

Metacognitive Rehabilitation of Overgeneral Autobiographical Memory

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Autobiographical memory is the ability to remember past events from one's own life. Although personal memories have always been a topic of interest among nonspecialists, they also have been the subject of several interesting psychological studies. One reason these types of memories are interesting is that they are about the individual and his or her unique history. These memories also can tell us quite a lot about an individual's personality and concept of self.

The topic of autobiographical memory has begun to attract substantial research attention among experimental psychologists. Research has examined its nature and function (Rubin, 1996); its role in organizing one's sense of self (Conway & Pleydell-Pearce, 2000); and the aspects that are affected by neurological damage (Conway & Fthenaki, 2000; Rugg & Wilding, 2000). Interestingly, a particular recent line of research in autobiographical memory, with a clinically oriented focus, concentrates on that very aspect of specificity with which personal or autobiographical memories are retrieved. It has been widely established that depressed mood states and clinical depression, as well as range of other psychiatric disorders, are associated with a relative difficulty in accessing specific autobiographical information in response to emotion-related cue words on Autobiographical Memory Test (AMT). This phenomenon is termed as overgeneral memory which is closely associated with the psychopathology of emotion. The focus of this article is on the phenomena of overgeneral autobiographical memory, which has four sections. First section discusses the phenomena of overgeneral autobiographical memory and its relation with psychopathology of emotion. Second part describes the underlying mechanism of overgeneral autobiographical memory, especially role of reduced executive control in overgeneral memory. Third section talks about the need for the modification of overgeneral memory. Fourth section describes the role of metacognitive thinking/metacognitive regulation in enhancement of executive control, which can in turn facilitate the specificity of autobiographical memory.

Overgeneral memory and psychopathology of emotion

Overgenerality is a specific cognitive dysfunction to those emotional disorders that involve depression and with a history of trauma and abuse (Williams et al., 2007) because it does not occur in general anxiety disorder (Burke & Mathews, 1992), social phobia (Wenzel et al., 2002), or blood and spider fearful indi-

viduals (Wenzel et al., 2003), and it was not found in a mixed group of anxiety disorder patients (Wessel et al., 2001). Depressed individuals tend to generate more general memories of their past than nondepressed individuals. For example, in response to a word cue such as 'sad' a depressed person may respond, 'every Christmas' whereas an individual who is not depressed may respond, 'The day I discovered that my mother was diagnosed with cancer'. Such overgenerality appear to be more than simply a cognitive epiphenomenon of being depressed. For example, degree of generality independently predicts the future course of depression (Brittlebank et al., 1993). Other than depression, overgeneral memory function has also been observed in a variety of individuals who have been exposed to trauma. Kuyken and Brewin (1995) examined AMT performance in depressed women with and without a reported history of childhood abuse. Women with a history of abuse showed reduced autobiographical memory specificity relative to those women who had not been abused. Other studies examined overgeneral memory in people diagnosed with eating disorders who reported abusive parenting, and undergraduate students who reported childhood sexual abuse (Hermans et al., 2004).

Reduced executive control: An important mechanism underlying overgeneral autobiographical memory

Different mechanisms underlying overgeneral memory have been discussed (see Williams et al., 2007 for review). The focus of this article is on one of the major underlying mechanism of memory retrieval: *executive control*. This is of interest because it has been suggested that voluntary retrieval of specific autobiographical memory is assumed to be hierarchical (Conway & Pleydell-Pearce, 2000; Williams, 2004) beginning with the generation of general event material. This voluntarily search "mode" is thought to rely on central or executive processes (Conway & Pleydell-Pearce, 2000). Lack of central executive resources is thus expected to hinder the generation of specific autobiographical memories and would lead to the relative overproduction of overgeneral memories (Kuyken & Brewin, 1995). Resource allocation model of depression proposed that the profile of cognitive performance in depressed individuals could be broadly explained by the notion of reduced executive resources (Ellis & Ashbrook, 1988). Reduced executive control results in a failure to inhibit competing information. The result is a greater likelihood of retrieval being "hijacked" by task-irrelevant material. Overgeneral autobiographical memory may be function of difficulties with inhibition of distracters (Engle et al., 1995). A

