

Digging deep into depression

THINK of a personal quality that is important to you, perhaps one that defines you in some way. Now try to think of a specific memory, a particular time and place that demonstrates this quality. Elaborate the memory – sharpen the image. What colours, smells, feelings and textures are associated with it?

One of the most extraordinary features of the human mind is our ability to reconstruct past events in this way to provide a sense of ourselves as continuous over time (Tulving, 2002). It's a complex reconstructive process, and Neisser (1967) compared autobiographical remembering to a palaeontologist reconstructing dinosaurs: 'Out of a few bone chips we remember the past' (p.285). Typically, autobiographical memories are of particular events, comprise a narrative (who, what, when and where) and include vivid associated imagery. However, people who suffer from depression have difficulty retrieving specific memories – they build up summarised schematics instead. To take Neisser's palaeontology analogy, their fossils tend not to spring to life to create an image of a specific triceratops at a water-hole on a hot summer day, instead preferring to create a schematised image of a dinosaur.

Cognitive theories of emotion propose that it is how we process the inputs that become moment-to-moment experience that is all important. Many people who suffer depression have not only experienced considerable adversity, but their depression amplifies these



WILLEM KUYKEN on the phenomenon of *overgeneralised autobiographical memory in depression.*

experiences through rehearsal and elaboration. They are less likely to generate the specific autobiographical memories that are normally used to solve problems, pursue goals, provide a self- and other-concept, and regulate emotions. Instead, they are disengaged from the richness of their pasts, both good and bad. They become a disembodied collection of numbed feelings and depressive thinking. A first-person account from someone who has suffered depression captures this well: 'Under the duvet, an internal ice age had set in. I had permafrost around my heart' (Lewis, 2002, p.1). Understanding autobiographical memory in people like Sherry (see box) who suffer depression will enable us to understand this paradoxical depressive process and improve our existing evidence-based therapies for depression by providing specific ways of helping people break these self-defeating patterns.

So how does modern research view autobiographical memory, and why should it differ in depression?

Theories of autobiographical memory

Contemporary theories of autobiographical memory have a number of main propositions in common (for a very readable review, see Schacter, 1996).

Firstly, the self-concept and autobiographical memory are in constant dynamic interplay. That is to say, the person's working goals influence encoding,

storage and retrieval of autobiographical memory. A classic illustration of this is Howard Dean's detailed testimony of conversations he had with US President Richard Nixon during the Watergate scandal. When the tapes of those conversations were released it became clear that the tapes were at odds with Dean's testimony because Dean's memory was shaped by his personal goals (Neisser, 1982). He tended to overstate his own role in the scandal and cast it in a more positive light than the tapes. This type of memory reconstruction is not an aberrant process, but a normal feature of autobiographical memory retrieval.

Secondly, autobiographical memory is broadly hierarchically organised into at least three levels (Conway & Pleydell-Pearce, 2000): lifetime episodes (e.g. 'when I was at primary school'); categories of summarised events (e.g. 'attending funerals') and event-specific knowledge (e.g. 'the day my friend humiliated me at her father's funeral'). Retrieval of a specific autobiographical memory involves using higher levels of the hierarchy to reconstruct the sensory, perceptual and semantic information stored as event specific knowledge.

Finally, retrieval can be either strategic or involuntary. Strategic retrieval deploys considerable cognitive resources as memories are reconstructed in relation to current goals, as relevant information is activated and irrelevant information is inhibited. Involuntary memories are

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bottom-up, cued by external or internal cues (e.g. a sensory cue like a smell); include intrusive traumatic memories; require few cognitive resources; and override the content of current awareness. In strategic retrieval this process takes place under the auspices of a supervisory executive system, while involuntary memories are activated through a more powerfully automatic and associative process.

Memory in depression

While studying the idea that people diagnosed with depression preferentially access negative memories, Mark Williams discovered that people who suffer depression often have difficulty producing specific memories (Williams, 1996). They will recall 'arguments with friends', rather than 'the argument I had with my best friend last Friday'. A recent meta-analysis of 14 studies suggests that this is a robust finding (van Vreeswijk & de Wilde, 2004).

