more recent problems have endured similar accusations (Loftus & Guyer 2002a; 2002b; Roediger & McDermott 1996). Eventually, when those scientists began to show that it was possible to implant memories for entirely false events, a few people in the clinical and legal community started listening. Every day brings a few more. Those who advocate a mechanism that represses and recovers memories should adhere to the same high standard. Listen to the science.

Reduced autobiographical memory specificity, avoidance, and repression

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Abstract: Recent empirical work indicates that reduced autobiographical memory specificity can act as an avoidant processing style. By truncating the memory search before specific elements of traumatic memories are accessed, one can ward off the affective impact of negative reminiscences. This avoidant processing style can be viewed as an instance of what Erdelyi describes as the "subtractive" class of repressive processes.

Erdelyi conceptualizes repression broadly as a class of operations that reduces the accessibility to consciousness of some target material. According to Erdelyi's "unified theory of repression," there are two ways in which this goal can be accomplished. The first consists of processes that add noise to the signal ("elaborative or additive processes"), examples of which are denial and rationalisation. The second are processes that lower the accessibility by degrading the signal ("inhibitory or subtractive processes"). Erdelyi discusses empirical work that supports both types of repression. However, an important series of studies, though missing from his overview, may be consistent with, and further elaborate, his conclusions. We refer here to recent work on reduced autobiographical memory specificity (for an overview, see Williams et al., in press), which provides a clear demonstration of a class of "subtractive processes."

Autobiographical memory specificity refers to the cognitive capacity of accessing memories of personally experienced past events in a specific way. This capacity is typically assessed using the Autobiographical Memory Test (AMT; Williams & Broadbent 1986). The AMT consists of the presentation of a series of cue words (e.g., happy, sad) for which participants are asked to respond, typically within 30 seconds, with a personal event that the word reminds them of. The event retrieved should be *specific*; something that happened at a particular place and time and lasted for a day or less. For instance, a specific response to the cue word "happy" would be "Last Friday evening when my daughter phoned me to say that she won a prize at school."

The ability to be specific in the retrieval of autobiographical information is of crucial importance for our day-to-day functioning. For example, it allows us to benefit from previous experiences in the effective pursuit of current goals (e.g., Goddard et al. 1996). In the context of the present discussion, however, it is important to note that there is clear evidence that reduced autobiographical memory specificity (1) can be observed in persons who experienced a history of trauma, and (2) can be functional in diminishing the accessibility of unpleasant/aversive memories.

During the last two decades, memory specificity has been studied in various populations. It has become increasingly clear that reduced memory specificity is particularly characteristic of two groups of persons: those suffering from major depression, and those who report a history of abuse or other traumatic adversities (Williams et al., in press). In spite of repeated prompting, both groups respond with significantly fewer specific memories to the cue words of the AMT, and produce more "overgeneral" memories. The latter are most often memories that refer to categories of events (e.g., "I feel happy whenever I visit my parents"), rather than to specific occurrences. At present, more than a dozen studies have confirmed the association between trauma and reduced specificity (Hermans et al. 2004). The findings range from emotional abuse (e.g., de Decker et al. 2003) and physical abuse (e.g., Hermans et al. 2004), to sexual abuse (e.g., Henderson et al. 2002; Kuyken & Brewin 1995).

An explanation for this association is that reduced memory specificity is a functional strategy that diminishes the accessibility to consciousness of trauma-related memories. By truncating the memory search before accessing specific representations, one can avoid the confrontation with sensory and perceptual fragments of an event that, if activated, might produce large and catastrophic increases in mood disturbance. As a result, a more "overgeneral" retrieval style might develop due to negative reinforcement (i.e., the non-confrontation with the emotionally arousing specificities of the trauma). This strategy will be adaptive only if it is not restricted to trauma-related memories. Because the associative pathways of human memory are often rather unpredictable, this avoidant strategy can be successful only if it is not selective and pertains to memory in general.

One type of evidence for the idea that reduced memory specificity can act as an avoidant coping style is correlational. Hermans et al. (2005) have demonstrated that the number of specific responses on the AMT correlates significantly with several measures of avoidant coping. The less specific, the more avoidant the participant. Similar results have been described by other authors (e.g., Kuyken & Brewin 1995).

Other evidence stems from recent experimental work. In a study that compared high- and low-specific participants, Raes et al. (2003) found that the degree of mood disturbance following the experimental manipulation of stress was significantly less in low-specific participants. These results illustrate the possible pay-off for people with a less specific retrieval style: They are less emotionally aroused by a negative personal experience. This finding was recently replicated (Raes et al. 2006, Experiment 1).

The whole of these findings strongly suggests that reduced autobiographical memory specificity can act as way to reduce the accessibility to consciousness of negatively valenced or traumatic memory traces. In this sense it can be regarded as a form of "repression" as defined by Erdelyi. Against this background, it is important to note that Raes et al. (2006, Experiment 1) have shown that reduced memory specificity correlates significantly with Mendolia's index of repression (Mendolia 2002), clearly indicating that the more a repressive coping style is used, the less specific autobiographical memories are retrieved. Similar results were obtained by Blagov and Singer (2004), who found a correlation between repressive defensiveness and memory specificity, with higher defensiveness being associated with fewer specific memories recalled (also see Dickson & Bates 2005).

In conclusion, we believe that the extensive literature on autobiographical memory specificity (at present more than 150 published manuscripts) is highly relevant to the discussion of the repression concept. In Erdelyi's distinction between additive and subtractive processes, reduced specificity can be placed within the latter category (in the sense of "eliminating thinking" about some material). Whether or not this form of avoidant coping is based on conscious processes, is a topic for further research. However, we do not exclude the possibility that it can be shaped by negative reinforcement without the need for conscious monitoring.

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