in the ability to forget it. Disconfirming studies include ones on subjects with panic disorder (McNally et al. 1999), obsessive-compulsive disorder (Wilhelm et al. 1996), posttraumatic stress disorder associated with childhood sexual abuse (CSA; McNally 1998), depression (Power et al. 2000), and borderline personality disorder (Korfine & Hooley 2000). Even adults who report histories of having "repressed and recovered" their memories of CSA fail to exhibit the predicted superiority for forgetting trauma-related material (Geraerts et al. 2006; McNally et al. 2001; 2004; 2005). Merely because individuals are highly motivated to forget something does not mean that they will be able to do so. Indeed, attempts to push unwanted thoughts out of awareness often backfire, *enhancing* their accessibility (e.g., Beck et al. 2006; Shipherd & Beck 1999; Wegner 1994).

Erdelyi attempts to exonerate Freud from the charge of having fathered recovered memory therapy. His eagerness to do so is understandable; this therapeutic approach was the worst catastrophe to befall the mental health field since the lobotomy era. But in his plea for Freud's acquittal, Erdelyi misunderstands one key fact: It is not the *later* Freud of classical psychoanalysis who inspired the recovered memory fiasco; it is the *early* Freud (1896b/1962) of the seduction theory of hysteria who did so (Crews 1995, pp. 191–223). Nearly every feature of recovered memory therapy can be traced to Freud's early work. In his 1896 article on the "aetiology of hysteria," Freud asserted that repressed memories of childhood sexual abuse are the source of his patients' symptoms, and that these memories had to be recovered and emotionally processed for healing to occur. It is little wonder that the primary theorists of "massive repression" of incest memories (Herman & Schatzow 1987, p. 12) described Freud's (1896b/1962) article as "brilliant" (Herman, 1992, p. 13). Finally, contra Erdelyi, Freud's (1896b/1962) patients did not "recollect" sexual abuse memories; Freud interpreted their symptoms as indicating repressed memories of molestation, and he relentlessly tried to foist this interpretation on his patients, as Esterson (1993; 1998; 2001; 2002a; 2002b) has convincingly shown.

Uncritical admiration for Freud abounds in 2006, the 150th anniversary of his birth. Not only have his occasional remarks about the brain earned him praise for envisioning cognitive neuroscience, even psychotherapeutic approaches developed in direct opposition to psychoanalysis, such as cognitive therapy, have somehow been traced to his genius. Informed observers realize that these accolades are seldom warranted (for a review, see Crews 2006). Research on motivated forgetting can best proceed unencumbered by Freud's problematic legacy. Freud is dead. Let him rest in peace.

## Learning from repression: Emotional memory and emotional numbing

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**Abstract:** Erdelyi argues persuasively for his unified theory of repression. Beyond this, what can studying repression bring to our understanding of other aspects of emotional function? Here we consider ways in which work on repression might inform the study of, on one hand, emotional memory, and on the other, the emotional numbing seen in patients with chronic persistent depersonalization symptoms.

We commend Erdelyi on a lively and authoritative survey of the theoretical and experimental literature surrounding repression. His central thesis – that a single model of repression can encompass a range of effects that may appear contradictory when viewed through the prism of earlier models – is persuasively argued, and we will not seek to raise objections to it here. Rather we wish to explore two questions touched on by Erdelyi at different stages in his argument. The first concerns the interactions of emotion and memory – specifically, the effects of emotionality on memory for central and peripheral information (see target article, sect. 2). The second concerns the relevance of theories and studies of repression for the understanding of wider issues of normal and abnormal emotional function. In particular, we discuss abnormalities of emotional experience that characteristically occur in depersonalization disorder.