The problem appears to be primarily specific to people who suffer mood difficulties, although overgeneral memory functioning has also been observed in a variety of samples exposed to trauma, such as accidents, combat and childhood abuse (Hermans *et al.*, 2004; Kuyken & Brewin, 1995). It is noteworthy that in clinical samples the presence of negative

psychological reactions to trauma – most notably post-traumatic stress symptoms (intrusions and avoidance) – are associated with greater overgeneral memory retrieval. Tentative evidence points to overgeneral memory as a trait-like phenomenon that persists between depressive episodes (e.g. Mackinger *et al.*, 2000). This trait is associated with impaired social problem solving, impaired ability to use memories to regulate feelings, and poor outcomes; but it can be modified through psychological interventions, such as mindfulness-based cognitive therapy (Williams *et al.*, 2000).

Explanations

Several explanations for the overgeneralised autobiographical memory effect in depression have been proposed. I have tried to summarise the main current accounts into four broad hypotheses.

The limited cognitive resource

hypothesis This proposes that depression and PTSD are typically characterised by depleted cognitive resources, especially in executive functioning that 'supervises' the retrieval process (Conway & Pleydell-Pearce, 2000). Depression is associated with a range of cognitive deficits in executive functioning. Moreover, people who have experienced trauma and

experience ongoing PTSD symptoms are likely to be preoccupied with inhibiting these upsetting intrusive images and thoughts. This depletion of cognitive resources in depression could limit resources required for strategic autobiographical memory retrieval, because the highly effortful final stage of retrieval – pulling together sensory and perceptual information into a coherent specific memory – requires too many resources. For Sherry, her mood difficulties tended to be associated with significant levels of generalised anxiety; she would become preoccupied with a stream of ruminative thoughts and images. The rumination took up cognitive resources, and undermined problem solving and genuine processing of emotions.

This hypothesis accounts for the (inconsistent) findings that trauma symptoms (intrusive thoughts and memories) exacerbate overgeneral memory retrieval. It is also consistent with the finding that overgeneral memory retrieval is seen in groups where executive function is impaired (some older adults and following frontal brain disease; see Levine, 2004). However, not all studies have shown a relationship between executive functioning and overgeneral memory in people diagnosed with depression.

The availability heuristic hypothesis

This stipulates that current frames of reference make related information more available and will therefore make retrieval of related information more likely (Kahneman, 2003). As outlined above, the current frame of reference is likely to be active personal goals linked to the self-concept. In depression, general themes created in depressive thinking (e.g. the self as defective or unlovable) prime related overgeneral memories, both in terms of level of representation (overgeneralised) and content (congruent with depressive schema).

For example, in our case example Sherry tended to withdraw from life when she noticed the first signs of depression because she was convinced that 'nothing helps'. This primed overgeneralised summary memories like 'None of the things I have tried has worked'. Only with considerable support would she retrieve a specific memory at odds with the overgeneralised level of representation and the goal of finding stable and global evidence of helplessness, like 'Last

SHERRY'S AUTOBIOGRAPHICAL MEMORIES

Sherry, a 42-year-old married personnel manager, had suffered repeated episodes of quite severe depression since she was 16. Her most recent episode followed an argument with her brother about their parents' finances.

Despite early family hardship, Sherry had done well in her career; was in a stable marriage of 18 years and had two teenage children who were doing well. But Sherry had come to see herself as fundamentally 'flawed,' and said 'I have made terrible mistakes in the past'. Sherry had learned to feel overly responsible for others' problems and would experience feelings of guilt and shame as she repeatedly rehearsed her perceived failings.

When this was explored in therapy she described a specific incident where she had not written a note of condolence to a friend whose father had died. At the funeral, her friend 'humiliated' her in front of others by rebuking her. Instead of seeing this as a result of the high emotions of such a difficult occasion she saw it as absolute proof that she was flawed. She tended to avoid challenging situations out of a fear that she would make a mistake.

Sherry was prone to worry, and once locked in to a depressive mode of thinking would feel quite severely disabled in her ability to be proactive in either her work or her family. The negative self-focus would disable her sense of competence and any number of slights, disappointments, failures and grievances would intrude.