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recent study has systematically examined the relationship between executive functions and autobiographical memory specificity and concluded that reduced executive control plays a key role in driving performance on the AMT. This indicates that these differences are an important element in accounting for the widely reported relationship between subclinical and clinical states and reduced autobiographical memory specificity on this task. In a series of experiments Dalgleish et al. (2007) demonstrated that the central problem in specific memory retrieval is a failure in the ability to inhibit interfering information. This produces capture errors and increased numbers of overgeneral memories on the AMT. A similar phenomenon results in poor performance on executive tasks where there is an increase in errors due to interference from irrelevant information. They found that levels of memory overgenerality correlated highly with levels of task errors on a range of executive paradigms with little or no relationship to autobiography, memory, or emotion while, in most cases, being unrelated to overall performance levels on these tasks. In particular, they were able to show that overgeneral errors correlated with tasks in which irrelevant material needed to be inhibited (the Emotional Stroop Test) and not with a task that merely requires sufficient executive capacity overall.

In addition, it has been suggested that individuals who have impairments in executive control utilize a different balance of automatic and controlled processing (Barrett et al., 2004). In effect, they may adopt an automatic processing mode as a way to optimize their performance on cognitively demanding tasks (Dalgleish et al., 2007). For example, it has been found that individuals who have less executive control, relied on automatic spreading activation for retrieval of category exemplars in a fluency task, whereas those higher in executive control used controlled attention to guide their search after a certain point in time (Rosen & Engle, 1997). Therefore, it is important to train the patients with less executive functions on adaptive or executive thinking or metacognitive thinking, so that it will enable them to inhibit impulsive behavior and facilitate change in core underlying pathological processes of overgeneral memory. By using a system, the patients can often concretely carry out the steps rather than simply acting without thinking in a systematic fashion.

Need for the modification of overgeneral memory

It has been suggested that some individuals strategically adopt an overgeneral retrieval style as a method for dealing with potentially emotional material (Williams et al., 2000). Although such overgeneral retrieval may thus appear to have an adaptive, affect regulation, function, it has also become clear that it has a

number of maladaptive effects such as problem solving (Evans et al., 1992; Goddard et al., 1996; Goddard et al., 1997; Raes et al., 2005; Scott et al., 2000); problems in imaging future events, with overgenerality for past events predicting nonspecificity in specifying future events (Williams et al., 1996); and delayed recovery from episodes of affective disorders and experience vagueness and a sense of hopelessness in imaging the future (Brittlebank et al., 1993; Dalgleish et al., 2001; Harvey et al., 1998; Peeters et al., 2002; Healy & Williams, 1999). In addition, an overgeneral memory phenomenon has been observed in patients who are not currently in an episode (Mackinger et al., 2000; Williams & Dritschel, 1988). It indicates that this phenomenon is not mood-dependent and acts as a future vulnerability to depression. For example, the relationship between low executive control and reduced AMT in individuals are also reported in individuals who are recovered from depression (Mackinger et al., 2000). Therefore, lack of executive control could be the risk factor for the onset of depression and it is also associated with the poor recovery from depression. In addition, there is a wealth of evidence which suggested that individuals recovered from depression chronically need to apply executive control to suppress, block, or gate negative self-related information (Wenzlaff & Wegner, 2000, for a review). If this memory deficit has such detrimental effects on functioning so it needs modification for better functioning by enhancing the executive control.

There is evidence to suggest that overgeneral autobiographical memory is modifiable. Kuyken and Dalgleish (1995) compared previously depressed to never-depressed individuals and found no difference between groups in their tendency to retrieve general memories, suggesting a return to autobiographical memory specificity upon recovery from an episode of depression. More recently, Watkins et al., (2000) showed that cognitive manipulation influences the recall of categorical memories in dysphoric patients. More specifically, a distraction manipulation produced significantly greater decreases in the proportion of memories retrieved that were categorical than a rumination manipulation. Another study investigated the modifiability of overgeneral memory, Williams et al., (2000) showed that overgenerality in memory could be reduced by treatment. Depressed patients in remission were randomly allocated to receive either treatment-as-usual or a program of treatment designed to reduce risk of relapse (mindfulness-based cognitive therapy, MBCT). Results demonstrated that patients in the MBCT group had an increased specificity of memory and a significant reduction in the number of categorical memories compared to patients in the treatment-as-usual group.

