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Alters in dissociative identity disorder Metaphors or genuine entities?

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Abstract

How should the different identities (i.e., alters) that are thought to be typical for dissociative identity disorder (DID) be interpreted? Are they just metaphors for different emotional states or are they truly autonomous entities that are capable of willful action? This issue is important because it has implications for the way in which courts may handle cases that involve DID patients. Referring to studies demonstrating that alters of DID patients differ in their memory performance or physiological profile, some authors have concluded that alters are more than just metaphors. We argue that such line of reasoning is highly problematic. There is little consensus among authors about the degree to which various types of memory information (implicit, explicit, procedural) may leak from one to the other alter. Without such theoretical accord, *any* given outcome of memory studies on DID may be taken as support for the assumption that alters are in some sense “real.” As physiological studies on alter activity often lack proper control conditions, most of them are inconclusive as to the status of alters. To date, neither memory studies nor psychobiological studies have delivered compelling evidence that alters of DID patients exist in a factual sense. As a matter of fact, results of these studies are open to multiple interpretations and in no way refute an interpretation of alters in terms of metaphors for different emotional states. © 2002 Elsevier Science Ltd. All rights reserved.

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1. Introduction

Although dissociative identity disorder (DID) is a recognized psychiatric disorder, it is also a highly controversial one. According to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV, American Psychiatric Association, 1994, p. 487), DID is characterized by “the presence of two or more distinct identities or personality states (. . .).” Furthermore, DSM-IV assumes that “at least two of these identities or personality states recurrently take control of the person’s behavior.” DSM-IV also notes that the patient has an “inability to recall important personal information that is too extensive to be explained by ordinary forgetfulness.” Extensive amnesia for certain childhood experiences that is thought to be typical for at least some identities of the DID patient would fulfill this criterion.

DSM-IV is silent about the origins of the different identities (hereafter referred to as “alters”) in DID. However, many clinicians assume that they are the product of severe and recurrent traumatic childhood experiences (e.g., Ross, 1997). According to this trauma-dissociation account, alters are the ultimate products of traumatized children’s attempts to compartmentalize overwhelming emotions and memories that are linked to trauma. This type of coping is termed “dissociation.” A recurrent theme in the clinical literature is that when dissociation becomes a habitual coping style, this may result in DID (e.g., Classen, Koopman, & Spiegel, 1993).

Over the past few years, controversies about DID have revolved around its alleged traumatic etiology (e.g., Gleaves, 1996; Lilienfeld et al., 1999), the extent to which it represents a separate nosology (e.g., Elzinga, Van Dyck, & Spinhoven, 1998; North, Ryall, Ricci, & Wetzel, 1993), and/or its preferred treatment (e.g., Piper, 1994a; Ross, 1997). The present article is concerned with a different issue, namely the status of alters in DID. More specifically, our article addresses the question whether alters should be considered as metaphors for differing emotional states or as genuine entities that have their own memory and identity, which are truly autonomous, and are therefore capable of willful action.

It is important to emphasize that professional opinions about this issue do not easily fit the distinction between proponents of the trauma-dissociation account of DID and their critics. For example, Ross (1997, p. 144), one of the leading advocates of the trauma-dissociation account, contends that “the most important thing to understand is that alter personalities are not people. They are not even personalities (. . .). The patient pretends that she is more than one person.” Likewise, Putnam (1992, p. 418) noted that “a reading of the North American clinical literature—as opposed to the sensationalized popular press accounts—quickly demonstrates that reputable clinicians do not believe that the alter personalities represent distinct people.” On the other hand, by using a certain type of descriptive language, at least some DID experts suggest that alters should be taken quite literally. For example, Elin (1995, p. 226) claims that “alter personalities can develop a history of memories, events, ideas, beliefs, perceptions, and behavioral response patterns.” Another illustration is provided by Nijenhuis and Van der Hart (1999, p. 45) who wrote that DID involves the formation of “separate ego states (. . .). Here some identities experience pain, but others are anesthetic; some are intensely fearful, while others experience aggression; still others know about, but escape experiencing, the trauma. Various trauma-ignorant identities continue to perform tasks

in daily life, becoming aspects of the apparently normal personality.” Thus, these authors treat alters as person-like entities that process information (e.g., “know about the trauma”), experience emotions (e.g., “experience pain”), and display behavior (e.g., “perform tasks in daily life”). Such an approach is entirely consistent with the DSM-IV description of DID, which, at least to some point, favors a literal interpretation of alters in DID. For example, DSM-IV (American Psychiatric Association, 1994, p. 484) states that alters “may deny knowledge of one another, be critical of one another, or appear to be in open conflict. Occasionally, one or more powerful identities allocate time to the others.” Likewise, the Dissociative Disorders Interview Schedule/DSM-IV version (Ross, 1997, p. 395) contains items such as “Is there another person (or persons) inside you that has a name?” and “If there is another person inside you, does he or she ever come out and take control of your body?” This is clearly language that attributes intentions and acts to alters and, in doing so, favors a literal interpretation of alters.

In the sections that follow, we first describe how a literal interpretation may have important ramifications in the legal arena, followed by a brief summarization of the arguments as posited by authors who have criticized this interpretation. We then evaluate two lines of research that have sought to elucidate the status of alters in DID: studies on memory performance and studies on physiological reactivity. The penultimate section addresses simulation studies and what they can teach us about adequate control conditions in biological and/or memory research on DID. We end with some remarks regarding future research concerned with alters in DID.

2. Medicolegal issues

From a purely academic point of view, discussions about the status of alters in DID are fascinating. They border on philosophical issues about the nature of consciousness and personal identity. More importantly, however, the way in which experts interpret alters generally bears strong relevance to court cases that involve DID patients. That is, a literal interpretation of alters may contribute to an array of legal complications. These can be grouped into three categories. The first category consists of cases in which DID patients start to accuse another person of childhood abuse after the patients have uncovered alters containing such memories in therapy (Merskey, 1994). Some advocates argue that such memories need to be recovered in order to treat the person (e.g., Brown, Schefflin, & Hammond, 1998) and in some quarters, there has been a tendency to assume that these memories are highly accurate. For instance, Elin (1995, p. 238) asserts that “a further clinical feature of DID is that while the various alters may behave as though they do not share one another’s memories, they may also appear to have photographic recall of events that happened to them in the past.”

