# Autobiographical memory specificity in response to verbal and pictorial cues in clinical depression

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## ARTICLE INFO

## ABSTRACT

*Background:* Depressed individuals have been consistently shown to exhibit problems in accessing specific memories of events from their past and instead tend to retrieve categorical summaries of events. The majority of studies examining autobiographical memory changes associated with psychopathology have tended to use word cues, but only one study to date has used images (with PTSD patients).
*Objective:* to determine if using images to cue autobiographical memories would reduce the memory specificity deficit exhibited by patients with depression in comparison to healthy controls.
*Methods:* Twenty-five clinically depressed patients and twenty-five healthy controls were assessed on two versions of the autobiographical memory test; cued with emotional words and images.
*Results:* Depressed patients retrieved significantly fewer specific memories, and a greater number of categorical, than did the controls. Controls retrieved a greater proportion of specific memories to images compared to words, whereas depressed patients retrieved a similar proportion of specific memories to both images and words.
*Limitations:* no information about the presence and severity of past trauma was collected.
*Conclusions:* results suggest that the overgeneral memory style in depression generalises from verbal to pictorial cues. This is important because retrieval to images may provide a more ecologically valid test of everyday memory experiences than word-cued retrieval..

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## 1. Introduction

Autobiographical memory (AM) refers to the recollection of events from one's past. These memories can vary in their level of specificity; specific memories refer to unique events and are sensory in nature (including the emotion associated with the event), whereas general memories are more abstract and conceptual, often referring to categories of events (e.g. we used to go walking on Sundays when I was younger). There is considerable evidence that depression is characterised by a marked deficit in the retrieval of specific autobiographical memories and a tendency to retrieve general categorical memories instead (see Williams et al., 2007 for a review). For example, in studies using the Autobiographical

Memory Test (AMT; Williams & Broadbent, 1986), a typical response from a depressed individual when cued with the word "party" might be "I always used to enjoy parties" instead of "I had a great time at Emily's party in February". This tendency to retrieve general descriptions of events or 'categorical' memories is referred to as over-general memory (OGM) and has also been observed in other clinical groups, most notably patients with trauma-related psychopathology (see Moore & Zoellner, 2007 and Williams et al., 2007 for reviews).

Studies using the traditional AMT have tended to use single words or short phrases to cue memories. However, this is likely to be quite different to how individuals access their memories during their everyday life. Schönfeld and Ehlers (2006) proposed that retrieval to image cues may be closer to everyday memory experiences than retrieval to word cues. Indeed, Rasmussen and Berntsen (2014) noted that when individuals access a personal memory they are able to 'see with their minds eye' the context in which the event happened, along with the people and objects that

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were present. The importance of visual imagery in the retrieval process was illustrated by Williams, Healy, and Ellis (1999), as they reported that highly imageable cues (e.g., library) led to faster and more specific retrieval than did less imageable cues (e.g., boredom). This finding has been replicated in several studies (Anderson, Dewhurst, & Nash, 2012; Rasmussen & Berntsen, 2014; Williams et al., 2006). Teasdale and Barnard (1993) proposed that externally viewed and internally generated images are processed by the same cognitive system, which suggests that pictorial cues should confer the same advantage as highly imageable words. In line with this notion, Schönfeld and Ehlers (2006) assessed participants with and without PTSD on two versions of the AMT (cued with words and images) and reported an overall specificity advantage for images over words. However, it should be noted that participants with PTSD still retrieved fewer specific memories than did participants without PTSD, regardless of the nature of the cue. Nevertheless, it would be interesting to establish if OGM in depression generalises to image cues and whether image-cued retrieval could override OGM in patients with depression. Therefore, that was the aim of the current study. We will now consider the processes underlying the retrieval of specific memories, and how these might be impaired in depression, before reflecting on how image cues might aid retrieval of specific memories in depressed participants.

According to hierarchical theories of autobiographical memory (AM) retrieval (e.g. Conway & Pleydell-Pearce, 2000), specific memories can be accessed via two routes. The 'direct' route is a 'bottom up' process whereby certain (internal or external) triggers automatically lead to spontaneous involuntary retrieval of an event memory. In contrast, the 'generative' retrieval route is a 'top down' process that involves a strategic search for a memory that matches current task demands. This process places significant demands on central executive resources (Conway & Pleydell-Pearce, 2000). Involuntary memories are retrieved more rapidly (around 2 s compared to around 10 s for generative retrieval) and tend to be more specific than voluntary memories (Rasmussen & Berntsen, 2011; Schlagman & Kvavilashvili, 2008; Watson, Berntsen, Kuyken, & Watkins, 2013). Depressed individuals exhibit reduced specificity during voluntary retrieval (Sumner, 2012; Williams et al., 2007) but not involuntary (Watson et al., 2013).

