

## Dysfunctions of spatial cognition: the case of schizophrenic Patients

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**Abstract** Finding one's way and remembering the location of objects in the world is essential for everyday living. This research addresses the issue of the impact of schizophrenia on visuo-spatial memory, focusing especially on the sequential spatial memory in schizophrenic patients. We conducted an experiment involving a set of four related tests. The experiment took place on the premises of a Parisian hospital, the "Hôpital de la Salpêtrière". Two groups of participants were set up: a schizophrenic patients group (n = 20) and a healthy participants one (n = 28). In the first two tests, the participants were requested to verbally describe the route they previously went all over, then to draw it in the form of a sketch map. Not surprisingly, due to their communication difficulties, schizophrenic patients produced shorter descriptions than the control participants'. Their descriptions were less prescriptive (they mentioned less actions to be done), and also less descriptive (they referred to a lesser number of landmarks).

Conversely, they produced more comments than the control participants did. Regarding the sketch maps, in a same way as for the verbal descriptions, schizophrenic patients produced quite poor sketches, especially regarding the number of relevant landmarks (they ignored a large number of landmarks) and the number of errors regarding the reorientations (they forgot more crucial turns). In short, the patients' route descriptions

are obviously quite unlikely to help an addressee to find a route and their sketch maps reflect a real difficulty in memorizing the landmarks and the overall shape of the route. In the last two tests, the participants were shown a set of 32 photographs. For each of them, they had to identify whether the view belonged to the route or not. Thereafter, they were shown 28 pairs of photographs and asked to decide for each pair which view had been encountered before the other one on the route. The results show that in spite of their cognitive deficit, the schizophrenic patients are able to correctly memorize the views they have encountered on a route. They have preserved ability to distinguish a scene from a similar other one and to identify that it belongs to the route. But they had poorer performance on the order recognition task than the control participants. Schizophrenic patients show severe deficits regarding the chronology of the events encountered along the routes. They are fully able to recognize objects, but they cannot correctly localize these objects in space. They have difficulties in remembering the spatial relations among landmarks in the environment. When recalling routes previously learned, they are impaired in the recall of the sequence of turns and the sequence of visual landmarks. To summarize, to refer to the classic distinction (cf. Landau and Jackendoff), they can quite easily answer the "what" question, while experiencing much difficulty with the "where" one.

