



## Game App Helps Improve Memory in Schizophrenia



University of Cambridge researchers have developed a "brain training" iPad game that can help improve the memory and daily functioning of patients with schizophrenia. The game is aimed at improving an individual's episodic memory, one of the facets of cognitive functioning to be affected in schizophrenia patients.

"We need a way of treating the cognitive symptoms of schizophrenia, such as problems with episodic memory, but slow progress is being made towards developing a drug treatment," says study lead author Professor Barbara Sahakian from the Department of Psychiatry at Cambridge. "So this proof-of-concept study is important because it demonstrates that the memory game can help where drugs have so far failed." The study is published in the *Philosophical Transactions of the Royal Society B*.

Schizophrenia is a long-term mental health condition that causes a range of psychological symptoms, from behaviour changes to hallucinations. Many patients also experience cognition problems, which affect their memory and ability to function independently.

The game, Wizard, was the result of a nine-month collaboration between psychologists, neuroscientists, a professional game-developer and people with schizophrenia. It was intended to be fun, attention-grabbing, motivating and easy to understand, whilst at the same time improving the player's episodic memory. The memory game asked players to enter rooms, find items in boxes and remember where they put them; the game rewarded progress with additional in-game activities to provide the user with a sense of progression independent of the cognitive training process.

Prof. Sahakian and colleagues tested the game on a small number of patients (training group) who played the game for a total of eight hours over a four-week period. Meanwhile, patients in the control group continued their treatment as usual. At the end of the four weeks, the researchers tested all participants' episodic memory using the Cambridge Neuropsychological Test Automated Battery (CANTAB) PAL, as well as their level of enjoyment and motivation, and their score on the Global Assessment of Functioning (GAF) scale, which doctors use to rate the social, occupational, and psychological functioning of adults.

Results showed that the patients who had played the memory game made significantly fewer errors and needed significantly fewer attempts to remember the location of different patterns in the CANTAB PAL test relative to the control group. Also, patients in the training group saw an increase in their score on the GAF scale.

Participants in the training group indicated that they enjoyed the game and were motivated to continue playing across the eight hours of cognitive training. In fact, the researchers found that those who were most motivated also performed best at the game. This is important, as lack of motivation is another common facet of

schizophrenia, according to the research team.

The team says further studies with larger sample sizes are needed to confirm the current findings.

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