from others (e.g., relatives, other victims), than in cases where the memory was recovered spontaneously. These findings show that in therapy, the risk of recovering false memories is greater than in other settings. Geraerts et al.'s study is not the first to point out the potential risks of recovering memories under the authority of a therapist (see Loftus, 1993; 2003).

MEMORY WORK AND FALSE MEMORIES

As said before, traumatic memories recovered during therapy should be interpreted with caution because they may be false. Why? In Chapter 5, we suggested that this may have to do with memory work. Clients seek therapy because they have a psychological problem. In an attempt to find the origin of this problem, therapists may use techniques that require a lot of memory work. Results of the study presented in Chapter 5 indicate that memory work may induce the belief that memory is poor. It appeared that the recovery of many childhood memories (enhanced memory work) induced the belief that memory for childhood is poor in a substantial number (40%) of participants. Such a belief was only reported by 12.5% of participants who engaged in little memory work. Similar findings have been reported in other studies (Belli, Winkielman, Read, Schwarz, & Lynn, 1998; Winkielman, Schwarz, & Belli, 1998). An important additional finding of our study was that beliefs about poor childhood memory may subsequently undermine general autobiographical memory performance. That is, participants who had engaged in a lot of memory work were 10% less specific than participants who only had to do little memory work. This relative inability to recall specific autobiographical memories has

been termed *overgeneral memory* (Williams & Broadbent, 1986). Although their difficulty with the retrieval of specific autobiographical memories was not as dramatic as has been found in clinical samples (e.g., depressed patients), such a large difference has not often been found in non-clinical samples.

When memory work induces overgeneral memory in clients during therapy, the implication would be that they may become more vulnerable to suggestion. Therapeutic suggestion of a possible traumatic past in combination with having only vague memories may lead to the development of false memories of a traumatic past. According to Schooler and Loftus (1986) this may have to do with the inability to detect discrepancies between true and suggested events in people who have only vague memories about the event. In our Introduction, we already pointed out that not everyone will be prone to developing false memories of a traumatic past in therapy solely on the basis of beliefs about few childhood memories. We reasoned that certain personality characteristics like fantasy proneness may be a risk factor. Studies have, indeed, demonstrated that participants who recovered memories of sexual abuse, score higher on fantasy proneness than participants who had no history of abuse (McNally, Clancy, Schacter, & Pitman, 2000; Geraerts, Smeets, Jelicic, Van Heerden, & Merckelbach, 2005). Especially individuals who reported bizarre abuse memories (e.g., satanic ritual abuse) or memories of alien abductions or past lives score high on this personality trait (Clancy, 2005; McNally, 2003a; Peters, Horselenberg, Jelicic, & Merckelbach, in press). Merckelbach (2004) noted that fantasy prone individuals are very good in fabricating a story, which suggests that this trait should also be taken into account when judging the plausibility of an abuse story in court.

CHILDHOOD TRAUMA

The results presented in chapter 5 have demonstrated that pessimistic metamemory beliefs may result from memory work. Additional testing has to make clear whether such a laboratory manipulation has also the potential to elicit false memories. In an unpublished study, we examined whether beliefs of poor childhood memory would, indeed, lead to reports of a traumatic past. We reasoned that having participants retrieve many negative childhood memories rather than neutral memories would lead them to endorse trauma items on a Childhood Trauma Questionnaire. To test this hypothesis, participants were instructed to retrieve either few (4; little memory work condition) or many (12; enhanced memory work condition) negative childhood memories. Next, they were asked whether there were large parts of their childhood they could not remember, and they were asked to fill out a Childhood Trauma Questionnaire

(CTQ; Bernstein et al., 2003). As pointed out in our Introduction, the belief that poor memory reflects a traumatic childhood is widespread, also among students. Thus, we expected that participants who as a result of enhanced memory work said to have poor childhood memory, would also report more traumatic events on the CTQ. In contrast to our expectations, participants in the little and enhanced memory work conditions did not differ in their reports of poor childhood memory. Neither did they differ in their scores on the CTQ. These null findings could be interpreted in two ways. First, when asked about the accessibility of their childhood memories, participants may have reasoned that they have plenty of childhood memories, but not of the negative type. It seems like our manipulation had the opposite effect in that participants came to adopt the belief that they had many (positive) childhood memories and only few negative childhood memories, which implies that their childhood was pleasant. So, participants did not report gaps for negative childhood events simply because their childhood was very pleasant and they did not experience any negative events. This would explain why no effect was found on the CTQ. A closer look at the type of negative childhood memories revealed that the reported negative memories were not extremely aversive, and rather of the type: "got punished by my parents" or "fell down and hurt my knee", which may have affected our findings.

A second explanation would be that after the retrieval of many negative childhood events, participants did, indeed, experience memory gaps for negative childhood events. Yet, the question "are there large parts of your childhood you can't remember?" may have inclined them to evaluate their childhood memory in general terms, including positive events. Perhaps then, the belief of having poor memory for negative childhood events could not be made explicit with this particular question. Perhaps, if participants were asked whether "there are negative childhood events you cannot remember", more participants would have answered affirmatively. Admittedly, these interpretations are all speculative and further testing is needed to clarify this issue.

One thing that has become clear in this study is that the retrieval of many negative childhood events, which is precisely what often happens during therapy, in itself did not lead to inflated responses on a trauma questionnaire. This finding is rather reassuring and supports the psychometric robustness of the CTQ. Apparently, this questionnaire is not sensitive for memory work. Future studies should use a setup in which valence of the memories that have to be retrieved does not matter for the evaluation of memory completeness. If such studies do not find inflated traumatic childhood reports despite beliefs about

poor childhood memory, this would provide additional support for the idea that it takes more than pessimistic metamemory beliefs to start reporting false memories of a traumatic childhood.

FORENSIC AND CLINICAL IMPLICATIONS

DEFENDANTS AND FORENSIC PATIENTS

The most important findings that were presented in this thesis with regard to claims of amnesia raised by perpetrators are 1) that the possibility of simulation for strategic purposes should be taken into account, 2) that simulation undermines memory, and 3) that "memory-enhancing" placebos may help to resolve (claims) of amnesia.

The finding that simulation undermines memory is of importance for several reasons: To begin wiht, if simulating amnesia has a memory-undermining effect, crime-related information that may be relevant for the investigation may get lost. Therefore, police interrogators should create a climate in which simulating memory problems is not very attractive (Holmberg & Christianson, 2002). We have to admit, however, that this is not always an easy thing to do.