With regard to the effect of emotion on memory, Erdelyi states that "there is widespread consensus that emotionality enhances memory for *central* elements of stimuli but degrades memory for *peripheral* items" (sect. 3.2.1.1, para. 2). In fact, although the experimental psychology literature has invariably supported the first part of this formula (enhanced central item memory), there is a long history of conflicting results as regards the second part, with some studies finding that memory for peripheral, or contextual, material is also enhanced (for a review, see Burke et al. 1992). The key issue here is likely to be the degree of emotional arousal – as Erdelyi outlines, when central information is highly arousing, as in the case of "weapon focus," it is probable that attentional resources are captured to the point where processing of peripheral information suffers. However, if the central information is less overwhelmingly arousing, and thus less attention-capturing, the emotional enhancement of memory may involve contextual information, too. This is important, as it suggests that contextual information is handled differently depending on the degree of emotional arousal, and implies that different neural circuits are involved in the processing of central and peripheral material. In recent years a number of neuroimaging studies have attempted to address these issues at a neurocognitive level (see e.g., Maratos et al. 2001; Medford et al. 2005a; Smith et al. 2004) – although emphases and methods of these studies vary, it is notable that such studies have mostly examined the functional neuroanatomy of contextual recall that is either enhanced, or, alternatively, not significantly affected, by emotional context. In our laboratory, we have been able to repeatedly demonstrate enhanced contextual recall using a verbal memory paradigm, the effect being robust across various experimental conditions (Brierley et al., in press), while current neuroimaging data provide converging evidence for a specific role for left parahippocampal gyrus in the recall of contextual material encoded in an emotional setting (Medford et al. 2005a).

All this begs the question – what of repression? It seems likely that demonstration of a possible repression effect would require more arousing stimuli, such as that used in the Erdelyi and Appelbaum experiment (described in the target article, sect. 3.2.1.1) – however, as Erdelyi comments, diminished processing of peripheral material cannot be automatically presumed due to repression. Nevertheless, such a study would readily lend itself to adaptation for a functional neuroimaging setting, and could help provide a more complete picture of the functional neuroanatomy of memory–emotion interactions.

Our second point concerns the possibility of applying insights from the study of repression to clinical groups. We have a particular interest in depersonalization disorder (DPD), an unusual psychiatric condition that has been studied relatively little until recently (for an overview of the condition, see Baker et al. 2003; Medford et al. 2005b; and for two recent large case series, see Simeon et al. 2003). In this condition, patients report a pervasive, disturbing sense of unreality in their sense of themselves (depersonalization) and their surroundings (derealization). Very often this is accompanied by a loss or diminution of subjective emotional experience, particularly in emotional responses to other people or external events. A recent analysis of patient responses to a symptom rating scale identified



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emotional disturbance as a key symptom domain of the condition (Sierra et al. 2005). And an fMRI study in which patients with DPD viewed aversive images showed that patients lacked the normal neural response to emotional stimuli, while activation in right-sided ventral prefrontal cortex was seen in DPD patients viewing aversive images, but not in controls or patients with obsessive-compulsive disorder (Phillips et al. 2001). Interestingly, this same brain region has been identified as a key area in two studies in which normal controls were asked to suppress their emotional responses to aversive images (Ochsner et al. 2004; Ohira et al. 2006). If similar neural circuitry is involved in the dampening of emotional responses, irrespective of whether this process is voluntary or not, this provides an intriguing correlate to Erdelyi's suggestion that repression can be viewed as a single entity, regardless of whether it is conscious or unconscious. It is debatable whether a general reduction in emotional responsivity would fall under the heading of "repression," as there may be no specific memory or other material that is repressed, but it could nevertheless be argued that a general lessening of emotional experience represents a form of repression: a repression of experience rather than of knowledge. In any event, whatever terminology one chooses, it seems likely that the kind of "de-affectualization" seen in DPD has some connection with repression as discussed by Erdelyi, and might usefully be illuminated by the kind of theoretical analysis and experimental approaches outlined in his excellent article.

## The United States of Repression

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**Abstract:** Erdelyi's account of thought *suppression*, which he equates with the Freudian construct of *repression*, is that it is mostly successful, and that it undermines memory for the suppressed material. Erdelyi has neglected to consider evidence from two decades of research on suppression which renders both these claims invalid. Contrary to Erdelyi's thesis, suppression often enhances the accessibility of unwanted material.

As Freud's major interpreter to experimental psychology for the past several decades, Matthew Erdelyi has contributed a wealth of research on repression. He has certainly earned the right to suggest the shape of future theory and research on this topic, and in the target article, he makes a strong suggestion. His message in this unified theory of repression is that Freud often used the terms *repression* and *suppression* interchangeably (in that repression may be both conscious and unconscious), and that everyone is getting it all wrong by perpetuating a false distinction between these processes. Erdelyi may be right about Freud, but he is not right about the human mind. There are good reasons to retain the distinction, not the least of which is the well-established finding Erdelyi somehow fails to recognize – that suppression can often have ironic effects, enhancing the recurrence of unwanted thoughts rather than effectively eradicating them.