However, Clancy, Schacter, McNally, and Pitman (2000) found that women who report having recovered memories of childhood sexual abuse are more prone to exhibit false memory effects in the laboratory than are women who have always remembered their abuse, women who merely believe they might have been abused, and women who deny a history of

abuse. Hence, at least in this paradigm, reports of having recovered formerly inaccessible trauma memories were associated with memory distortion, not memory accuracy. In fact, these authors proposed that one possible explanation for recovered memories is an “effort-after-meaning,” whereby individuals may have high levels of general distress and attribute this lack of happiness to childhood sexual abuse. Furthermore, in a follow-up laboratory study McNally, Clancy, and Schacter (2001) also found that those who reported either recovered or repressed memories scored higher on the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), yet were no more proficient at forgetting or remembering trauma-related words than a nonclinical control group.

That those with repressed or recovered memories should score higher than controls who always remembered their abuse on measures of dissociation is not inconsistent with the position of commentators who have doubts regarding the veracity of many recovered memories (e.g., Loftus, 1993). This point is nicely illustrated by another recent laboratory study of McNally, Clancy, Schacter, and Pitman (2000). These authors noted that those reporting either repressed or recovered memories evidenced higher fantasy proneness than those who always remembered their abuse history and controls who were never abused. The authors again found that those with repressed memories were the most distressed group on measures of both personality and symptom endorsement and suggested that this further supports the “effort-after-meaning” explanation of recovered memories.

In more general terms, there is little or no reason to believe that compared with ordinary memory, traumatic memories are remarkably accurate, as some clinicians seem to assume (e.g., Van der Kolk, 1994). For example, Bryant and Harvey (1998) studied survivors who were amnesic of the motor vehicle accident in which they had been involved. Although survivors had subjectively compelling memories about the accidents and tended to attribute historical accuracy to them, these memories were not corroborated by third-party accounts of the accidents. As well, reconstruction of traumatic memories through imagined scenarios and third-party reports of accidents has been found to produce pseudomemories that fuel posttraumatic stress disorder (PTSD) symptoms, even when the survivor has no factual memory of the trauma due to a concussion (Bryant, 1996). Likewise, in their longitudinal study of U.S. soldiers who had served in Somalia, Roemer, Litz, Orsillo, Ehlich, and Friedman (1998) found a considerable increase in retrospective reports of war-zone exposure frequencies (see also, Harvey & Bryant, 2000; Merckelbach, Muris, Horselenberg, & Rassin, 1998; Schwarz, Kowalski, & McNally, 1993; Southwick, Morgan, Nicolaou, & Charney, 1997).

An example of the problems that may arise when traumatic memories are considered to be accurate revisualizations or representations of an traumatic accident and alters are granted the status of witness is provided by the case of “Witness X1” in the pretrial investigations of the Belgian child murderer Marc Dutroux. During a period in which the Dutroux affair was extensively covered by the media, Witness X1 contacted the police and claimed that she possessed intimate knowledge about Dutroux and his position in a large network of child abusers. X1, who was treated for DID involving 169 alters, was interviewed by police investigators on many occasions. The interviews lasted for hours and often took place during the night. During at least one of the interviews, alters of X1 were invited to react to mug

shots of potential victims of Dutroux and his network members. Although her alters were not able to verbally identify the portraits, they reacted with “nonverbal panic reactions” to some of the material and this was taken by the police as evidence for positive identification (Merckelbach, 1998).

The second type of complication that may arise when the diagnosis of DID surfaces in a legal context pertains to situations in which a DID patient denies responsibility for wrongful behavior. A number of philosophers and psychiatrists have argued that on a strong version of the DSM-IV definition of DID, one should seriously consider a criminal defendant’s claim that he or she is innocent because it was not he or she who committed the crime, but an alter. For example, Braude (1996, p. 51) concluded that “(. . .) we might be justified, from a largely pragmatic point of view, in regarding the multiple as only marginally (or perhaps only theoretically but not practically) responsible for an alter’s emergence and subsequent behavior, especially outside the therapeutic setting.” A similar conclusion was reached by Saks (1995, p. 127) who noted that “(. . .) multiples’ alters (. . .) should generally be found not responsible for their crimes.”

In the United States, a DID-based insanity defense has been raised in at least 20 court cases, of which at least four had not-guilty-by-reason-of-insanity or incompetence-to-stand-trial outcomes (Saks, 1995). The charges in these cases varied from drunk driving and child kidnapping to rape and murder (Behnke, 1997; Dinwiddie, North, & Yutzy, 1993). Perhaps one of the most famous cases is that of “Billy” Milligan who was hospitalized rather than imprisoned following the serial rape of three women in Ohio (Keyes, 1981). While many such defenses fail (McDonald-Owens, 1997), given the increasing use of the DID diagnosis (e.g., Kluft, 1995), there is every reason to expect that in the years to come, courts will regularly be confronted with the phenomenon of defendants pleading insanity or diminished capacity on the basis of their dissociative states or alters at the time of the crime (see for recent examples, McSherry, 1998). Germane to this issue is also Loewenstein and Putnam’s (1990) observation that about 35% of patients with DID claim to have homicidal alters. Likewise, Lewis, Yeager, Swica, Pincus, and Lewis (1997, p. 1709) noted that “in our clinical experience, we found that among the male outpatients seeking treatment for DID at our clinic, a substantial percentage (64%) had demonstrated rageful behavior that came just short of homicide.” In a thorough analysis of 236 DID patients, Ross (1997, p. 123) found that about 12% of his sample had been convicted for a crime and/or had been in jail.