Secondly, because our findings have demonstrated that first reporting about the crime after a one-week interval undermines memory to a similar extent as simulation does, it is important to start interrogations as soon as possible. This issue is, of course, also well-known in the eyewitness literature (e.g., Brewer, Weber, & Semmler, 2005; Shepherd, 1982). It has to be noted, though, that the context of our experiment cannot be compared to a real-life situation when it comes to the memory-undermining effect of not reporting about a crime or reporting about it after a certain interval. That is, participants in the delayed-testing only control group were aware that they merely participated in an experiment in which poor performance during session two (i.e., one week after committing the mock crime) would not have any serious consequences. Furthermore, although they may have suspected that their memory for the mock crime would be tested at the follow-up session, this was not explicitly mentioned to them. This may have prevented them from thinking about the mock crime, leading to a faster decay of memories of the mock crime. In real life, a suspect who tries not to get caught or awaits interrogation, will probably be thinking a great deal about the crime (i.e., rehearsal), or will be working on an alternative (amnesia-like) story in order to minimize responsibility. Thus, although the memory-undermining effect we found in our study resembles that

of delayed interrogation, in real life the delayed interrogation may not have such strong memory-undermining effects.

Thirdly, for therapeutic reasons it is important that forensic patients recall their crime. Forensic treatments relying on so-called crime-scenario discussion may help to deal with the events and prevent recidivism. However, feigning amnesia makes crime-scenario discussions impossible. These discussions are considered an essential part of therapy and inform decisions about the extension of treatment have to be made every two years. Perhaps, debriefing forensic patients about the importance of remembering crime details as a part of therapy could lead to more cooperation. Marshall and colleagues (2005) have already demonstrated that by stressing this importance, offenders may become more motivated to describe their crime. Even when they are feigning amnesia, offering them a structured way to help them remember the crime may be a safe way to give up their role of a simulator. In cases where it is not sure whether the amnesia is feigned or genuine, their method has also proven to be successful in promoting discussions about the crime details. In Chapter 8, we described two cases in which "memory-enhancing" placebos were administered to amnesia claiming forensic patients. Placebos are similar to the intervention used by Marshall, Serran, Marshall, and Fernandez (2005) as far as feigned amnesia is concerned. However, when expectations about memory loss for criminal events instigated an amnesia claim, offering memory-enhancing drugs (i.e., placebos) could set in motion an entirely different mechanism. In such cases a change of expectations (i.e., metamemory beliefs) rather than face-saving methods for giving up amnesia claims are important. We already mentioned that expectations about the existence of crime-related amnesia are widespread. It was also pointed out that perhaps a claim of amnesia may lead to actual believing in being amnesic in situations where this is expected (e.g., intoxication, extreme emotions). Especially when the perpetrator wishes he never committed the crime, - a classical example being he butler who in a state of provocation murders his lord (Kretschmer, 1922, 1956) - memory loss may be experienced as non-volitional or dissociative (see also Jureidini, 2004). It is difficult to investigate whether memory loss is voluntarily or experienced as non-volitional, especially because motivational aspects may be involved. Meanwhile, the studies that were presented in this thesis have not explicitly considered automatic responses or voluntariness. Nevertheless, our findings presented in Chapter 6 demonstrate that expectancies about memory do in fact affect memory performance.

The cases in Chapter 7 also suggest that expectancies may be involved in claims of amnesia. That is, when alternative explanations like malingering and organic

amnesia can be excluded, the possibility increases that metamemory beliefs may have contributed to the belief that one is amnesic. When a memory pill consequently improves the recollection of crime details, the hypothesis becomes even more likely. What the exact mechanism behind expectancy-based claims of amnesia is, remains speculative. According to Jureidini (2004) it is the experience of unintentionality that underlies pseudo-neurological symptoms like amnesia. Kopelman (2000) argues that previous experiences with memory loss may be an important antecedent. They both agree that in some cases, simulation or pretending may develop into firm beliefs about being amnesic. As said, our studies fail to provide evidence for either of these explanations. They do, however, indicate that metamemory beliefs or expectancies about memory loss are likely to be involved in some cases.

In cases where it is unclear whether amnesia is feigned or whether expectancies about memory are involved, there are several diagnostic tools that can be administered. In Chapter 7, we discussed some tools that can provide more insight in the type of offender we are dealing with. These tools can help to determine if it is likely that the amnesia is feigned or based on expectations or *a priori* beliefs about memory loss in relation to crime. When the tools indicate that malingering is not a likely explanation for the amnesia, expectancies may be involved. It was already pointed out that memory-enhancing placebos could be effective in both types of amnesia: malingered or expectancy-based. In malingered amnesia it could be a face-saving way to give up the role of a simulator. In expectancy-based amnesia it could help to counteract pessimistic expectancies.

Another possibility is that the amnesia is not simulated or expectancy-based, but caused by the way attention was directed during the storage of information (Jureidini, 2004). A defendant could (deliberately or not) direct his attention in such a way during the encoding of the crime that details to which he did not direct his attention are difficult to retrieve. In our Introduction, we gave the example where shifting from the perspective of a house buyer to a burglar led to entirely new information being reported about a house (Anderson & Pichert, 1986; Jureidini, 2004). We investigated this shift in perspective in a study that has not been discussed in this thesis. Participants engaged in a mock crime similar to the one that was presented in Chapters 2 and 3. One group ($n = 16$) simulated amnesia as a perpetrator during the first test and was asked to shift to the perspective of a police officer during the second test. Control groups were participants ($n = 16$) who simulated on the first test and reported honestly on the second, and a group of participants ($n = 15$) who reported honestly (from the perspective of a police officer) about the crime on both tests. We

hypothesized that memories of the mock crime for which amnesia was simulated during the first test, would be more detailed when retrieved from the perspective of a police officer during the second test. That is, ex-simulators who shifted to the perspective of a police officer would do better than controls who first simulated and later reported honestly without shifting from perspective. However, our findings demonstrated that both groups of ex-simulators showed improved memory during the second test, irrespective of whether they shifted from perspective or not. Their performance on session two did not differ from honestly responding controls. The shift group recalled 41% correct information, the non-shift group recalled 43% correct information and the honestly-responding controls recalled 45% information during session one, compared to 23%, 24% and 42%, respectively, during session one. This indicates that using a shift strategy during session two did not increase recall of crime-related memories to a greater extent than simply telling the truth did.

Although we did not find evidence for a shift of perspective leading to an increased accessibility of information that was stored in memory, the cognitive interview (CI; Geiselman, Fisher, McKinnon, & Holland, 1986) has proven that such a strategy might be helpful. When the CI is used during interrogation of suspects or witnesses, shifting in perspective, together with contextual reinstatement and recalling backwards, are methods known to improve memory (Köhnken, Milne, Memon, & Bull, 1999). The idea is that different retrieval strategies may help to unlock memories that are inaccessible with other cues. Moreover, this technique has been proven to increase the interviewee's confidence about his memory reports, yet is not paired with more erroneous reports (Granhag, Jonsson, & Allwood, 2004).

In sum, then, the implications or our findings are that when amnesia claimed by a defendant is suspected to be feigned, tools can be administered to evaluate the plausibility of the amnesia claim. When it turns out that it is likely that the amnesia is simulated, interrogators should take into account the detrimental effects of simulation on memory. Perhaps, they can interact with the defendant in a way that promotes his willingness to tell the truth. Finally, when the amnesia is unlikely to be malingered and no organic cause for the memory cause can be found, there are different memory-improving techniques that can be used for the purpose of crime-scenario discussions. One of those techniques is the use of "memory-enhancing" placebos.

