

Specificity deficit in the recollection of emotional memories in schizophrenia ☆,☆☆

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Abstract

The influence of emotion on episodic and autobiographical memory in schizophrenia was investigated. Using an experiential approach, the states of awareness accompanying recollection of pictures from the IAPS and of associated autobiographical memories was recorded. Results show that schizophrenia impairs episodic and autobiographical memories in their critical feature: auto-noetic awareness, i.e., the type of awareness experienced when mentally reliving events from one's past. Schizophrenia was also associated with a reduction of specific autobiographical memories. The impact of stimulus valence on memory performance was moderated by clinical status. Patients with schizophrenia recognized more positive than negative pictures, and recalled more positive than negative autobiographical memories while controls displayed the opposite pattern. A hypothesis in terms of a fundamental executive deficit underlying these impairments is proposed.

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1. Introduction

Among the large but selective memory deficits encountered in schizophrenia, the impairment of episodic memory is now well established (e.g., Bilder et al., 2000; Danion, Rizzo, & Bruant, 1999; Gold, Randolph, Carpenter, Goldberg, & Weinberger, 1992; Heinrichs & Zakzanis, 1998; Huron et al., 1995; Palmer et al., 1997; Saykin et al., 1994). Patients with schizophrenia typically fail in tasks that require explicit and conscious retrieval of information from memory. According to Tulving (1985), the main characteristic of episodic memory is its dependence on auto-noetic awareness, i.e., the kind of awareness where people consciously recollect

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events by reliving them mentally. Noetic awareness, on the other hand, is the knowledge that an event has occurred but in the absence of any conscious recollection. It conveys a more abstract sense of the past, based on feelings of familiarity. The distinction between the different states of awareness can be assessed using an experiential approach in which auto-noetic and noetic awareness are operationally defined in terms of the Remember/Know procedure (Gardiner, Java, & Richardson-Klavehn, 1996; Tulving, 1985). In a recognition task, participants are asked to report their subjective state of awareness at the time they recognize each item. They are instructed to give a Remember response if they consciously recollect something they experienced when they learned the item, i.e., if they mentally relive the learning episode. For example, they can remember a thought they had, or an event that occurred, when they learned the item. Participants are instructed to give a Know response if recognition is accompanied by feelings of familiarity in the absence of any specific memories of the learning episode.

Using this procedure, a series of studies have demonstrated that, compared to control participants, the recognition performance of patients with schizophrenia is associated with lower levels of Remember, but not of Know responses (e.g., Danion et al., 1999; Huron et al., 1995; Huron & Danion, 2002; Sonntag et al., 2003). This indicates that schizophrenia selectively impairs auto-noetic awareness, but not noetic awareness.

More recently, several studies have reported that autobiographical memory (i.e., memory for personal events and facts) is also disturbed in schizophrenia (e.g., Baddeley, Thornton, Chua, & McKenna, 1995; Feinstein, Goldberg, Nowlin, & Weinberger, 1998; Riutort, Cuervo, Danion, Peretti, & Salamé, 2003; Tamlyn et al., 1992). Patients with schizophrenia generate fewer autobiographical memories than normal individuals. This deficit seems to be particularly marked for events that occurred after the onset of the disease (Elvevag, Kerbs, Malley, Seeley, & Goldberg, 2003a; Feinstein et al., 1998; Riutort et al., 2003). Further, patients with schizophrenia report overgeneral memories rather than unique episodes that happened at a specific time and place (Harrison & Fowler, 2004; Iqbal, Birchwood, Hemsley, Jackson, & Morris, 2004; Riutort et al., 2003). Indeed, when asked to retrieve specific memories (e.g., *'When my husband and I went to a Chinese restaurant last week'*), patients with schizophrenia tend to recall overgeneral events such as events that refer to repeated occasions (e.g., *'Every time I go shopping'*), or events that lasted longer than a day (e.g., *'A weekend with my husband in Paris'*).

Schizophrenic patients' lack of specificity in the retrieval of their own personal past may be related to their difficulties in consciously recollecting past events. According to Conway and Pleydell-Pearce (2000), autobiographical memories are generated from the individuals' autobiographical knowledge base at different levels of specificity. The ability to specify personal events is linked to auto-noetic awareness. Indeed, the recollection of highly specific details, such as the sensory-perceptual details of a particular situation, is necessary for mentally reliving these events. The experience of conscious recollection emerges when specific details are accessed in the autobiographical knowledge base (Conway & Pleydell-Pearce, 2000). In contrast, the subjective feeling of simply knowing that an event has occurred should be sufficient for the recall of more general, abstract memories (Conway & Pleydell-Pearce, 2000).

Taking these arguments into account, the difficulties for schizophrenic patients to recollect specific events could be intrinsically related to their auto-noetic awareness deficit. This hypothesis has been recently tested in a study (Danion et al., 2005) comparing the performance of 22 patients with schizophrenia and 22 normal controls on an adaptation of the autobiographical memory inquiry (Piolino, Desgranges, Benali, & Eustache, 2002). Participants were asked to recall specific autobiographical memories and to indicate the subjective states of awareness associated with the recall of what happened, when and where. Danion and collaborators (2005) found that patients with schizophrenia retrieved fewer specific memories and provided lower levels of Remember responses than controls, and this was the case across all lifetime periods. More directly relevant to the present study, the proportion of Remember responses was significantly correlated with the level of specificity for both the patients and the control group.

When considering the relationship between consciousness and memory in schizophrenia, emotion may play a significant role. Because emotional disturbances are a major aspect of schizophrenia, it is crucial to establish whether patients with schizophrenia exhibit a different pattern of memory performance than control participants when emotional material is used. Many studies conducted on normal participants have shown that memory is strongly influenced by emotion (e.g., Blaney, 1986; Bower, 1981; Conway & Pleydell-Pearce, 2000). Memory for emotional events is better than memory for neutral events, a phenomenon known as the emotionality effect (e.g., Dutta & Kanungo, 1975; Rubin & Friendly, 1986; Rusting, 1998).

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