Sherry's memory of being rebuked was seen by her as proof that she was flawed

Saturday I visited my dad and we went out for a long walk and I seemed to forget all about my troubles’.

Specific memories may even be actively excluded at a late stage of memory retrieval because they are inconsistent with the overgeneralised current working goal. In many ways overgeneral memories (e.g. ‘Nothing I have tried works’) are like fuel to the fire of depressive thinking (e.g. ‘I am flawed’). This explanation is consistent with several recent experimental studies showing that when people who are depressed change from an evaluative-conceptual to a more experiential mode of processing, they are able to generate more specific memories (Watkins & Teasdale, 2001). It also helps explain why the phenomenon is observable for both positively and negatively valenced emotional memories and both trivial and important memories.

The cognitive avoidance hypothesis

This hypothesis (Williams, 1996) suggests that during retrieval the search process from semantic associates to categorical summary memories to specific memories locks at the overgeneral categorical level as a form of avoidance of the emotion associated with event-specific knowledge. It is argued that this strategy is over-learned in the context of early adversity because avoiding upsetting emotion is negatively reinforcing. At the reconstructive stage, when summary information (e.g. ‘mistakes at work’) comes into awareness, the emotion associated with sensory and perceptual event-specific information (e.g. shame) signals the executive system to inhibit event-specific knowledge and truncate the memory retrieval process.

This hypothesis is consistent with the

Some people collapse their memories into pockets of summarised information

finding that overgeneral memory is observed among people with a history of trauma and subsequent intrusive memories. Essentially, people who experience depression that is characterised by high levels of PTSD symptoms learn to collapse their autobiographical memories into manageable pockets of summarised information (in Sherry’s case ‘I have made terrible mistakes’). This hypothesis is also consistent with findings that PTSD symptoms are common in depression (Kuyken & Brewin, 1994) and that overgeneral memory is exacerbated by the presence of PTSD symptoms (Kuyken & Brewin, 1995). More recently, prospective studies examining the interaction of stress and overgeneral memory retrieval style have shown that overgeneral memory might serve to protect the person in the short term (Raes *et al.*, 2003) but in the medium term is associated with the development of depressive symptoms (Gibbs & Rude, 2004).

The functional brain impairment hypothesis

This argues that prolonged stress during crucial developmental periods may limit the functional capacity of the brain to perform complex modular functions. Prolonged stress is common in the history of people with recurrent depression, especially in the childhood and adolescence of early onset recurrent depression. There is (conflicting) evidence that prolonged stress is associated with reduced hippocampal volume, a structure implicated in strategic memory retrieval (Cordon *et al.*, 2004). This explanation is consistent with the relative stability of the phenomenon and its pervasiveness across

positive and negative memories and findings of overgeneral memory in people with brain injury, but is less easy to reconcile with findings showing that it can be modified through brief experimental manipulations. In a recent study, administration of cortisol was associated with reductions in specificity of autobiographical memory, suggesting support for a functional brain impairment hypothesis (Buss *et al.*, 2004).

These four hypotheses are not mutually exclusive, indeed they are likely to be self-reinforcing: rumination might lead to reduced resources and overgeneral memory; prolonged early adversity could lead to elevated levels of cortisol, structural brain changes and consequently to fewer cognitive resources for autobiographical memory retrieval. Arguably, the functional brain impairment, cognitive avoidance hypothesis and the limited cognitive resource hypothesis are all restatements of the same basic idea – namely, functionally impaired higher-order cognitive processing. This position is consistent with the weak support currently available for each hypothesis. It is premature to attempt a theoretical synthesis of mood and memory until these hypotheses are systematically examined.

Research challenges

The first research challenge facing this area is to address the explanations outlined above; unpacking in which circumstances and at which level each hypothesis confers explanatory power. Experimental designs that can manipulate schema accessibility, available executive resources and emotionality will likely distinguish the accessibility, cognitive avoidance and breakdown of inhibitory control hypotheses.

A second research challenge is the neuroscience of encoding, storage and retrieval of autobiographical memory. Autobiographical memory almost certainly emerges from the coordination of multiple cortical and subcortical brain systems. It is exciting to consider the possibility of unpacking the pathways involved in autobiographical memory associated with different brain structures, and the way in which depression and trauma might affect these pathways (e.g. Conway *et al.*, 2001).