VICTIMS

The most important findings that were presented in this thesis with regard to claims of amnesia raised by victims are 1) that memory work may induce the

belief that memory is poor, 2) that memory work or beliefs of poor memory may lead to overgeneral memory, and 3) that memory work alone does not necessarily lead to reports of past traumatic events.

We already discussed extensively how beliefs of having poor memory for childhood and in its wake, overgeneral memories may, in some individuals, increase the risk of developing false memories of a traumatic past. However, in our study we did not directly look at false reports of traumatic events. Our results only suggest that the possibility of developing pessimistic metamemory beliefs and overgeneral memories exists, and that therapists should take this into account when addressing their clients' memories during therapy. When victims like Juliet (see Chapter 1) claim that they have not remembered the traumatic events for years, caution is warranted. Obviously, when a woman suddenly remembers an event (e.g., sexual abuse) that she could not remember before, she is likely to conclude that she must have been amnesic for the event for a long time. A recent study by Geraerts et al. (in press a) has demonstrated that people who all of a sudden report a history of sexual abuse (i.e., recovered memories of sexual abuse) display a stronger "forgot-it-all-along" effect compared to those who have always remembered the abuse or those without a history of abuse. In their laboratory experiment, these authors found that compared to women with continuous memories or controls, women with recovered memories are more likely to forget that they have recalled a target event (e.g., being home alone in a positive (freedom) or negative (thunderstorm) context) on a previous test (two months earlier) if they have recalled the target event in a different framing context (e.g. positive vs. negative) on that previous test. This "forgot-it-all-along" (FIA) phenomenon may underlie claims of recovered memories. Perhaps, some women simply forgot they remembered the abuse before. In such cases, the experience of having been previously amnesic for the abuse has to do with changes in the context in which the abuse is remembered. Some evidence for this has been reported by Schooler, Ambadar, and Bendiksen (1997) who described several cases of women who thought they had recovered an abuse memory for the first time when in fact their partners provided evidence that they had talked about the abuse before they had the memory recovery experience.

The studies of Geraerts et al. (in press a) and Schooler et al. (1997) demonstrate that women with recovered memories of abuse may have problems with metamemory processes that pertain to dating previous instances of forgetting and remembering. According to Geraerts and colleagues, "the large FIA effect in the recovered memory group may be a manifestation of a source monitoring problem that makes some people particularly susceptible to pseudo-memories

and to the FIA effect. Thus, not only claims of traumatic events, but also claims of having been amnesic may be inaccurate.

OTHER POPULATIONS

The positive placebo effects that were reported in Chapter 6 and 7 invite speculations about the advantages placebos may have for other clinical groups. For example, elderly who believe their memory is poor often use their memory in an inefficient way (Ponds, Van Boxtel, & Jolles, 2000). The same holds for people who receive Electro-Convulsive Therapy (Squire, Wetzel, & Slater, 1979). In these groups, memory-enhancing placebos may be effective to counteract self-defeating expectations about memory.

Expectancies also play a role in non-clinical populations. For example, studies on alcohol expectancies and alcohol placebos (Critchlow, 1986; Fillmore, Vogel-Sprott, & Gavrilescu, 1999) have shown that much of the behaviors drunk people display are to a large extent caused by the expectancies they have about the effects of alcohol. On a related note, Assefi and Garry (2003) found that to a certain extent, expectancies may also be responsible for alcohol effects on memory. Similarly, Kindt and Van den Hout (2003; Kindt, Van den Hout, & Buck, 2005) have demonstrated that claims of fragmented memory for an extremely emotional event by highly dissociative individuals are limited to metamemory. That is, despite the perceived fragmentation of memory (metamemory), no effect of dissociation was observed on actual memory performance. Expectancies about fragmented memory may have been responsible for these metamemory effects. Huntjens, Postma, Peters, Woertman, and Van der Hart (2003), in addition found no objective evidence for interidentity amnesia that was reported by patients with dissociative identity disorder (DID; formerly multiple personality disorder). DID is a dissociative disorder that is characterized by the presence of two or more distinct identities or personality states that recurrently take control of the individual's behavior (DSM-IV; APA, 1994). Some identities experience total (or partial) amnesia for the other identities memories. Although the patients in Huntjens et al's. (2003) study subjectively experienced that they were unable to retrieve words that were learned by another identity, they displayed similar interference effects as normal controls when two word lists were studied by one and recalled by another identity. The work of Robert Rosenthal (e.g., 1994; 2002; Rosenthal & Jacobson, 1968) has also indicated that expectancies have an effect in different clinical and non-clinical settings. One straightforward example is the *Pygmalion effect,* which refers to the phenomenon that children become brighter when their teachers are led to believe that their intelligence is maturing. Rosenthal and

Jacobson (1968) illustrated this phenomenon by administering non-verbal intelligence tests to children. The children's teachers were told that the test results of some randomly selected children (experimental group) indicated that surprising gains of intellectual competence could be expected within the next 8 months. Nothing was mentioned about the other children (control group). Interestingly, when all children were retested 8 months later, it appeared that those children of whom the teachers *expected* intellectual blooming actually displayed a greater gain than did control children. Apparently, teachers created a warmer socio-emotional climate for their "special" students, they taught more difficult material to them, and gave their "special" students more opportunities for responding and more informative feedback. Most of these behaviors were unintended and nonverbal. Pygmalion effects not only appear in the classroom, but also in nursing homes, courtrooms, and management (Rosenthal, 1994). Expectations in caregivers, juries or leaders about capability, guilt, and organization lead to unintended nonverbal (mediating) behaviors which affect performance of the receivers. Studies on interpersonal expectancy effects as described by Rosenthal (1994; 2002) have demonstrated that the expectancies people have about the outcome of certain behaviors may actually lead to the desired outcome as part of a self-fulfilling prophecy of the experimenter or clinician but also of the responders (e.g., participant or patient). The examples above and the studies presented in this thesis seem to suggest that expectancies or beliefs about performance are a very powerful and influential tool to affect both memory and behavior in different clinical and non-clinical settings.