The third category of legal complications that may arise when one accepts a literal interpretation of alters has to do with civil rights. This point is summarized by Piper (1994b, p. 607), who argued that “the fragmented person approach casts serious doubt on whether the patient has one of the major moral and legal attributes of personhood: the ability to choose. Can such a collection of personalities legally choose to sign (itself? himself? themselves?) into a hospital, voluntarily enter into a sexual relationship, make a legally binding will, or enter into a contract to buy a car? If one truly respects the idea of autonomous personalities, these questions must be answered in the negative.” Examples of how a factual interpretation of alters has been applied in some civil courts include the claim by a wife of alter responsibility for her infidelity (which would have barred alimony

payments in the divorce hearing with her husband)¹ and a hospital sued for not anaesthetizing all alters during an operation.²

On the basis of a few spectacular cases (e.g., the Los Angeles Hillside Strangler case; e.g., Beahrs, 1994; Dinwiddie et al., 1993), there has been a tendency in literature to approach the legal complications surrounding DID from a perspective that focuses on the difficulty of differentiating between DID and malingering. However, there is a more fundamental point that can be raised. In his impressive review, Behnke (1997) notes that when faced with DID cases, courts often tend to confuse the concepts of personality, mental state, and/or identity with the concept of person. This author shows that such confusion promotes unstable jurisprudence: In some cases courts focus on the alter who supposedly committed a criminal act and hold the accused accountable, while in other cases courts focus on alters who were supposedly not involved in the crime and rule that the accused is not criminally responsible. Behnke added that the DSM-IV description of DID fosters such confusion between alter and person. In Behnke's words (1997, p. 303): "We can hardly expect judges and lawyers to do better than the American Psychiatric Association's official nosology of mental disorders." Confusion about the legal status of alters is not fully resolved by describing DID as not so much the presence of too many personalities but a failure to have a functional and complete ego (e.g., Greaves & Faust, 1996). This description does have the benefit of diverging from the idea of multiples as discrete entities, but still sees an error within the person, as defined by their personality.

3. Critics on alters

Skeptics have raised a number of critical points concerning the status of alters in DID. Some have argued that the DSM criteria for this condition rely on a vague and outdated notion of personality, namely personality as a single, unitary homunculus that resides somewhere in the brain and controls our behavior (e.g., Dinwiddie et al., 1993; Hacking, 1995; Merskey, 1992; Piper, 1994b; Robinson, 1982). It is only when one subscribes to this problematic idea that it becomes possible to talk about multiple alters or homunculi in the case of DID. Yet, it is largely to avoid the problems of the homunculus idea that many psychologists view personality as the position of an individual on an array of dimensional traits. Indeed, introductory textbooks on individual differences often present the Big Five personality traits (i.e., neuroticism, extraversion, openness, agreeableness, and conscientiousness) as the leading example in this domain of psychology (e.g., Feist & Feist, 1998; Funder, 2001). These textbooks also stress that personality traits do correlate with actual behavior, but that the correlations are by no means overwhelming (e.g., Carver & Scheier, 1996). On a related note, given the influence of self-presentational biases, the target person (e.g., the patient) is not the best available reference point for defining someone's personality (Hofstee, 1995).

¹ *Rutherford v. Rutherford*, 414 S.E.2d 157 (S.C. 1992).

² *Johnson v. Henry Ford Hospital*, Michigan Court of Appeals, No. 181296, unpublished, Sept. 20, 1996.

Another point raised by critics is that alternative interpretations of alters are possible. In short, critics contend that alters of DID patients may well be products of social creation. Perhaps the most forceful formulation of this position has been offered by Spanos (1994, p. 144), who argued that in the case of DID, patients “come to believe that their alter identities are real personalities rather than self-generated fantasies.” According to this author, alters are not real entities, as suggested by the DSM-IV, but rather metaphors that patients learn from their therapists and/or from exposure to prototypic examples that can be found in books, TV talk shows, movies, and so on. In Spanos’ words (pp. 143 and 144): “patients learn to construe themselves as possessing multiple selves, learn to present themselves in terms of this construal, and learn to reorganize and elaborate on their personal biography so as to make it congruent with their understanding of what it means to be a multiple (. . .).”

4. Alters are real because they have different memories

Is there any reason to believe that alters are more than just imaginary constructions? Some clinicians have pointed out that marked changes in handwriting, demeanor, and voice of DID patients may provide evidence for the objective reality of alters (e.g., Huber, 1997; Lewis et al., 1997). For example, in their study on 12 murderers with DID, Lewis et al. (1997) interpreted fluctuations in handwriting style and voice as objective documentation of dissociated alters in their patients. However, consider a theater play in which one actor has to play two different roles. To help the audience differentiate between these roles, the actor would strategically use explicit changes in voice, demeanor, and so on. Thus, such superficial changes do not invalidate the view that alters are imaginary constructions. In the words of Simpson (1997, p. 122), “any sensible actor or faker would definitively adopt such superficial differences.” In fact, this critique can be made even stronger. Most authors who adhere to a trauma-dissociation account of DID seem to agree that alters are primarily manifestations of severe retrieval and/or encoding disruptions in autobiographical memory (e.g., Allen, Console, & Lewis, 1999; Kihlstrom, Tataryn, & Hoyt, 1993). With this in mind, there is no reason to assume that DID patients do exhibit abnormalities in the more automatized types of memory that guide procedural motor output such as handwriting or voice. Indeed, under the assumption that amnesic boundaries between alters are restricted to autobiographical memory, superficial changes involving procedural knowledge could be easily interpreted as signs of strategic role enactment (see, for an example, Serban, 1992).

Some authors (e.g., Elin, 1995) have argued that research on memory performance of DID patients may inform discussions about the status of alters. One of the best controlled studies in this domain is that of Eich, Macaulay, Loewenstein, and Dihle (1997b). In their study, nine DID patients were subjected to explicit and implicit memory tasks while they were in either of two different alter states, each claiming to have no conscious awareness of the other’s memory. In this way, the authors examined to what extent transfer of information from one to the other alter occurred. Replicating results of a previous single-case study (Nissen, Ross, Willingham, Mackenzie, & Schacter, 1988), Eich et al. were able to show that words presented to one alter were not recalled by the other and vice versa. Yet, unlike DID patients’

performance on this explicit free recall task, their performance on an implicit test of picture fragment completion suggested substantial transfer of information from one to the other alter. That is, if one alter had to identify a series of degraded pictures, the other alter subsequently required less perceptual detail to identify the same pictures. By and large, this suggests that the amnesic barriers that are thought to be typical for DID pertain to explicit memory, but not to implicit memory. It has to be added, though, that with a different implicit memory task (i.e., word stem completion), Eich et al. did find some indications for an amnesic barrier between alters (i.e., lack of implicit memory leakage from one to the other alter). In a follow-up study, Eich, Macaulay, Loewenstein, and Dihle (1997a) showed that this discrepancy in inter-alter transfer of explicit and implicit knowledge could not be reproduced in a sample of simulators. In that study, mental health professionals familiar with the condition of DID were instructed to role play two mutually amnesic alters. There were no indications that one simulated alter performed better on the picture identification task when the other sham alter had been previously exposed to the pertinent object information. Postexperimental interviews made it clear that the simulators believed that since they were supposed to enact mutually amnesic alters, there could or should be no transfer of perceptual information from one to the other alter. Accordingly, the authors concluded that their results are “suggestive of a qualitative difference in the implicit memory performance of DID patients versus simulators” (Eich et al., 1997a, p. 473).