We know little about the broader characteristics of autobiographical memories among people who suffer

DISCUSS AND DEBATE

- What are the possible explanations for the overgeneral memory phenomenon in depression?
 - What functions (if any) does overgeneralised autobiographical memory serve?
 - What sorts of therapeutic interventions might help someone to be flexible in retrieving specific and categoric memories?
 - What impact might trauma have on autobiographical memory retrieval?
- Have your say on these or other issues this article raises. E-mail Letters on psychologist@bps.org.uk or contribute to our forum via www.thepsychologist.org.uk.*

depression. What is the qualitative content of autobiographical memories on dimensions such as affectivity, personal saliency, field versus observer perspective, recency, coherence...? There is good reason to suppose that someone who engages in extensive overgeneralised depressive memories would become unable to differentiate what was actually experienced from what was thought about the experience, a well-researched autobiographical phenomenon known as source-monitoring errors (Johnson *et al.*, 1993). Dirk Hermans, Filip Raes and colleagues have started to examine how overgeneral memory is related to rumination and source monitoring in depression and these data are likely to move our understanding on substantially. A recent study suggests that when compared with never-depressed controls, the autobiographical memories of depressed adolescents show an exacerbated recency effect and are more likely to be recalled from an observer perspective (e.g. seeing the memory from a bird's eye perspective), which suggests differences in the scope and type of memories available to depressed adolescents (Kuyken & Howell, 2006). Phenomena like source monitoring, recency effects, field versus observer perspective in autobiographical memory are only just beginning to be studied in people diagnosed with depression. Discovering whether the extensive literature on 'normal' autobiographical memory is replicable in people who are vulnerable to depression will substantially develop our understanding of depression.

Finally, the established functions of autobiographical memory in the general population need extending to depression, drawing on the parallel literatures in cognitive and social psychology. In what ways does autobiographical memory support goal-directed behaviour and the elaboration of the self-concept in people who suffer depression?

Towards practice

Together, these lines of research will enable a theoretical synthesis of mood and memory. From a clinical perspective, the pressing question is how can we enhance existing effective psychological treatments by explicitly developing protocols for addressing the autobiographical memory paradox? It is likely that overgeneralised memory is functional in some contexts and dysfunctional in others. How can we help

people process emotional experiences and use their autobiographical experiences (good and bad) in a way that enhances their resilience? Returning to our case example of Sherry, how can she process her 'humiliating' memory of her friend's criticism, and how can she bring to mind memories to help her regulate her emotions and enhance her self-esteem when her 'self-as-flawed' mode is activated? A participant in a recent study conducted in the Mood Disorders Centre in Exeter said of her experience of cognitive behaviour therapy: 'I was expecting a lot more talking, less of, you know, what exactly did happen at this point and how did you feel ...um...it was very precise ...which is what I needed really rather than having this glob of experiences floating around in my head and knowing that they made me feel bad. I needed (my thinking) to be pinned down.'

Digging deep

Being readily able to bring to mind specific, vivid and well elaborated memories confers many adaptive advantages, but people who suffer depression preferentially retrieve overgeneral memories. Overgeneral memory retrieval is very likely to be implicated in difficulties with problem solving and in the course of depression. Overgeneral memory may be a function of the accessibility of overgeneralised information in depressive frames of mind, an over-learned cognitive avoidance strategy, depleted general cognitive resources required in retrieval or an artefact of brain impairments. We do not yet have a compelling theoretical synthesis that can explain this intriguing, paradoxical and important phenomenon in depression.

But we will not move closer to understanding autobiographical memory in depression if we hug intellectual shorelines. Genuine increases in understanding require the synthesis of cognitive, clinical, developmental, neuroscience and social psychological knowledge and research. Similarly, developing our interventions for depression requires us to begin thoughtfully and systematically to apply what we know about depression to our therapeutic approaches to intervention.

■ *Willem Kuyken is at the Mood Disorders Centre at the University of Exeter. E-mail: w.kuyken@exeter.ac.uk.*

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