DIRECTIONS FOR FUTURE STUDIES

DEFENDANTS

Of course, the studies that were presented in this thesis have several limitations of which some were already outlined shortly above. Future studies should take these limitations into account in order to get more insight into the role of simulation, metamemory beliefs or expectations in amnesia claims. One of the most important limitations of our simulation studies is that even though we used a mock crime paradigm, it does not resemble a real life situation. For that reason, the memory-undermining effect of simulated amnesia should be interpreted with caution. It could be argued that in a real crime, memories are much more emotional and therefore more difficult to forget as has been demonstrated for memories of other emotional events (Geraerts et al., in press c; McNally, Lasko, Macklin, & Pitsman, 1995; Merckelbach, Dekkers, Wessel, &

Roefs, 1990). However, the mock crime we used comes close to the most realistic setting that is possible in laboratory studies. In addition, the opposite could also be true; in our laboratory studies, participants may be less motivated to forget the mock crime than real perpetrators might be. That is, the wish that an event (e.g., crime) never happened may lead to much more effort to make up an alternative story than our instructed participants put into the task. This preoccupation with minimizing responsibility could strengthen the memory-undermining effect of such a strategy in a real perpetrator. In addition, the imagination of being amnesic for the event in actual perpetrators may lead to the belief that they really can't remember what happened. Although this is only speculative, it has to be taken into consideration that a highly intelligent student sample may not be very representative of an offender population. Therefore, future studies on the effects of simulating memory disorders preferably include offenders. If offenders were instructed to perform a mock crime and simulate amnesia for it, the effect of simulation on memory may be quite different from that found in our student sample. Not much work has been done on assessing offenders' memories of their crimes (see for an exception Cooper, 2005). Perhaps, they process crime-related memories differently because of previous experiences with memory loss, expectations about memory loss, or poor memory skills related to poor education. Offenders are often raised in low socio-economic environments surrounded by crime, poorly educated (Palermo, 2004), and many times subjected to crime and abuse themselves (Sirkia, 2000). It may well be the case that their being used to violent events surrounding them may make them emotionally flat for the impact of such events. Thus, the processing of emotional events or memory in general may be different in an offender sample. We previously reported that prisoners rated the possibility of memory loss for traumatic events less likely than university students did. We speculated that this might have to do with their increased exposure to traumatic events as a child (Sirkia, 2000) and that they may have no problems remembering these events. However, these findings were based only on a few questions. For future studies it would be interesting to assess general memory ability of people who have been involved in crime-related behavior. This would provide more insight in how likely it is for offenders to experience memory loss.

Because offenders who claimed amnesia for their crime in our survey more often reported to have had a previous experience with memory loss compared to the offenders who did not claim amnesia, previous experiences may induce them to use it as a strategy more often (see also Kopelman, 2000; Marshall et al., 2005). As said before, simulating amnesia, especially when expectations about

memory loss for crime are strong, may lead to such firm beliefs that memories for the crime are lost that this "believing" may lead to actual amnesia. In this scenario, it is not necessarily the case that offenders differentially process memories (i.e., encoding). Rather they would then differentially retrieve memories. Obviously, this issue warrants further study.

Another area that would be interesting to look into in future studies would by the type of crime for which amnesia is more likely to occur. Both Cooper (2005) and Christianson and Von Vogelsang (2003) have demonstrated that violent offenders who have committed reactive crimes (e.g., crimes of passion) more often report amnesia and display higher levels of dissociation compared to the instrumental offenders (i.e., those who committed planned crimes). However, these findings were not always very consistent and were related to valence of the crime and level of rehearsal of the crime. Cooper (2005) also hypothesized that psychopaths, who are more often involved in instrumental crimes, would display better memory for the crime than non-psychopaths (see also Porter et al., 2001). This idea is related to findings that compared to normal controls psychopaths process emotional events more generally (e.g., Christianson et al., 1996), and are less impulsive and more planned in their crimes than non-psychopathic (more reactive) offenders. Psychopathic participants, indeed, reported higher levels of positive valence (pleasure) during the crime which resulted in better memory for the crime compared to non-psychopaths. However, Cooper's (2005) hypothesis that non-psychopaths would more often report amnesia than psychopaths was not supported by his findings. It has to be noted, though, that Cooper (2005) used a different criterion for amnesia. His "amnesia" claiming participants did not actually claim amnesia but only displayed *dissociative amnesia like memories.* This means that they displayed poorer recall of violent memories than "non-amnesic participants." Cima, Merckelbach, Hollnack and Knauer (2003c) also found that psychopaths and non-psychopaths do not differ in their frequency of amnesia claims. Thus, it appears that non-psychopathic offenders have more problems remembering crime details than psychopathic offenders, but do not reach the criterion of being "amnesic" more often. This may have to do with differences in processing emotional events and emotional evaluation of criminal acts. Some evidence for this was provided by Cooper (2005) and Pollock (1999) who demonstrated that psychopathic offenders reported fewer Post Traumatic Stress Disorder (PTSD) symptoms than non-psychopathic offenders. This would be consistent with the idea that they "enjoy" the crimes more than do non-psychopathic offenders, but also that they process emotional information differently (see also Christianson et al., 1996). However, the opposite was demonstrated by Kruppa, Hickey, and

Hubbard (1995) who found high levels of PTSD in psychopathic offenders. PTSD may be accompanied by memory loss for parts of the traumatic events (but see McNally, 2003a). Another issue is, of course, that the tendency to simulate symptoms is more pronounced in psychopaths (e.g., Porter et al., 2001) and so there is the distinct possibility that this type of perpetrator is likely to malinger amnesia and/or PTSD symptoms. Given these contradictory findings it would be interesting to study this issue in more depth. Perhaps, psychopaths or graduate students with high levels of psychopathic traits would display better or different memory for emotional events than non-psychopathic offenders or students with low levels of psychopathic traits in a laboratory setting. Thus, it may well be that there are differences in information processing between perpetrators which will promote or hamper their memory for criminal acts. Clearly, for therapeutic reasons remembering the crime is essential. Are motivational drives primary reasons for claims of amnesia or do the type of crime, type of offender and experience of the crime also play a role? When these questions can be clarified, it might provide interesting cues to therapist working with crime-related memories as part of crime-scenario therapy.

VICTIMS

There are a number of interesting avenues for future research in the area of memory work and metamemory beliefs. We already discussed that studies are needed to gain more insight in how substantial the effects on memory are when people have pessimistic beliefs about memory. Although our findings wiht the Childhood Trauma Questionnaire seem to suggest that memory work does not necessarily lead to more reports of childhood trauma, a limitation was that possibly no beliefs about poor childhood memory were induced in this study. At least, such beliefs could not be objectified on the measure we used, which does not mean they did not exist. To be confident that memory-work in itself does not lead to reports of childhood trauma, this finding needs to be replicated in a situation where actual metamemory beliefs about poor childhood memories are induced. Furthermore, it would be interesting to investigate which people are more prone to develop beliefs of having poor childhood memories. Perhaps, there are certain personality characteristics that lead some individuals to distrust their memory and make them subsequently more prone to develop false memories (Gudjonsson, Kopelman, & MacKeith, 1999; Van Bergen, Merckelbach, & Jelicic, in press). On a related note, it would be interesting to find out how long the effects of pessimistic metamemory beliefs on memory (i.e., autobiographical memory) last. Is it a situation specific state-like phenomenon, which disappears when a patient leaves the therapist's room

or does the effect persist? It may well be the case that the effect on memory performance disappears within a certain time-range, but that effects on metamemory persist. If so, individuals might still believe that they have poor memory and they may start using their memory less efficiently. Also, it may incite persons to start ruminating about what sorts of aversive events might have happened in childhood and this may lead to the development of false memories.