Although the Eich et al. studies belong to the best in their sort, some critical remarks are in order. To begin with, it is unfortunate that the authors did not combine DID patients and simulating controls in one single experiment. Secondly, the picture completion data of the simulators show that this implicit memory test was sensitive to strategic control. That is, simulators could control their responses on this task in such a way as to make it look “real.” If simulators can do this, DID patients can do it, and, perhaps, the discrepancies in implicit memory transfer between DID patients and simulators reflect different views on how alter metaphors should be expressed. It is also noteworthy that some authors reported an absence of implicit memory transfer between alters of DID patients (e.g., Peters, Uyterlinde, Consemulder, & Van der Hart, 1998), a finding that adds to the incoherent pattern of results in this research domain. Interestingly, neuropsychological researchers often assume that absence of implicit memory transfer may be indicative of simulators who deliberately feign amnesia as implicit memory is believed to survive even severe neurological damage (e.g., Cochrane, Baker, & Meudell, 1998).

At a more theoretical level, it is hard to escape the conclusion that research on memory performance of alters is plagued by conflicting ideas about the precise type of memory disturbance that characterizes DID. The following quotations underline this point.

Episodic memory developed by one personality is often not accessible by another. In many cases, even implicitly stored procedural memory is discrete (Spiegel, Frischholz, & Spira, 1993, p. 767).

While the dissociative disorders involve profound impairments of autobiographical memory, and of self-referent semantic memory, other knowledge stored in memory appears to be relatively unimpaired. The individual’s fund of world knowledge (non-self-referent semantic

knowledge), and repertoire of cognitive and motor skills (procedural knowledge) remain intact (Kihlstrom & Schacter, 1995, p. 341).

Identities who are unaware of each other's biographical memories may share procedural knowledge, i.e., the skills and strategies that are used in judgment, decision-making, and problem-solving (Peters et al., 1998, p. 29).

The conclusion might be that interpersonality amnesia affects explicit more than implicit memory; or, put another way, that implicit (not explicit) memory transfers across personalities (Kihlstrom et al., 1993, p. 222).

Whereas all these authors agree that DID is accompanied by a disturbance in explicit autobiographical (i.e., episodic) memory, they seem to disagree as to whether alters may share procedural, implicit, and/or semantic knowledge. Against this liberal background, almost any type of memory disturbance in DID patients may be interpreted as support for the idea that alters do exist in "some" factual sense. Meanwhile, we can only guess at the impact that clinicians' acceptance of this idea can have on the clinical and forensic interview process and their resultant outcome. One good reason for suspecting that this impact will be nontrivial is that people who report recovered memories and/or dissociative symptoms tend to score high on fantasy proneness (e.g., McNally et al., 2000), a trait that is linked to overendorsement of items (Merckelbach, Muris, Horselenberg, & Stougie, 2000).

5. Alters are real because they have different physiological profiles

To elucidate the status of alters in DID, some authors have adopted a biological approach. The idea behind this approach is as follows: suppose one asks a DID patient to switch between different alters. And suppose that physiological activity is measured during such alternations. If one observes that the alters differ in their physiological profile, this could be evidence that they are more than just socially created metaphors in the minds of patients (e.g., Stringer & Cooley, 1994). A recent *New Scientist* article (Adler, 1999) nicely illustrates this type of reasoning. Referring to a functional magnetic resonance imaging (fMRI) study of DID by Tsai, Condie, Wu, and Chang (1999), *New Scientist* announced on its front page that "now we can watch multiple personalities emerge in the brain." In the pertinent study, one DID patient was instructed to switch from her adult alter Marnie to her 8-year-old amnesic child alter Guardian while fMRI brain recordings were made. Interestingly, when Marnie was in control, hippocampal activity was relatively normal, but as Guardian emerged hippocampal activity was found to be decreasing.

Although this fMRI study is described as an innovative contribution to the biological underpinnings of DID (Adler, 1999), it should be noted that this type of study has a long tradition spanning almost a century. At several points in that history, application of new psychophysiological methodologies in the assessment of DID has been heralded as a breakthrough in drawing a clearer picture of the intrinsic nature of alters. The first was in 1908, when Prince and Petersen (cited in Miller & Triggiano, 1992) reported that the alters of a DID patient reacted with different skin conductance activity. The next development took

place in the 1950s when studies appeared utilizing electroencephalogram (EEG) activity (see Putnam, 1984, for a review). Some studies demonstrated that alter states differ in terms of EEG activity (e.g., Flor-Henry, Tomer, Kumpula, Koles, & Yeudall, 1990; Rosenstein, 1994; Thigpen & Cleckley, 1954), while other researchers found few differences between DID alters and simulating controls (e.g., Coons, Milstein, & Marley, 1982—see below). Then, in the 1970s, evoked potential research was published, which claimed to have shown that alter states are accompanied by fluctuating evoked potentials. A typical study was that by Larmore, Ludwig, and Cain (1977), who recorded evoked potentials in a patient with four alters. The authors concluded that “the average visual evoked potentials (AER) for each personality were quite different from each other (...) such as would be expected if four separate individuals had been tested” (Larmore et al., 1977, p. 39). With the advance of mapping techniques in 1990s, students of DID reported that different alters have unique brain activation maps (e.g., Hughes, Kuhlman, Fichtner, & Gruenfeld, 1990).

Thus, the fMRI study described in the recent *New Scientist* issue finds itself in the good company of many researchers who documented substantial variations in physiological activity between alter states. Does this show that alters are genuine entities rather than metaphors? In their scholarly review, Miller and Triggiano (1992, p. 49) explained why the answer has to be in the negative: “In general, the neurophysiologic studies have suffered from methodological flaws that make generalization of their findings difficult. Such shortcomings include an overreliance on the single-subject, case-study design, as well as a lack of adequate experimental controls.” Over the past few years, these points have not lost their relevance. For example, the recent fMRI study that was so extensively cited by *New Scientist* was based on a single patient and failed to include proper control conditions.

