Autobiographical memory in depression’s pathology and treatment

Mark Greener

Ninety years ago an Agatha Christie mystery gripped the nation – and this time it wasn’t fictional. On the evening of 3 December 1926, Christie disappeared from her home. She had recently endured considerable stress. Her mother had died a few months before and her husband planned to spend the weekend with Nancy Neele, his mistress. Eleven days later, after a nationwide search, Christie was found living in a hotel as Teresa Neele. Many psychologists believe that, for a few days, Christie entered a dissociative fugue state.¹

A person with dissociative fugue suddenly loses all autobiographical memories and, as a result, their sense of personal identity. They may wander – Christie went from Berkshire to Harrogate – and do not recall events during the fugue.¹ Dissociative fugues offer a rare but dramatic example of the fragility of autobiographical memory. But several much more common conditions may also involve alterations in autobiographical memory including post-traumatic stress disorder,² Alzheimer’s disease,³ bulimia nervosa,⁴ schizophrenia,² chronic pain² and, as discussed in this article, depression.²

Autobiographical memory’s importance

Autobiographical memory is an example of long-term declarative memory² – the form of memory that stores facts, ideas and events that we consciously recall as verbal propositions or visual images.¹ Declarative memory includes asemantic (knowledge of objects, concepts and facts) and episodic recall, which covers spatial landmarks and temporal milestones.¹ In the 1980s, psychologists starting describing storage of personal experiences as ‘autobiographical memory’.⁵ Episodic tends to dominate semantic recall in autobiographical memory.²

Most people can recall little before the age of three or four years. Most first autobiographical memories recall frightening or painful experiences, such as being left alone, getting lost, an operation or a fall. As this suggests, autobiographical memory aids self-preservation.⁵ We remember, and so can avoid, dangerous, painful and frightening events. Autobiographical memory also stabilises self-identity, and helps us plan, actualise schemes and solve problems by recalling similar events.²

In the short-term, psychologically healthy people are more likely to recall pleasant than unpleasant autobiographical memories. This propensity for the pleasant declines over time. Indeed, autobiographical memory is especially good at recording humiliations, unpleasant times when ‘you were your own worst enemy’ and other affronts that are hard to reconcile with our self-image. The unpleasant memories of affronts may help ‘ensure that our self-image does not stray too far from the reality’.⁵

Autobiographical memory in depression

Against this background, the psychological concept of ‘overgeneral autobiographical memory’ (OAM) underscores the distinct nature of such recollections in people with depressive disorders. Indeed, OAM seems to be a risk factor for recurrent depression as well as a poor prognostic indicator. The concept distinguishes specific and overgeneralised memories.

Specific autobiographical memories refer to the recollection of events at a specific time and place that did not last longer than 24 hours. Overgeneral memories refer to recall of events that are repeated (such as attending a weekly religious observance) or last longer than a day (such as a holiday). Depressed patients generally collect overgeneral rather than specific memories.² So, when asked to recall a specific happy event, a depressed person is more likely to say ‘last year’s holiday in Dorset’ rather than ‘my wedding’. Depressed people even experience difficulties recalling specific details of personally significant events.²

For instance, a meta-analysis identified 22 studies encompassing 626 patients and 517 controls assessing autobiographical memory in people with depression. Patients with depressive disorders reported less specific and more overgeneral autobiographical memories, and recalled more slowly following a cue from the researcher. The effect on overgeneral memory correlated with self-reported depression score.⁶

Changes in brain regions

Several brain areas seem to be involved in autobiographical memory, including the medial temporal lobes, hippocampus and the prefrontal area. Dysfunctions or neuroanatomical changes to
many regions that modulate autobiographical memory also seem to contribute to depression and responses to stress.²

For example, numerous studies link reductions in the volume of the hippocampus, which is involved in memory and learning,² with depression. Moreover, smaller hippocampi may predispose or increase vulnerability to major depression and seem to be associated with a greater number of episodes and poorer responses to antidepressants.⁷ Taylor and colleagues followed 92 depressed subjects and 70 controls without a history of depression, who were aged at least 60 years, for two years. People with depression exhibited greater hippocampal atrophy than controls. In 152 depressed older people, smaller hippocampal volumes were associated with greater depression severity.⁷

In addition, the hippocampus and parahippocampal cortex seem to be less active when depressed patients recall autobiographical memories compared with healthy controls. Moreover, the volume of the left hippocampus seems to be inversely correlated with recollection of specific autobiographical memories in people with depression as well as in healthy subjects from families of people with recurrent depressive disorder. OAM in adolescence increases the risk of depression when a person becomes an adult.²

Several other studies suggest that people with depression show structural changes to brain regions, including some of those involved in autobiographical memory. For instance, Canadian researchers imaged 16 females (aged 16–21 years) and three males (aged 18 years) with their first episode of early-onset major depression, and 25 female and one male controls of the same age range. Volumes of the left parahippocampal gyrus and the left superior temporal gyrus were significantly greater in depressed people compared with controls.⁸

In addition, differences in the shape of several structures – particularly the left hippocampus, and the left and right parahippocampal gyri – emerged between depressed patients and controls. The pose (size, anatomical position and orientation) of, in particular, the left and right putamina, right hippocampus, and the left and right inferior temporal gyri also differed between patients with depression and controls. Pose measures correlated with Beck Depression Inventory score in patients and controls. The patients were experiencing their first episodes of major depression. So the changes are unlikely to result from antidepressants.⁸

Furthermore, deterioration of executive functions mediated by the frontal lobes may contribute to the intrusive ruminations and OAM endured by people with depression. In people with recurrent depression, frontal dysfunction may undermine their ability to inhibit unpleasant recollections and thought as well as impairing working memory, verbal fluency and cognitive elasticity. More specifically, OAM in people with depression may arise from deterioration in the frontal functions that inhibit overgeneral memories.²

Addressing problems with autobiographical memory
The relationship between autobiographical memory and recurrent depression suggests that patients might benefit from cognitive remediation:² a range of techniques including ‘drill-and-practice’ and compensatory strategy learning that are delivered by a therapist or using a computer during programmes varying in length and intensity.⁹ The Neuropsychological and Educational Approach to Remediation (NEAR), for example, uses drill-and-practice and compensatory approaches, facilitated by a therapist based on principles such as errorless learning, positive reinforcement and shaping.⁹

Cognitive remediation seems to improve outcomes in depression, schizophrenia, bipolar disease, anorexia, OCD and substance abuse. Lee et al. for example, assessed NEAR in 55 patients (mean age 22.8 years) with their first episode of major depression or psychosis. Therapists delivered NEAR during once-weekly two-hour sessions for 10 weeks. Fourteen patients with depression and 22 with psychosis completed the study. Cognitive remediation improved immediate learning and memory, and psychosocial functioning. Improved memory seemed to mediate the functional gains.⁹ Given the intimate relationship between dysfunctions in autobiographical memory and depression, and the limitations of antidepressants, cognitive remediation seems likely to offer new hope.

Mark Greener is a freelance medical writer.

References