First off, trying to unite the terms suppression and repression makes little sense if there is a clear conceptual distinction between them (no matter what it was that Freud intended). The fact that these terms have now survived for years in the psychological lexicon suggests that they do capture a valuable distinction. After all, some mental processes occur unbidden, whereas others occur voluntarily; why shouldn't we celebrate this truth in the case of the process of not thinking? This partition was highlighted initially by studies that asked people to try consciously to suppress thoughts, and it is in the understanding and appreciation of this research that Erdelyi's unified theory fails most seriously.

Citing Wegner (1989), Erdelyi mentions the "white bear" findings – that people who try not to think about a white bear and are later allowed to think about it show a relative rebound of the thought. He intimates that the effect fails to replicate – by citing an unpublished dissertation by Gildston (1998) and a study by Anderson and Green (2001) that did not even test for the rebound effect. This review is so superficial as to be seriously misleading. No mention is made of the scores of studies showing the return of suppressed thoughts, both in post-suppression rebound and also during suppression under conditions of mental load (see reviews by Abramowitz et al. 2001; Beevers et al. 1999; Rassin 2005; Wegner 1989; Wenzlaff & Wegner 2000).

Erdelyi also neglects to mention the critical factor protecting mental control from its ironic effects – the availability of mental capacity (Wegner 1994). When capacity is compromised by cognitive load, the control falls below a baseline level and produces the opposite of the intended effect. Thus, a thought one is trying to suppress becomes more accessible under mental load. Moreover, this is not unique to thoughts, but in fact is the same process at work when people are burdened by competing cognitive demands as they try to relax (e.g., Wegner et al. 1997), concentrate (e.g., Wegner et al. 1993), sleep (e.g., Ansfield et al. 1996), avoid being prejudiced (e.g., Macrae et al. 1994), or ignore pain (e.g., Cioffi & Holloway 1993).

Erdelyi approvingly cites Freud's theory of the counter-will, apparently without realizing that it captures exactly these ironic effects. As Wegner (1994) notes in detail, the finding that unwanted thoughts surface when a person is under cognitive load follows nicely from Freud's (1892–1893/1966) description of counter-will: "The antithetic idea gains the upper hand as a result of general exhaustion" (p. 125). Whereas Freud goes on to attribute the depletion of mental capacity to sexual and aggressive conflicts, evidence from suppression research reveals that the mechanisms are less exotic (e.g., time pressures, stress, concurrent tasks, etc.).

Since suppressed thoughts return with relentless predictability, it may be tempting to attribute special psychological significance to them, perhaps even to see them, as Freud did, as the content of the deeper, disquieted self. However, what two decades of research have shown is that thoughts return relentlessly even when people are instructed to try not to think about the most mundane things such as white bears (Wegner et al. 1987), houses (Wegner & Erber 1992), rabbits (Clark et al. 1991), and vehicles (Lavy & van den Hout 1990).

Evidence for whether emotionally relevant thoughts are easier to suppress has been found in some studies (Kelly & Kahn 1994; Wegner & Gold 1995) but not in others (McNally & Ricciardi 1996; Salkovskis & Campbell 1994), and hence the research is inconclusive on this issue. However, in studies with clinical populations, evidence weighs heavily toward impaired suppression of emotionally relevant material. This directly contradicts Erdelyi's thesis. For example, Shipherd and Beck (1999) showed the inability to suppress rape-related thoughts in post-traumatic stress disorder (PTSD) patients, Harvey and Bryant (1998) showed the same effect for accident-related thoughts in survivors of motor vehicle accidents with acute stress disorder, and Conway et al. (1991) showed impaired suppression of negative thoughts in dysphoric individuals. Thus, Erdelyi's claim that suppression is mostly successful has not held up to empirical scrutiny.

One implication of Erdelyi's account of suppression is that it impairs memory for the suppressed material. Again, this claim has not been supported empirically. Several studies have shown instead that when suppression is relinquished or interrupted, instructions to suppress can lead to enhanced recall of the suppressed information. Because suppression enhances the accessibility of the target thought (e.g., Wegner & Erber 1992), if anything, the enhanced attention would be expected to improve memory for the information. Indeed, some studies



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