What happens when physiological activity of DID patients who are instructed to switch alters is compared to that of normal control individuals who simulate alters? One of the few studies that comes close to this design found more significant EEG differences between role played alters of a normal than between alters of DID patients. In line with this, the authors of that study (Coons et al., 1982, p. 825) concluded: “It is not as if each personality is a different individual with a different brain. Instead, to put it simply, the EEG changes reflect changes in emotional state.”

6. Simulating amnesic alters

Case reports suggest that in the clinic, detection of simulated DID can be a difficult task (e.g., Brick & Chu, 1991). This fits with experimental studies demonstrating that in general, normal individuals need only a few prompts to take on the role of an amnesic alter. For example, in a pioneering study by Spanos, Weekes, and Bertrand (1986; see also Spanos, 1997), college students were asked to play the role of an accused murdered who was confronted with strong forensic evidence. The role players were not specifically instructed about alters. Even so, the large majority of role players (81%) enacted an alter in response to subtle cues from the interviewer that “there might be another part” of the accused. In most cases, it was this second alter who admitted responsibility for criminal behavior, while the primary

alter simulated amnesia for the second alter. Other authors (e.g., Rabinowitz, 1989) were able to replicate these enactment phenomena. But how should one interpret them? Carson and Butcher (1992) were quite right when they remarked that when healthy college students give a convincing portrayal of a person with a broken leg, this does not imply that broken legs do not exist. In other words, enactment phenomena in normal participants are not very convincing when they are used as an argument for the iatrogenic etiology of DID (Kluft, 1995). On the other hand, these phenomena do bear relevance to the issue of whether alters in DID are genuine entities that can be held accountable for, say, criminal behavior. That is, enactment phenomena documented by Spanos et al. suggest that when faced with social dilemmas, even normal people may resort to amnesic alters who are made responsible for socially disapproved behavior. Interestingly, attributing deviant behavior not to oneself, but to internal forces that are uncontrollable is a widespread explanatory style among offenders (Gudjonsson, Hannesdottir, & Petursson, 1999). Invoking alters to make sense of one's behavior is not the same as deliberately faking, but it definitely is a form of "effort-after-meaning" in which metaphors and real behavioral antecedents may become easily mixed up.

In a recent simulation study, Merckelbach, Rasquin, and Rassin (2001) exposed undergraduates to an emotional narrative about a student who causes a severe accident. Next, words uniquely referring to the narrative and emotional control words were presented to participants while their skin conductance responses (SCRs) to the words were measured. In one condition, participants simulated an alter who was completely amnesic of the narrative, whereas in the other condition, participants simulated an alter who fully remembered the traumatic narrative. When playing the role of an amnesic alter, participants reacted with lower SCRs to story words and higher SCRs to emotional control words. Such a differential pattern was not evident in the traumatic alter condition. One could speculate that role-playing an amnesic alter might produce real amnesia (e.g., Christianson & Bylin, 2000). However, free recall data obtained after the experiment proper indicated that participants remembered more story words than control words and there were no differences in this respect between the amnesic and traumatic alter condition. Thus, these findings show biological differences between role-played alters in the absence of true memory effects. Interestingly, biological differences were most robust in individuals scoring high on fantasy proneness. It is worthwhile at this point noting that there is a considerable overlap between scores on a widely used screening instrument for DID, namely the DES (Bernstein & Putnam, 1986), on the one hand, and fantasy proneness, on the other hand (Merckelbach & Muris, 2001). Correlations between DES total scores and fantasy proneness range from .42 (Silva & Kirsch, 1992) to .63 (Merckelbach, Muris, & Rassin, 1999). Perhaps, then, psychobiological studies that encourage DID patients to switch from one to the other alter capitalize on the role-playing talents implicated in fantasy proneness. Thus, normal individuals with high scores on fantasy proneness would constitute the appropriate control group for memory and psychobiological research on alters in DID. Furthermore, a control group of abused individuals who have never forgotten their trauma and have PTSD would also make for a good third comparison group based upon the work of the recent "repressed" memory investigations explained above (Clancy et al., 2000; McNally et al., 2000, 2001). The recent fMRI research described earlier (Tsai et al., 1999) lacks any such control conditions and, therefore, lacks the

methodological rigor that would preclude alternative explanations for their results. Meanwhile, given the seductive power that neuroimages have in the courtroom (Kulynych, 1996), the preliminary announcement of this type of research might have a misleading effect on judicial decision making in court cases that involve DID.

7. Conclusion

The older literature on DID offers some strong claims as to the literal status of alters. Anecdotal reports of alters differing in their allergic reactions, in their response to medication, and in their optical functioning abound (e.g., Miller, 1989). These anecdotes led Simpson (1997, p. 124) to pose the following question: “Why not claim that they wear different size shoes?” While this was meant as a *reductio ad absurdum* argument, the German DID expert Huber (1997, p. 109) describes how one of her DID patients does have her shoe sizes vary (37, 38, or 39) along with her different alter states. It is easy to recognize this as an inflated interpretation of the status of alters. Still, a literal interpretation of alters can also be found in the DSM-IV and in many serious articles on DID. In their thought-provoking essay on DID, Lilienfeld et al. (1999) present several examples of treatment interventions that seem to be predicated on the belief that alters in DID are independent agents. These examples include asking to meet an alter, giving names to alters, and encouraging alters to write letters to each other. On the basis of these examples, Lilienfeld et al. (p. 513) conclude that “many or most influential authors in the DID treatment literature treat alters as independent entities or even personalities, at least during the early phase of treatment.”

It is this literal view on alters that has inspired studies examining differences in memory functioning and physiological reactivity between various alter states of DID patients. Yet, theoretical and methodological shortcomings of these studies restrict any conclusions that can be drawn from them. Memory studies on DID suffer from the absence of articulated theories about memory functioning in DID. Psychobiological studies, on the other hand, primarily suffer from the absence of proper control conditions. This is unfortunate, because it is now perfectly possible to specify control conditions for this type of research. More precisely, further attempts to clarify the status of alters by means of sophisticated memory paradigms or biological techniques are uninformative unless they include a control group of individuals with similar levels of fantasy proneness and distress on measures of personality and symptom endorsement.