Finally, the role that fatigue related to memory work plays in the retrieval of autobiographical memories needs further investigation. The memory-work studies seem to suggest that metamemory beliefs of poor childhood memory are responsible for overgeneral autobiographical memory. However, participants who were not explicitly asked about metamemory beliefs, but engaged in extensive memory work, also displayed overgeneral memory. Based on this, we concluded in Chapter 5 that metamemory beliefs also exist implicitly and do not have to be made explicit by asking about them (see also Bargh & Chartrand, 1999; p. 466). However, it may well be that the memory work rather than metamemory is responsible for overgeneral memory. How could memory work by itself lead to less specific autobiographical memories? One could argue that the difficult task is so exhausting that participants are unable to retrieve specific autobiographical memories on subsequent autobiographical memory tests. Yet, participants did not indicate that they were more exhausted then participants who only retrieved few childhood memories. In addition, if fatigue would explain our findings, than one would expect similar fatigue effects on the semantic autobiographical memory, but this was not the case. Nevertheless, to be certain that fatigue did not play a role in our findings and to exclude the possibility that the semantic task may not have been sensitive to fatigue effects, an additional study should make sure that the control condition (our 3-events group) has to perform an equally cognitive demanding task as the experimental group. Also, more detailed questions about fatigue should be asked to make sure that participants do not confuse mental and physical exhaustion. These issues are currently being investigated in a new study. In that study, we also examine what the exact role of metamemory is and whether metamemory beliefs actually change after memory work or not. Perhaps, memory work and related fatigue effects solely explain why people in the *enhanced* memory-work group displayed overgeneral autobiographical memory.

OTHER POPULATIONS

As we pointed out before, expectancies about memory do not only play a role in defendants or victims of crimes. Especially when it comes to the usefulness of placebos in situations where expectancies may be involved (e.g., psychiatric patients or elderly with subjective memory problems) more research is needed. Perhaps the findings on beneficial placebo effects that were presented in Chapters 6 and 7 may encourage scientists to do more research in the domain of memory and placebos.

To assess possible beneficial effects of placebos it would be challenging to provide placebos to elderly who believe they have problems with their memory or fear to become demented. Of course, one should be control for actual dementia and other age-related memory problems, but perhaps expectancies about becoming demented may also induce real dementia-like symptoms. When placebos are able to reduce these symptoms, they could alleviate at least one of the adversarial consequences of getting older.

Obviously, the administration of placebos to amnesia claiming offenders and victims of alleged crimes, but also to eyewitnesses needs additional investigation. More studies should assess the effects of memory-enhancing placebos in crime-related memory problems. To gain more insight in the mechanism behind reports of poor memory, the role of expectations or deliberate simulation should be closely monitored by administering malingering instruments and instruments that tap beliefs about and experiences with memory loss. It may well be that expectancy-based claims of amnesia in victims who claim to have memory loss for an emotional event could also benefit from "memory-enhancing" placebos. Here too, an amnesia claim could be malingered and placebos may serve a face saving way to give up the malingering role. Alternatively, the amnesia might be expectancy based or consciously repressed (see also Anderson & Green, 2001). It would be interesting to investigate the beneficial effects of "memory-enhancing" placebos in this context.

FINAL REMARKS

The most important message of this thesis is that claims of dissociative amnesia can be of various kinds. They could be malingered, but also could be based on expectancies or metamemory beliefs. Such beliefs can apparently be induced in the average person. For that reason, one should be cautious when evaluating

the plausibility of an amnesia claim. Although amnesia claims in defendants and victims are different in nature – in the former, memory loss concerns more recent events and in the latter it concerns events that happened years ago – they may have one thing in common. Both may be induced by metamemory beliefs after some type of memory work. In defendants, these could be beliefs about memory loss for crime or the (deliberate) creation of an amnesia-like story during intensive, suggestive interrogations. Our studies on simulated amnesia pointed out that consciously simulating amnesia can undermine memory to some extent, but it does not induce genuine amnesia. Nevertheless, playing an amnesia role has detrimental effects on genuine memory for the crime. On a related note, a defendant may have convinced himself that he can't remember his crime simply because he does not want to remember. Also, the belief of simply having poor memory, or attributional ideas about one's alcohol or drug use could be factors that increase the belief or expectation of poor memory in defendants. Metamemory beliefs are defined as "what you know about what you know". When you believe you don't know much, this could seriously hamper the retrieval of your memories. Suspects of crimes could come to believe that they "can't remember" after intense memory work during interrogation. An illustrating case at this very moment in the United States is that of the, then, 17 year old Marty Tankleff who denied killing his parents. A confession was extracted from him after hours of interrogation. The interrogators told Tankleff that the minute before his father died, he came out of his coma and said that Marty was the one who stabbed him and his wife. When Marty was confronted with this information, he started to doubt his own memory and developed what Gudjonsson and MacKeith (1982) termed "memory distrust." He said: "my father never lies, so it must have been me who killed him". Later, it turned out that his father never made this statement. This case illustrates how malleable metamemory is (see also Gudjonsson, Kopelman, & MacKeith, 1999 for a similar case).

Thus, memory work in certain situations could have far-reaching consequences. In our studies, the consequences of memory work that bear relevance to amnesia claims in alleged victims focused on beliefs about poor childhood memory and overgeneral autobiographical memory. They did not involve increased reports of childhood trauma. However, metamemory appears to be more than a simple byproduct of memory work, it obviously affects memory. Therefore, it should be taken into account that its effects could be harmful. As said before, when an authority figure asks misleading questions and raises the possibility of having been amnesic for some past trauma, this may make people

more vulnerable to developing false memories, especially when they must rely on overgeneral autobiographical memories.

In conclusion, we would argue that it is not always a matter of determining whether an amnesia claim is genuine (organic or dissociative) or simulated. The different types of amnesia can best be considered endpoints on a continuum. Expectancies and beliefs about memory may be involved in such claims. Manipulating these beliefs by the use of memory-enhancing placebos has proven to enhance memory and may therefore be a promising tool for the future.

SUMMARY

Both defendants and victims of alleged crimes sometimes claim amnesia for the crime.

Defendants often deliberately use this claim as a way to minimize legal consequences of their behavior. There are also cases in which alleged victims of sexually abuse believe that the abuse actually happened when in fact it did not. *Chapter 1* is an introduction to the phenomenon of "dissociative amnesia" in relation to defendants and victims of crimes. It describes defendants' motivation to simulate amnesia, and how memory work can induce the metamemory belief of being amnesic and how expectations can be involved. Different interpretations of dissociative amnesia are discussed. Perhaps genuine and feigned amnesia are not always entirely different things, but endpoints on a continuum.