Williams and colleagues proposed a comprehensive model (CaR-FA-X) to account for the deficits in memory specificity observed in depression and trauma-related psychopathology (Williams et al., 2007). Capture and rumination (CaR) refers to the disruption of the memory search when resources are captured by ruminative processes (repetitive, negative self-focused thinking) that have been activated by self-referent conceptual information (e.g. depression-relevant word cues). Functional avoidance (FA) is a means of affect regulation whereby the retrieval of specific memories is strategically avoided by the individual in order to avoid the negative consequences of retrieving memories of unpleasant experiences. The final element of the model proposes that depressed and traumatised patients have reduced executive resources that can be utilised during the retrieval process (X). Sumner (2012) conducted an updated review of the literature and concluded that there was support for all elements of the CaR-FA-X model.

Based on Williams et al. (1999) and Schönfeld and Ehlers (2006), it would be expected that participants in the control group of the current study would retrieve a greater number of specific memories to images than words. However, whether image-based retrieval could override OGM in the depressed patients is unclear. With the CaR-FA-X model in mind, images might aid specificity in depressed patients by reducing the demands on the executive resources during generative retrieval. In line with this proposal, Williams et al. (1999) suggested that visual images provide a rich source of information about an event and thus provide an efficient summary of information that can be used for searching the memory system. Furthermore, Williams et al. (2006) conducted a study using a dual-task paradigm to deplete executive resources and demonstrated that retrieval to highly imageable words was unaffected by performing the concurrent task, whereas specificity to low imageable cues was reduced in the dual task condition. This finding was confirmed by Anderson et al. (2012). Given that executive deficits have been implicated in the OGM exhibited by depressed participants (Dalgleish et al., 2007), then, if image-based retrieval does reduce demands on this system, is likely to be particularly beneficial for depressed individuals' retrieval of voluntary memories.

Another way that pictorial cues might lead to greater memory specificity in depressed participants is via the 'direct' retrieval route, as images may be more likely than words to lead to involuntary retrieval of specific memories. In line with this notion, Anderson et al. (2012) interpreted their findings and those of Williams et al. (1999; 2006) as evidence that image-based mental representations facilitate retrieval via the direct route. Furthermore, Berntsen (1998) noted that involuntary memories are almost invariably triggered by an external visual or auditory cue that relates directly to the central features of the retrieved memory, which also suggests that images might be more likely than words to lead to involuntary retrieval. As evidence suggests that direct retrieval is not affected by depression (Watson et al., 2013), most likely because it does not require executive resources, then it would be expected that depressed patients would be more specific when cued with images compared to words.

In contrast to the above, based on the functional avoidance component of the CaR-FA-X model, it is plausible that images might actually lead to reduced AM specificity in depression. A recent review by Holmes and Mathews (2010) suggested that, in comparison to words, images may be more likely to lead to direct activation of the emotional systems, which in turn should lead to increased attempts on the part of the participants to control access to specific events in order to regulate their affect and a concomitant increase in categorical retrieval.

## 1.1. Overview and predictions

The aim of the current study was to determine if overgeneral memory in depression generalised to retrieval from image cues. We also aimed to determine if images would override the OGM effect in depressed patients. To this end, clinically depressed patients and healthy controls were assessed on two versions of the AMT (cued with words and images). We predicted that (1) depressed patients would retrieve significantly fewer specific memories, and a greater number of categorical, than would healthy controls. (2) Images would lead to enhanced retrieval of specific memories (faster retrieval times and a greater number of specific memories) in comparison to word cues. (3) We expected that controls would exhibit faster and more specific retrieval to images than words. (4) If images reduce demand on executive resources (and/or facilitated direct access) then depressed individuals should exhibit faster retrieval times and greater specificity to images than words. However, if images lead to greater emotional activation than words, then depressed individuals should exhibit slower retrieval times and greater OGM to images than words.

## 2. Method

### 2.1. Participants

Twenty-five psychiatric outpatients (15 females, 10 males) with a diagnosis of a current major depressive episode (ICD-10; World