Neither memory studies, nor psychobiological studies have elicited compelling evidence that supports a literal view on alters in DID. As things stand, the results of these studies in no way refute an interpretation of alters in terms of role enactment and metaphors for emotional states (Spanos, 1997). Recent reviews by some DID experts seem to suggest that they too have abandoned overliteral interpretations of alter activity. A case in point is Gleaves (1996, p. 48) who notes that “what is critical to understand is that acknowledging a patient with DID to have genuine experiences of alters as real people or entities is not the same as stating that alters are actually real people or entities.” Obviously, this conceptualization of alters is

reminiscent of the position that alters exist largely as a result of role enactment in which patients become absorbed. Thus, it is probably time to de-emphasize the literal interpretation of alters advocated by the DSM-IV. What remains, then, is the idea that unlike normal people, DID patients do not hold a subjective sense of unitary identity by ascribing prosopopoeia to different emotional states. Clearly, such a modest view on alters has consequences for the way in which future editions of the DSM should portray DID and its alters.

This approach also suggests some new research avenues for future studies. So far, studies in this domain have been preoccupied with documenting memory dysfunctions and neuronal substrates of alters in DID. However, once alters and the dissociative amnesia attributed to them are viewed as metaphors, the question arises what type of subjective experience may promote these metaphors. To the extent that dissociative amnesia is a subjective meta-memorial experience rather than an objective sign of memory pathology (e.g., Read & Lindsay, 2000), it should, in principle, be possible to elicit reports of amnesia in healthy participants. Interestingly, recent studies by Belli, Winkielman, Read, Schwarz, and Lynn (1998) and Winkielman, Schwarz, and Belli (1998) show that under some conditions, normal undergraduates come to misattribute experienced difficulty in remembering childhood events as manifestations of amnesia (see also Winkielman & Schwarz, 2001). Further studies along these lines are needed to examine whether such misattributions may take the form of a profound conviction that one has multiple alters who are separated by amnesic barriers. Perhaps reinforcement contingencies of the sort described by Kohlenberg (1973) may play a critical role in the development of such convictions.

Another research line that may contribute to a better understanding of the status of alters is concerned with causal attributions and self-concepts. Wegner and Wheatley (1999) have pointed out that people easily come to attribute causality to the self, even in the case of actions that are elicited by other factors. There are good reasons to suspect that more dramatic versions of such attributional illusions play a role in psychological disorders like depression, paranoia, and bipolar disorder (e.g., Kinderman & Bentall, 2000). Surprisingly enough, little or no work has been done on attributional abnormalities in DID. Meanwhile, the hypothesis that alters in DID may be nothing more than the result of some patients' tendency to attribute causality to inside agents, only becomes a coherent position when one seriously considers the possibility that expressed alters are metaphors rather than real entities.

References

- Adler, R. (1999, December 18). Crowded minds. *New Scientist*, 26–31.
- Allen, J. G., Console, D. A., & Lewis, L. (1999). Dissociative detachment and memory impairment: reversible amnesia or encoding failures? *Comprehensive Psychiatry*, 40, 160–171.
- American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Behrs, J. O. (1994). Dissociative identity disorder: adaptive deception of self and others. *Bulletin of the American Academy of Psychiatry and the Law*, 22, 223–237.
- Behnke, S. H. (1997). Confusion in the courtroom: how judges have assessed the criminal responsibility of individuals with multiple personality disorder. *International Journal of Law and Psychiatry*, 20, 293–310.

- Belli, R. F., Winkielman, P., Read, J. D., Schwarz, N., & Lynn, S. J. (1998). Recalling more childhood events leads to poorer memory. Implications for the recovered/false memory debate. *Psychonomic Bulletin and Review*, 5, 318–323.
- Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease*, 174, 727–735.
- Braude, S. E. (1996). Multiple personality and moral responsibility. *Philosophy, Psychiatry and Psychology*, 3, 37–54.
- Brick, S. S., & Chu, J. A. (1991). The simulation of multiple personalities: a case report. *Psychotherapy*, 28, 267–272.
- Brown, D., Schefflin, A. W., & Hammond, D. C. (1998). *Memory, trauma treatment, and the law*. New York: Norton.
- Bryant, R. A. (1996). Posttraumatic stress disorder, flashbacks, and pseudomemories in closed head injury. *Journal of Traumatic Stress*, 9, 621–629.
- Bryant, R. A., & Harvey, A. G. (1998). Traumatic memories and pseudomemories in posttraumatic stress disorder. *Applied Cognitive Psychology*, 12, 81–88.
- Carson, R. C., & Butcher, J. N. (1992). *Abnormal psychology and modern life*. New York: HarperCollins.
- Carver, C. S., & Scheier, M. F. (1996). *Perspectives on personality*. Boston: Allyn and Bacon.
- Christianson, S.-A., & Bylin, S. (2000). Does simulating amnesia mediate genuine forgetting for a crime event? *Applied Cognitive Psychology*, 13, 495–511.
- Clancy, S. A., Schacter, D. L., McNally, R. J., & Pitman, R. K. (2000). False recognition in women reporting recovered memories of sexual abuse. *Psychological Science*, 11, 26–31.
- Classen, C., Koopman, C., & Spiegel, D. (1993). Trauma and dissociation. *Bulletin of the Menninger Clinic*, 57, 178–194.
- Cochrane, H. J., Baker, G. A., & Meudell, P. R. (1998). Simulating a memory impairment: can amnestics implicitly outperform simulators? *British Journal of Clinical Psychology*, 37, 31–48.
- Coons, P. M., Milstein, V., & Marley, C. (1982). EEG studies of two multiple personalities and a control. *Archives of General Psychiatry*, 39, 823–825.
- Dinwiddie, S. H., North, C. S., & Yutzy, S. H. (1993). Multiple personality disorder: scientific and medicolegal issues. *Bulletin of the American Academy of Psychiatry and Law*, 21, 69–79.
- Eich, E., Macaulay, D., Loewenstein, R., & Dihle, P. H. (1997a). Implicit memory, interpersonality, amnesia, and dissociative identity disorder. In D. J. Read, & D. S. Lindsay (Eds.), *Recollections of trauma: scientific evidence and clinical practice* (pp. 469–474). New York: Plenum.
- Eich, E., Macaulay, D., Loewenstein, R. J., & Dihle, P. H. (1997b). Memory, amnesia, and dissociative identity disorder. *Psychological Science*, 8, 417–422.
- Elin, M. (1995). A developmental model for trauma. In L. Cohen, J. Berzoff, & M. Elin (Eds.), *Dissociative identity disorder* (pp. 223–259). London: Jason Aronson.
- Elzinga, B. M., Van Dyck, R., & Spinhoven, P. (1998). Three controversies about dissociative identity disorder. *Clinical Psychology and Psychotherapy*, 5, 13–23.
- Feist, J., & Feist, G. J. (1998). *Theories of personality*. Boston: McGraw-Hill.
- Flor-Henry, P., Tomer, R., Kumpula, I., Koles, Z. J., & Yeudall, L. T. (1990). Neurophysiological and neuropsychological study of two cases of multiple personality syndrome and comparison with chronic hysteria. *International Journal of Psychophysiology*, 10, 151–161.
- Funder, D. C. (2001). *The personality puzzle*. New York: Norton.
- Gleaves, D. H. (1996). The sociocognitive model of dissociative identity disorder: a reexamination of the evidence. *Psychological Bulletin*, 120, 49–59.
- Gleaves, G. B., & Faust, G. H. (1996). Legal and ethical issues. In L. K. Michelson, & W. J. Ray (Eds.), *Handbook of dissociation: theoretical, empirical, and clinical perspectives* (pp. 595–615). London: Plenum.
- Gudjonsson, G. H., Hannesdottir, K., & Petursson, H. (1999). The relationship between amnesia and crime: the role of personality. *Personality and Individual Differences*, 26, 505–510.
- Hacking, I. (1995). *Rewriting the soul: multiple personality and the sciences of memory*. Princeton, NJ: Princeton University Press.