As said, defendants often feign (i.e. simulate) amnesia for their crimes. Christianson and co-workers have suggested that simulating amnesia for a crime-script undermines memory. Relying on a more realistic mock crime paradigm, *Chapter 2* describes a study that examined whether feigning amnesia has memory-undermining effects. After committing a mock crime, one group of participants (n = 21) was instructed to simulate amnesia for the event. Their performance on immediate free recall tests was compared to that of participants (n = 20) who were instructed to respond honestly during free recall. After one week, simulators, honestly responding controls, and a second control group (n = 20) that had not undergone immediate memory testing after the pertinent event completed free recall tests. This time, all participants were instructed to perform as well as they could. At the follow-up free recall test, both ex-simulators and controls who underwent the memory testing for the first time performed significantly worse than the honestly responding controls. This supports the idea that simulating amnesia in order to evade responsibility for a crime has detrimental effects on true memory of the crime. The results also suggest that this effect can best be understood in terms of lack of rehearsal.

Chapter 3 replicates and extends findings presented in the previous chapter. Again participants were asked to feign amnesia for a mock crime. This time, however, they did not only have to feign amnesia on a free recall test, but also on a Symptom Validity Test (SVT). The SVT can be used to detect feigning of amnesia. We also examined whether memory-undermining effects would occur when participants' memories were evaluated with a SVT. Thirty participants committed a mock crime and then simulated amnesia for it. During a follow-up test, participants were instructed to perform as well as they could on a free

recall test and a SVT. Their memory performance was compared to that of a control group (n = 30). Although only a minority of simulating participants (7 %) was detected by our SVT, the memory-undermining effect of simulating amnesia appeared to be a robust phenomenon. That is, ex-simulators displayed poorer free recall, more commission errors, and lower SVT scores relative to memory performance of honestly responding controls. However, at follow-up testing the poor memory of ex-simulators did not take the form of a real amnesia (i.e., random performance on SVT).

Chapter 4 describes the role of alcohol in claims of amnesia. Some criminal suspects claim to have had an alcohol-induced blackout for the crimes they have committed. Are alcoholic blackouts a frequently occurring phenomenon or are merely they used as an excuse to minimize criminal responsibility? That was the central question of this chapter. Frequency and type of blackout were surveyed retrospectively in two healthy samples (n= 256 and n=100). Also, a comparison of blood alcohol concentrations (BAC's) was made between people who did and those who did not claim a blackout when stopped in a traffic-control study (n=100). In the two survey studies, blackouts were reported frequently by the person himself (or herself) and others (67% and 76%, respectively). In respectively 15% and 33%, these blackouts pertained to criminally relevant behavior. In the traffic-control study only 14% of the drivers claimed an alcohol blackout. Interestingly, the majority of the drivers who reported a blackout (85%), were involved in an accident. Their BAC's did not differ from drivers who did not claim a blackout. These results indicate that although blackouts during serious misbehavior are reported outside the court, both the denial and the claim of alcoholic blackout may serve a strategic function.

In *Chapter 5*, the focus is no longer on amnesia in relation to perpetrators of crimes, but on claims of amnesia in patients or victims. The idea that memory work can induce the belief that memory is poor was tested in this chapter. Previous studies have shown that retrieving many childhood memories can induce the belief that one's memory for childhood events is poor. Some argue that this paradoxical retrieval effect may play a role in patients' reports about amnesia. In the *Chapter 5*, we examined whether such metamemory beliefs are artefacts of asking participants explicitly about the availability of their childhood memory. We were also interested in whether beliefs about the unavailability of childhood memories do affect performance on objective memory tests. Undergraduates were asked to retrieve either 3 or 9 childhood memories. Half of both groups were explicitly asked about the unavailability of childhood memories, the other half was not. Next, all participants were asked to

complete semantic and episodic autobiographical memory tasks. Compared to the 3-events group, retrieving 9 childhood events resulted in more "yes" responses to the question about unavailability of childhood memory and less specific memories about autobiographical events. Apparently, retrieval induced metamemory beliefs also exist when they are not emphasized by questions about unavailability of memories. And once such beliefs have been formed, they do affect subsequent performance on a task that taps memories of autobiographical episodes. This shows that metamemory beliefs are more than a peripheral by-product of asking certain memory questions.

In the previous chapter, the effect of memory work on certain metamemory beliefs was examined. *Chapter 6* describes a study in which these beliefs were explicitly induced by the use of placebos. "Memory-enhancing" or "memory-impairing" placebos can be used to explicitly shape these beliefs. This study investigated whether "memory-enhancing" or "memory-impairing" placebos could, respectively, enhance or impair memory for a film fragment. After watching an emotional film fragment, participants were randomly assigned to a "memory-impairing" (n = 13) or "memory-enhancing" (n = 15) placebo group or control group (n = 30). Although all participants reported an improvement or impairment of their memory for the film fragment in the suggested direction, only in the positive placebo group, memory for the film fragment was actually improved. In the negative placebo group, objective memory was only mildly impaired, in that participants made more distortion errors. These findings may have important implications for both clinical practice and the legal domain.

Defendants often report to have no memory of the crime they committed. Such claims of amnesia could be simulated but they may also have a genuine background. Expectancies about ones own memory (i.e., metamemory) could play a role in the latter type of amnesia. The study described in *Chapter 6* showed that "memory-enhancing" placebos could positively affect memory for a film fragment. For that reason, it would be interesting to test the effect of "memory-enhancing" placebos in perpetrators who claim to have no memory for the crime they committed. In *Chapter 7*, two cases in which "memory-enhancing" placebos were tested are described. In two forensic patients, we exploratively assessed whether their amnesia claims could be countered by modifying their expectancies. Both patients were given "memory-enhancing" placebos and were told that it would help them to retrieve memories of their crime. The treatment was effective in a patient who had pronounced beliefs about his memory loss. However, the placebo failed to be effective in a patient who most likely feigned his amnesia. Perhaps, placebos could be successfully used for the treatment of memory-related problems in forensic patients. The

effectiveness of such a treatment is, however, dependent of the type of amnesia. Therefore, the use of proper diagnostic tools, e.g., to detect feigning of psychiatric problems, might have much to contribute to treatment decisions in this domain.

In *Chapter 8,* the major findings of this thesis are summarized, implications for forensic and clinical practice are made and avenues for future studies are discussed. Future studies are needed to point out who is more prone to display memory-undermining effects of memory work or simulation. It would also be interesting to investigate whether type of offender and type of crime play a role in whether or not an offender claims amnesia and the influence these factors have on the quality of crime-related memories. Furthermore, the treatment regimes containing "memory-enhancing" placebos in different settings needs thorough investigation.

SAMENVATTING

Zowel verdachten als slachtoffers van (vermeende) misdrijven beweren soms geheugenverlies te hebben voor het delict. Zulk geheugenverlies heet in jargon "amnesie." Wanneer er geen biologische oorzaak voor het geheugenverlies (bv. hersenletsel of middelenmisbruik) te vinden is, spreken we van dissociatieve amnesie.

