

Editorial

Remembering the self in schizophrenia†

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**Summary**

Autobiographical memories are a key component of our identity. Here, in the light of Cuervo-Lombard and colleagues' paper in this issue, we review impairments in autobiographical memory in schizophrenia and the association between autobiographical memory and outcome in the disorder. We also discuss whether these

deficits are specific to schizophrenia and a possible link with traumatic events.

Declaration of interest

None.

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Cognitive impairment in schizophrenia has long been described across multiple domains but links with quality of life and functional outcomes have only recently been established. People with schizophrenia have been repeatedly found to have generalised intellectual impairments but there may be a more particular deficit in episodic memory.¹ Tasks used to study episodic memory vary considerably. They range from encoding new information to recalling personally significant events from many years ago, although the term episodic memory is generally used for any task that involves an appreciation of one's ongoing, personal, life experience. In this month's *British Journal of Psychiatry*, Cuervo-Lombard *et al*² have used autobiographical memory, a particular type of episodic memory, to evaluate further the nature of memory problems in schizophrenia. Using functional magnetic resonance imaging, they examined autobiographical memories of similar phenomenology and compared the brain activations between patients and controls to investigate the disturbances in brain function that underlie the well-demonstrated difficulties recalling autobiographical memories in schizophrenia.

Autobiographical memory and identity

Autobiographical memories are critical for our sense of who we are. Memories of our own past allow us to 'mentally time travel' and provide a basis from which to plan for the future.³ Autobiographical memories contain information about what the self was doing at a specific time and place in the past, and are used by people to describe and define their identity. The autobiographical memory task used in Cuervo-Lombard *et al*² required participants to read cue words (for example cat) not shown to them in advance and then recall an autobiographical memory related to that specific word. This task involves initial associations to the cue word and a subsequent search through different memories to select the most appropriate one. This selection process is thought to require activity in cognitive control areas of the brain, as memories are sorted through, selected or discarded based on their appropriateness to the task, and has been consistently found to

be impaired in schizophrenia.⁴ In general, this process activates a core, left-biased network in the brain encompassing left lateral and medial prefrontal activations, anterior cingulate, medial temporal lobe, temporal-parietal lobe junction/angular gyrus and the right cerebellum.³

Imaging autobiographical memory in schizophrenia

Cuervo-Lombard *et al*² carefully controlled for the phenomenological qualities of the autobiographical memories in the scanner and their results largely reflect autobiographical memory selection and retrieval. The researchers selected for intact autobiographical memory performance in the patient group and the two groups did not differ on current verbal IQ. Compared with controls, patients showed reductions in activation across the regions that have been described as the core autobiographical memory network.³ Using a whole brain analysis, reduced activations were found in the left ventral tegmental area, right cerebellum and bilateral caudate nuclei. The authors suggest that this reflects a deficit in performing goal-related memory searches. However, autobiographical memory performance was the same in both groups. In functional imaging studies this pattern of findings is normally interpreted as suggesting the presence of a successful compensatory strategy overcoming impairments in the relevant neural pathways.

A fascinating finding in keeping with this interpretation was evident in the caudate nuclei. There was an opposite effect of increasing caudate activation in the two groups: better performance (greater time, place and detail in the memory) in controls was associated with less activation in the caudate, whereas reduced activations were associated with poorer performance in patients. All the putative circuits that are involved in autobiographical memory retrieval have both functional and anatomical connections to the caudate, and at least five different brain networks have been shown to activate the caudate, including cognitive, emotional and action/perception circuits.⁵ This makes it difficult to draw firm conclusions about the nature of this compensation, although the associated reduced activation in the dopamine rich, ventral tegmental area may offer a clue. Network-based analysis approaches such as dynamic causal modelling offer a method for future evaluation of how this subcortical differential effect relates to wider cortical activations, and which specific functional circuits are implicated.

Autobiographical memory in schizophrenia and other disorders

People with schizophrenia have well-described difficulties with retrieving autobiographical memories. They describe fewer and

†See pp. 473–480, this issue.

less specific autobiographical memories, and do not show the usual oversampling of autobiographical memories from young adulthood.⁶ Difficulties in recalling autobiographical memories have been linked to the acute symptoms of schizophrenia. Indeed, an underlying reduction in the ability to ascribe self *v.* other intentions could underlie both some psychotic symptoms and poorer autobiographical memory performance – for example, because the personal or autothetic nature of an experience is not as effectively bound to the knowledge of the event happening. This could lead to both the experience that the event has come from an external source and to poorer autobiographical memory performance.⁷

On the other hand, poor performance in recalling autobiographical memories is not specific to schizophrenia. More emotive events are generally more easily remembered⁸ but people with a history of experiencing traumatic events describe autobiographical memories with lower contextual detail, time and place information. This pattern has been reported in a number of other conditions, including schizophrenia, post-traumatic stress disorder, obsessive-compulsive disorder and depression. People with schizophrenia report having experienced higher levels of trauma both before acute symptoms and after the development of the illness,⁹ and an association between traumatic memories, negative symptoms and autobiographical memory performance in schizophrenia has been reported.⁶ It has been suggested that a ‘sealing over’ strategy limits the impact that these potentially intrusive, difficult memories have on wider functioning⁶ and the effort of suppressing unwanted or distressing memories has also been associated with wider cognitive impairments. This suggests that autobiographical memory deficits following the stressor(s) that may have predisposed or precipitated the illness, and possibly even the trauma of an acute psychosis, may contribute to the deficits seen in schizophrenia.

Clinical implications and future work

How do these findings regarding autobiographical memory inform our clinical understanding of schizophrenia? Difficulties in autobiographical memory performance have been linked to poor functional outcome⁶ and to suicide in schizophrenia.² This suggests that autobiographical memory ability is potentially influencing processes determining the outcome that people with schizophrenia will experience. Further work needs to establish whether autobiographical memory impairments in schizophrenia are indeed specific to the disorder, as this will be key in determining potential interventions. Extending Cuervo-Lombard *et al's*² work to a broader range of people with schizophrenia will be an important part of this. Interventions designed to improve wider cognitive abilities in schizophrenia may be of benefit. Cognitive remediation in schizophrenia works to improve attention, memory, executive function and social cognition. A recent meta-analysis found small to moderate effect sizes in improving cognitive abilities, functioning and symptoms,¹⁰ although the National Institute for Health and Clinical Excellence has not recommended the routine application of this treatment, its guidance pre-dates the meta-analysis.¹¹ Great care in developing and applying these approaches is needed though, as patients who did not improve had significantly lower self-esteem at the end of the study. Using a remediation approach, one study

did find a specific improvement in autobiographical memory, although this was not related to more general improvements in functioning⁶ and the specific active ingredients in remediation therapy are still to be determined.

If struggling to cope with intrusive, traumatic memories underlies the difficulties described, future work needs to establish the effect that different types of trauma or different coping strategies may have. Whether these factors are similar across different disorders will be important to establish. The ability to form meaningful relationships depends, in part, on sharing autobiographical stories. An intervention targeted at helping people with schizophrenia with these memories could lead to wider benefits in engagement and social functioning. Effective therapies for helping people who have experienced traumatic events are based on improving the structure and specificity of traumatic memories. Whether these techniques could be used to improve autobiographical memory, and potentially functioning, in schizophrenia needs to be further examined. Importantly, helping people with schizophrenia improve the detail and specificity of their autobiographical memories may lead to benefits in their quality of life.

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First received 9 May 2012, final revision 29 Aug 2012, accepted 20 Sep 2012

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