- Harvey, A. G., & Bryant, R. A. (2000). Memory for acute stress disorder symptoms: a two-year prospective study. *Journal of Nervous and Mental Disease*, 188, 602–607.
- Hofstee, W. K. B. (1995). Who should own the definition of personality? *European Journal of Personality*, 8, 149–162.
- Huber, M. (1997). *Meervoudige persoonlijkheden: een handboek voor overlevenden van extreem geweld* (Multiple personalities: a handbook for survivors of extreme violence). Amsterdam: Wereldbibliotheek.
- Hughes, J. R., Kuhlman, D. T., Fichtner, C. G., & Gruenfeld, M. J. (1990). Brain mapping in a case of multiple personality. *Clinical Electroencephalography*, 21, 200–209.
- Keyes, D. (1981). *The minds of Billy Milligan*. New York: Random House.
- Kihlstrom, J. F., & Schacter, D. L. (1995). Functional disorders of autobiographical memory. In A. D. Baddeley, B. A. Wilson, & F. N. Watts (Eds.), *Handbook of memory disorders* (pp. 337–363). New York: Wiley.
- Kihlstrom, J. F., Tatarzyn, D. J., & Hoyt, I. P. (1993). Dissociative disorders. In P. B. Sutker, & H. E. Adams (Eds.), *Comprehensive handbook of psychopathology* (pp. 203–232). New York: Plenum.
- Kinderman, P., & Bentall, R. P. (2000). Self-discrepancies and causal attributions: studies of hypothesized relationships. *British Journal of Clinical Psychology*, 39, 255–273.
- Kluft, R. P. (1995). Current controversies surrounding dissociative identity disorder. In L. Cohen, J. Berzoff, & M. Elin (Eds.), *Dissociative identity disorder* (pp. 347–377). London: Jason Aronson.
- Kohlenberg, R. J. (1973). Behavioristic approach to multiple personality: a case study. *Behavior Therapy*, 4, 137–140.
- Kulynych, J. (1996). Brain, mind, and criminal behavior: neuroimages as scientific evidence. *Jurometrics Journal*, 36, 235–244.
- Larmore, K., Ludwig, A. M., & Cain, R. L. (1977). Multiple personality: an objective case study. *British Journal of Psychiatry*, 131, 35–40.
- Lewis, D. O., Yeager, C. A., Swica, Y., Pincus, J. H., & Lewis, M. (1997). Objective documentation of child abuse and dissociation in 12 murderers with dissociative identity disorder. *American Journal of Psychiatry*, 154, 1703–1710.
- Lilienfeld, S. O., Lynn, S. J., Kirsch, I., Chaves, J. F., Sarbin, T. R., Ganaway, G. K., & Powell, R. A. (1999). Dissociative identity disorder and the sociocognitive model: recalling the lessons of the past. *Psychological Bulletin*, 125, 507–523.
- Loewenstein, R. J., & Putnam, F. W. (1990). The clinical phenomenology of males with multiple personality disorder. *Dissociation*, 3, 135–143.
- Loftus, E. F. (1993). The reality of repressed memories. *American Psychologist*, 48, 518–537.
- McDonald-Owens, S. (1997). The multiple personality (MPD) defense. *Maryland Journal of Contemporary Legal Issues*, 8, 237–270.
- McNally, R. J., Clancy, S. A., & Schacter, D. L. (2001). Directed forgetting of trauma cues in adults reporting repressed or recovered memories of childhood sexual abuse. *Journal of Abnormal Psychology*, 110, 151–156.
- McNally, R. J., Clancy, S. A., Schacter, D. L., & Pitman, R. K. (2000). Personality profiles, dissociation, and absorption in women reporting repressed, recovered, or continuous memories of childhood sexual abuse. *Journal of Consulting and Clinical Psychology*, 68, 1033–1037.
- McSherry, B. (1998). Getting away with murder? Dissociative states and criminal responsibility. *International Journal of Law and Psychiatry*, 21, 163–176.
- Merckelbach, H. (1998). Hoe het afliep met getuige X1 (How things ended with Witness X1). *Directieve Therapie*, 18, 400–409.
- Merckelbach, H., & Muris, P. (2001). The causal link between self-reported trauma and dissociation: a critical review. *Behaviour Research and Therapy*, 39, 245–254.
- Merckelbach, H., Muris, P., Horselenberg, R., & Rassin, E. (1998). Traumatic intrusions as worse case scenario's. *Behaviour Research and Therapy*, 36, 1075–1079.
- Merckelbach, H., Muris, P., Horselenberg, R., & Stougie, S. (2000). Dissociative experiences, response bias, and fantasy proneness in college students. *Personality and Individual Differences*, 28, 49–58.