Hoewel het mogelijk is om gefragmenteerde herinneringen te hebben aan traumatische of stressvolle gebeurtenissen, wordt de amnesie ook wel geveinsd om de verantwoordelijkheid voor het delict te minimaliseren. Vermeende slachtoffers die zich plotseling een verleden van seksueel misbruik herinneren, zullen daarentegen minder vaak geheugenverlies opzettelijk voorwenden. Zij zijn er meestal van overtuigd dat het misbruik ook daadwerkelijk heeft plaatsgevonden. *Hoofdstuk 1* bevat een inleidende beschouwing over het fenomeen "dissociatieve amnesie" in relatie tot daders en slachtoffers van misdrijven. Het beschrijft waarom daders geheugenverlies claimen en hoe geheugenwerk bij sommigen kan leiden tot het gevoel amnestisch te zijn. Hier komt ook de rol die verwachtingen en opvattingen over het eigen geheugen (metageheugen) in claims van geheugenverlies spelen aan de orde. Verschillende visies op dissociatieve amnesie worden besproken. Mogelijk zijn echte en geveinsde amnesie niet per definitie twee verschillende dingen, maar vormen ze eindpunten van een continuüm. De ene vorm van geheugenverlies zou wel eens geleidelijk kunnen overgaan in de andere.

Zoals gezegd veinzen (simuleren) daders nogal eens dissociatieve amnesie voor hun delict. Christianson en Bylin (1999) lieten proefpersonen een misdaadverhaal lezen waarbij proefpersonen zich moesten inleven in de rol van dader. Later moesten ze geheugenverlies voor het misdrijf voorwenden. Een week later kregen deze deelnemers de instructie om de waarheid te vertellen. Het bleek dat het simuleren van amnesie voor een misdaadverhaal het werkelijke geheugen voor het verhaal ondermijnde. *Hoofdstuk 2* beschrijft een studie waarin het werk van Christianson en Bylin (1999) werd gerepliceerd, met de aanvulling dat nu een meer realistisch *nepmisdrijf* werd gebruikt. Nadat alle deelnemers een nepmisdrijf hadden gepleegd, moest de helft (n = 21) geheugenverlies voorwenden tijdens de ondervraging over het delict. Hun prestatie op een vrije en gestuurde herinneringstaak over het misdrijf werd vergeleken met die van deelnemers die zo moesten rapporteren wat er was gebeurd zonder te simuleren (n = 20) en die van een controle groep die pas na één week voor het eerst ondervraagd werd over het delict (n = 20). Na een week moesten alle groepen hun rol achter zich laten en naar beste vermogen op de

geheugentaken presteren. Een vergelijking van de prestaties van de groepen op de geheugentaken na een week liet zien dat ex-simulanten minder goed in staat waren de oorspronkelijke gebeurtenis te reconstrueren dan deelnemers die vanaf het begin de waarheid hadden verteld. Dit ondersteunt de bevindingen van Christianson en Bylin (1999) dat het simuleren van amnesie om verantwoordelijkheid te minimaliseren het geheugen ondermijnt. Ex-simulanten verschilden niet van controlepersonen die pas na een week voor het eerst rapporteerden over de gebeurtenis. Dit suggereert dat de bevindingen het beste kunnen worden verklaard in termen van gebrek aan mentale repetitie van de echte gebeurtenis.

Hoofdstuk 3 repliceerde deze bevindingen en borduurde erop voort door simulanten niet alleen geheugenverlies te laten simuleren op een vrije herinneringstaak, maar ook op een Symptom Validity Test (SVT). De SVT kan worden gebruikt om simulanten op te sporen wanneer het vermoeden bestaat dat het geheugenverlies door een verdachte wordt voorgewend. Door een aantal 2-keuze vragen over het delict aan de verdachte voor te leggen kan diens kennis erover worden getoetst. Het idee is dat een verdachte die zijn geheugenverlies voorwendt opzettelijk vaker het foute antwoord op delict gerelateerde vragen zal geven in een poging over te komen als iemand die niks van het delict weet. Hij zal daarmee beneden kansniveau gaan scoren. Dat wil zeggen, hij zal lager scoren dan iemand die echt niks van het delict weet en op basis van gokken de vragen beantwoordt. Dertig deelnemers pleegden een *nepmisdrijf* en simuleerden amnesie ervoor op een vrije herinneringstaak en de SVT. Na een week werden deelnemers geïnstrueerd om nu naar hun beste kunnen te rapporteren. Slechts een minderheid van de simulanten (7%) werd door de SVT als zodanig gedetecteerd. Vergeleken met de controlegroep (n = 30) bleek het simuleren wederom uiteindelijk een geheugenondermijnend effect te hebben. Ex-simulanten scoorden lager op de vrije herinneringstaak, maakten meer geheugenfouten en hadden lagere SVT scores dan niet-simulanten. Hoewel ex-simulanten dus minder goed in staat waren zich het misdrijf te herinneren, liet de score op de SVT zien dat dit niet de contouren van echte amnesie aannam.

Hoofdstuk 4 beschrijft de rol van alcohol in amnesie claims. Sommige verdachten beweren dat ze een alcohol black-out hebben voor het delict. De centrale vraag van dit hoofdstuk was of alcohol black-outs een regelmatig voorkomend verschijnsel zijn en of ze gebruikt worden als een excuus om ongewenst gedrag te verontschuldigen. In twee gezonde steekproeven (n = 256 en n =100) vroegen we middels een enquête hoe vaak alcohol black-outs voorkwamen en voor welk soort gedrag een black-out optrad. Ook werd er een vergelijking gemaakt

tussen bloed alcoholconcentraties van automobilisten die wel of geen black-out claimden toen ze werden aangehouden (*n* = 100). In beide enquêtes werden alcohol black-outs frequent gerapporteerd. Uit de eerste enquête bleek dat 67% van de ondervraagden wel eens een alcohol black-out had gehad. Uit de tweede enquête bleek dat 76% wel eens getuige was geweest van een black-out bij een bekende. De black-out had in respectievelijk, 15% en 33% van de gevallen betrekking op delictwaardig gedrag. In de verkeerscontrolestudie kwamen black-outs aanzienlijk minder vaak voor: 14% van de aangehouden automobilisten zei een black-out te hebben gehad. Interessant was dat 85% van deze automobilisten een aanrijding had veroorzaakt. Hun promillages verschilden niet van automobilisten die geen black-out rapporteerden. De resultaten beschreven in *Hoofdstuk 4* laten zien dat black-outs voorkomen in de Nederlandse bevolking. Zowel het ontkennen als claimen ervan kan een strategisch doel dienen.