Role of metacognitive thinking/metacognitive regulation in enhancement of executive control: A proposed intervention for the overgeneral memory

This section presents a cognitive therapy techniques that utilizes the concept of metacognition. Metacognition refers to cognition applied to (i.e. thinking about how to think) may be defined as any knowledge or cognitive processes that is involved in the appraisal, control, and monitoring of thinking (Flavell, 1979). Metacognition is closely related to executive function, which involves the ability to monitor and control the information processing necessary to produce voluntary action. It is multifaceted and a basic distinction has been made between *metacognitive knowledge*, which is information that individuals have about their own thinking and about strategies that affect it, and *metacognitive regulation*, which are the strategies used to change the status of thinking. Metacognitive regulation coordinates cognition. These include both bottom-up processes called cognitive monitoring (e.g., error detection, source monitoring in memory retrieval) and top-down processes called cognitive control (e.g., conflict resolution, error correction, inhibitory control, planning, resource allocation) (Nelson & Narens, 1990; Reder & Schunn, 1996). It should be noted that both bottom-up processes such as source monitoring and top-down processes such as inhibitory control are the necessary factor for the retrieval of specific autobiographical memory. Research supports the assumption that metacognitive regulation improves executive control performance in a number of ways, including better use of attentional resources, better of existing strategies and a greater awareness of comprehension backgrounds.

In addition, an important aspect of metacognitive regulation is the ability to retrieve memories and monitor their reality (memory monitoring). After retrieving a certain candidate answer, subjects have to monitor whether that answer is likely to be right or wrong. In other words, subjects have to access whether or not the retrieved information is relevant to the episode they are trying to remember (Koriat & Goldsmith, 1998). Being able to successfully differentiate relevant from irrelevant memories is key to problem solving, planning, and other complex tasks. Furthermore, memory monitoring is critical for memory tasks in which a decision about volunteering or withholding an answer is required. This decision depends on, among other things, how certain the person is about the answer being correct. Lack of executive control results in failure to memory monitoring which in turn gives rise to false recognition, and source amnesia. Source amnesia is the inability to remember contextual information about the circumstances under which a particular fact was acquired. Source amnesia may involve an inability to remember the person who presented the information, the place in which the information was learned, and so forth. A recent study suggested that overgeneral autobiographical memory is also related to other memory dysfunction such as source memory deficit (Raes et al., 2006). Earlier, Ramponi et al. (2004) showed that a higher level of autobiographical memory specificity is related to the recollection of more contextual details in an episodic recognition task using a remember-know procedure. In line with these findings, Ramponi et al. (2004) suggested that overgeneral autobiographical memory “may be one facet of a wider deficit in recollecting specific

properties of past events” (Ramponi et al., 2004, p. 657). Therefore, it has been suggested that people with an overgeneral retrieval style for autobiographical memory would have more difficulty with making correct attributions about the specific origin, source, or context in which they acquired information (Raes et al., 2006). They concluded that overgeneral autobiographical memory forms part of a broader memory deficit in retrieving the specific details of the context in which a memory was acquired.

Metacognitive processes such as thinking about how to think and thinking about self regulation provides better executive control of cognitive processes which, in turn, improves attentional resources, promotes better use of existing strategies, and produces greater awareness and comprehension. They enable one to plan, monitor, and evaluate performance throughout the execution of a task. It is important to enhance the executive resources of patients with emotional disorder, to enable them to use controlled attention to guide their search after a certain point in time. In training executive and adaptive thinking it is important to use a series of steps or processes to guide a thinking strategy. Patients with disorders of executive function do not have the habit of thinking before acting because of lack of inhibitory control. Therefore, the necessary interventions are to teach or reinforce the patients with an executive disorder to think before acting, to think routinely and how to think in a systematic fashion (Marlowe, 2000). Metacognitive or executive thinking can increase executive control over processing, and patients can often correctly carry out the steps rather than simply acting without thinking in a systematic fashion.

In closing, this paper emphasizes use of metacognition, which is so intimately allied with executive control. Thus, I recommend using metacognitive thinking/metacognitive regulation to enhance executive control, the very domain thought to be most impaired in emotional disorders that involve depression and with a history of trauma and abuse. Enhancement of executive control may in turn help in accessing specific autobiographical memory. Future research should be geared towards the application of metacognitive rehabilitation for overgeneral autobiographical memory.

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