- Merckelbach, H., Muris, P., & Rassin, E. (1999). Fantasy proneness and cognitive failures as correlates of dissociative experiences. *Personality and Individual Differences*, 26, 961–967.
- Merckelbach, H., Rasquin, S., & Rassin, E. (2001). Psychobiological research on DID: a methodological note. *Acta Neuropsychiatrica*, 13, 64–67.
- Merskey, H. (1992). The manufacture of personalities: the production of multiple personality disorder. *British Journal of Psychiatry*, 160, 327–340.
- Merskey, H. (1994). Multiple personality disorder and false memory syndrome. *British Journal of Psychiatry*, 166, 281–283.
- Miller, D. M., & Triggiano, P. J. (1992). The psychophysiological investigation of multiple personality disorder: review and update. *American Journal of Clinical Hypnosis*, 35, 47–61.
- Miller, S. (1989). Optical differences in cases of multiple personality disorder. *Journal of Nervous and Mental Disease*, 177, 480–486.
- Nijenhuis, E. R. S., & van der Hart, O. (1999). Forgetting and reexperiencing trauma. In J. Goodwin, & R. Attias (Eds.), *Splintered reflections: images of the body in trauma* (pp. 39–65). New York: Basic Books.
- Nissen, M. J., Ross, J. L., Willingham, D. B., Mackenzie, T. B., & Schacter, D. L. (1988). Memory and awareness in a patient with multiple personality disorder. *Brain and Cognition*, 8, 21–38.
- North, C. S., Ryall, J. M., Ricci, D. A., & Wetzel, R. D. (1993). *Multiple personalities, multiple disorders: psychiatric classification and media influence*. Oxford: Oxford University Press.
- Peters, M. L., Uytterlinde, S. A., Consemulder, J., & Van der Hart, O. (1998). Apparent amnesia on experimental memory tests in dissociative identity disorder: an exploratory study. *Consciousness and Cognition*, 7, 27–41.
- Piper, A. (1994a). Treatment for multiple personality disorder: at what cost? *American Journal of Psychotherapy*, 48, 392–400.
- Piper, A. (1994b). Multiple personality disorder. *British Journal of Psychiatry*, 164, 600–612.
- Putnam, F. W. (1984). The psychophysiological investigation of multiple personality disorder. *Psychiatric Clinics of North America*, 7, 31–39.
- Putnam, F. W. (1992). Letter to the editor. *British Journal of Psychiatry*, 161, 417–418.
- Rabinowitz, F. E. (1989). Creating multiple personality: an experiential demonstration for an undergraduate abnormal psychology class. *Teaching of Psychology*, 16, 69–71.
- Read, J. D., & Lindsay, D. S. (2000). Amnesia for summer camps and high school graduation: memory work increases reports of prior periods of remembering less. *Journal of Traumatic Stress*, 13, 129–147.
- Robinson, D. N. (1982). Cerebral plurality and the unity of the self. *American Psychologist*, 37, 907–910.
- Roemer, L., Litz, B. T., Orsillo, S. M., Ehlich, P. J., & Friedman, M. J. (1998). Increases in retrospective accounts of war-zone exposure over time: the role of PTSD symptom severity. *Journal of Traumatic Stress*, 11, 597–605.
- Rosenstein, L. D. (1994). Potential neuropsychologic and neurophysiologic correlates of multiple personality disorder. *Neuropsychiatry, Neuropsychology and Behavioral Neurology*, 7, 215–229.
- Ross, C. A. (1997). *Dissociative identity disorder: diagnosis, clinical features, and treatment of multiple personality*. New York: Wiley.
- Saks, E. R. (1995). The criminal responsibility of people with multiple personality disorder. *Psychiatric Quarterly*, 66, 119–131.
- Schwarz, E. D., Kowalski, J. M., & McNally, R. J. (1993). Malignant memories: post-traumatic changes in memory in adults after a school shooting. *Journal of Traumatic Stress*, 6, 545–553.
- Serban, G. (1992). Multiple personality: an issue for forensic psychiatry. *American Journal of Psychotherapy*, 46, 269–280.
- Silva, C. E., & Kirsch, I. (1992). Interpretive sets, expectancy, fantasy proneness, and dissociation as predictors of hypnotic response. *Journal of Personality and Social Psychology*, 63, 847–856.
- Simpson, M. A. (1997). Gullible's travel or the importance of being multiple. In L. Cohen, J. Berzoff, & M. Elin (Eds.), *Dissociative identity disorder* (pp. 87–134). London: Jason Aronson.
- Southwick, S. M., Morgan, C. A., Nicolaou, A. L., & Charney, D. S. (1997). Consistency of memory for combat-related traumatic events in veterans of operation desert storm. *American Journal of Psychiatry*, 154, 173–177.

- Spanos, N. P. (1994). Multiple identity enactments and multiple personality disorder: a sociocognitive perspective. *Psychological Bulletin*, *116*, 143–165.
- Spanos, N. P. (1997). *Multiple identities and false memories: a sociocognitive perspective*. Washington, DC: American Psychological Association.
- Spanos, N. P., Weekes, J. R., & Bertrand, L. D. (1986). Multiple personality: a social psychological perspective. *Journal of Abnormal Psychology*, *94*, 362–376.
- Spiegel, D., Frischholz, E. J., & Spira, J. (1993). Functional disorders of memory. *American Psychiatric Press Review of Psychiatry*, *12*, 747–782.
- Stringer, A. Y., & Cooley, E. L. (1994). Divided attention performance in multiple personality disorder. *Neuropsychiatry, Neuropsychology, and Behavioral Neurology*, *7*, 51–56.
- Thigpen, C. H., & Cleckley, H. (1954). A case of multiple personality. *Journal of Abnormal and Social Psychology*, *49*, 135–151.
- Tsai, G. E., Condie, D., Wu, M. T., & Cheng, I. (1999). Functional magnetic resonance imaging of personality switches in a woman with dissociative disorders. *Harvard Review of Psychiatry*, *7*, 119–122.
- Van der Kolk, B. A. (1994). The body keeps the score: memory and the evolving psychobiology of posttraumatic stress. *Harvard Review of Psychiatry*, *1*, 253–265.
- Wegner, D. M., & Wheatley, T. (1999). Apparent mental causation: sources of the experience of will. *American Psychologist*, *54*, 480–492.
- Winkielman, P., & Schwarz, N. (2001). How pleasant was your childhood? Beliefs about memory shape inferences from experienced difficulty of recall. *Psychological Science*, *12*, 176–179.
- Winkielman, P., Schwarz, N., & Belli, R. F. (1998). The role of ease of retrieval and attribution in memory judgments: judging your memory as worse despite recalling more events. *Psychological Science*, *9*, 124–126.