In *Hoofdstuk 5* wordt de aandacht verlegd van amnesie bij daders naar amnesie bij slachtoffers. Meer specifiek wordt onderzocht of geheugenwerk bij bepaalde mensen tot de opvatting kan leiden dat hun geheugen slecht is. Dit hoofdstuk borduurt voort op eerder onderzoek dat al aantoonde dat het ophalen van veel jeugdherinneringen leidt tot meer "ja" antwoorden op de vraag of "er grote delen van je jeugd zijn die je je niet kunt herinneren." Een moeilijke geheugentaak waarbij veel herinneringen worden gemobiliseerd leidt dus, paradoxaal genoeg, tot het idee dat je een slecht geheugen hebt voor je jeugd. Volgens sommige auteurs is dit mogelijk een mechanisme achter het geheugenverlies dat cliënten met hervonden herinneringen zeggen te hebben gehad. De studie die in dit hoofdstuk wordt gepresenteerd onderzocht of metageheugen-opvattingen een artefact zijn van het vragen naar de beschikbaarheid van herinneringen of dat ze ontstaan door geheugenwerk, ook zonder dat er expliciet naar wordt gevraagd. Daarnaast werd onderzocht of opvattingen over een slecht geheugen leidden tot een slechtere prestatie op een objectieve autobiografische geheugentaak. Studenten werd gevraagd om 3 of 9 jeugdherinneringen op te halen. De helft van beide groepen werd vervolgens expliciet gevraagd naar de beschikbaarheid van jeugdherinneringen, de andere helft niet. Vervolgens voerden alle deelnemers een semantische en autobiografische geheugentaak uit. Vergeleken met de conditie waarin men slechts 3 herinneringen ophaalde, resulteerde het ophalen van 9 herinneringen in meer "ja" antwoorden op de vraag of "er grote delen van je jeugd zijn die je je niet kunt herinneren." Bovendien waren deze studenten minder goed in staat om specifieke herinneringen op te halen op de autobiografische geheugentaak. Blijkbaar leidt een moeilijke geheugentaak bij een aantal mensen tot de

overtuiging dat ze een slecht geheugen hebben, ook zonder dat daar expliciet naar wordt gevraagd. Wanneer zulke opvattingen er eenmaal zijn, kunnen ze de prestatie op een geheugentaak die autobiografische episodes aanspreekt beïnvloeden. Dit laat zien dat metageheugen-opvattingen meer zijn dan een eenvoudig bijproduct van het stellen van bepaalde vragen.

In het voorgaande hoofdstuk werd het effect van geheugenwerk op metageheugen-opvattingen onderzocht. *Hoofdstuk 6* beschrijft een studie waarin verwachtingen over het geheugen expliciet werden uitgelokt met behulp van placebo's. Verwachtingen die mensen hebben over hun eigen geheugen kunnen de geheugenprestatie beïnvloeden. "Geheugenverbeterende" (positieve) of "geheugenverslechterende" (negatieve) placebo's zouden zulke verwachtingen kunnen doen laten ontstaan. De studie in dit hoofdstuk onderzocht of positieve of negatieve placebo's, respectievelijk, het geheugen voor een filmfragment konden verbeteren of verslechteren. Nadat deelnemers een emotioneel filmfragment hadden bekeken, werden ze willekeurig toegewezen aan een "geheugenverbeterende" (n = 30) of "geheugenverslechterende" (n = 30) placebogroep, of een controlegroep (n = 30). Alleen deelnemers die geloofden in de effectiviteit van de placebo werden meegenomen in de verdere analyses. Dit resulteerde in 13 deelnemers in de positieve placebogroep, 15 in de negatieve placebogroep en 30 in de controlegroep. Hoewel alle deelnemers, afhankelijk van de groep waarin ze zich bevonden, een verbetering dan wel verslechtering van hun geheugen voor het filmfragment rapporteerden, werd alleen in de positieve placebogroep een daadwerkelijke verbetering van het geheugen gevonden. Dat wil zeggen: deelnemers die dachten een geheugenverbeterend middel te hebben gehad, scoorden beter op een vrije herinneringstaak over het filmfragment dan beide andere groepen. In de negatieve placebogroep trad er een lichte verslechtering van het geheugen op in die zin dat er iets meer distortie fouten werden gemaakt vergeleken met de andere twee groepen. Deze bevindingen hebben belangrijke implicaties voor zowel de klinische praktijk als het juridische domein.

Het komt geregeld voor dat daders zeggen geen enkele herinnering te hebben aan het door hen gepleegde misdrijf. Zo'n vorm van amnesie kan gesimuleerd zijn, maar dat is niet altijd zo. In het laatste geval spelen negatieve verwachtingen over het eigen geheugen mogelijk een sleutelrol. In *Hoofdstuk 7* gingen we op exploratieve wijze na of het beweerde geheugenverlies van twee daders die werden behandeld in een forensische kliniek, kon worden verminderd door hun verwachtingen te beïnvloeden. De proefpersonen kregen een placebo met de mededeling dat herinneringen aan het delict hierdoor zouden kunnen terugkeren. De placebo leek te werken bij een proefpersoon die

negatieve verwachtingen had over zijn geheugen voor het delict. Het placebo-effect bleef uit bij een proefpersoon die zijn geheugenbeperking hoogstwaarschijnlijk veinsde. Wellicht kunnen placebo's vruchtbaar worden ingezet bij de behandeling van daders die zeggen geheugenverlies te hebben. Succes is echter afhankelijk van het type geheugenverlies. Het gebruik van goede diagnostische instrumenten - om bijvoorbeeld het simuleren van geheugenverlies op te sporen - is daarbij belangrijk.

In *Hoofdstuk 8* worden de belangrijkste bevindingen van ons onderzoek nog eens becommentarieerd. Tevens worden de implicaties voor forensische en klinische praktijk besproken en enkele suggesties voor toekomstig onderzoek gedaan. Toekomstig onderzoek zal moeten aantonen wie er vatbaar is voor het geheugenondermijnende effect van simulatie of geheugenwerk. Ook zou het interessant zijn om te kijken of type dader en type delict bepalend zijn voor het al dan niet claimen van geheugenverlies en de invloed van deze twee factoren op de kwaliteit van misdaadgerelateerde herinneringen. Verder zullen de toepassingsgebieden van "geheugenverbeterende" placebo's nader onderzocht moeten worden.

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CURICULUM VITAE

Kim van Oorsouw werd op 29 juni 1977 geboren in Brunssum. In 1994 behaalde zij haar Havo diploma aan het St. Janscollege in Hoensbroek. In 1996 behaalde zij haar VWO diploma aan het Romboutscollege in Brunssum. In datzelfde jaar startte zij haar studie Psychologie aan de Universiteit Maastricht. Daar volgde zij de trajecten Ontwikkelingspsychologie en Neuropsychologie. In deze laatste specialisatie studeerde zij in 2001 af. Na haar opleiding was zij gedurende enkele maanden als Universitair Docent werkzaam bij de faculteit der Sociale Wetenschappen van de Erasmus Universiteit in Rotterdam. In december 2001 werd zij aangesteld als Assistent in Opleiding (AiO) bij de capaciteitsgroep Experimentele Psychologie van de Universiteit Maastricht. Sinds september 2006 is zij als Universitair Docent werkzaam bij deze capaciteitsgroep.

LIST OF PUBLICATIONS

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