

Brain re-training may improve memory, focus in schizophrenia

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This is Dr. Peter F. Buckley, a schizophrenia expert and Dean of the Medical College of Georgia at Georgia Regents University and study coordinator Edna Stirewalt. Credit: Phil Jones

Much like physical exercise can re-chisel the body, researchers hope targeted mental workouts can sharpen the memory, focus and function of adults with schizophrenia.

"Cognitive retraining has the potential to help in core attention, in memory and in executive function all of which we know are disturbed in people with schizophrenia," said Dr. Peter F. Buckley, a schizophrenia

expert and Dean of the Medical College of Georgia at Georgia Regents University.

He is a principal investigator on the e-CAeSar study underway at 11 sites nationally, sponsored by San Francisco-based [Brain Plasticity](#) Inc. and funded by the National Institute of Mental Health. The current study is part of [Brain Plasticity](#) Inc. seeking new device clearance from the [Food and Drug Administration](#). MCG is receiving \$68,700 as a study site.

The modules, developed by Brain Plasticity Inc., use a game-like approach to take advantage of the brain's natural plasticity and improve the speed and accuracy of information processing. Games are paced so that as participants get better, the pace of the game increases, with the goal of increasing brain processing speed. Participants play the games an hour daily for six months while controls use commercially available games for the same period.

"As you get better at it, the game gets harder," Buckley said. As a reward, patients get cyber money to purchase items which they can use to redecorate virtual rooms or download music to personalize their game experience. Cognitive assessment is done before, during and at the conclusion of the study period.

Most of the debilitating cognition problems appear to result from faulty wiring laid down during development that results in erratic communication and sensory overload. Individuals often cannot focus or filter, so that can't ignore even normal environmental distractions such as a conversation in the next room or the drone of an air conditioner, Buckley said.

"We think the [brain changes](#) are more related to developmental failures rather than actual tissue loss, which occurs in Alzheimer's disease, so while it may be a development disorder, all is not lost," Buckley said.

"There is the potential to retrain areas of the brain that are either faulty or encourage other areas of the brain to assist so that you maximize the cortical output of the brain and the individual's ability to focus and to remember."

In fact, Dr. Sophia Vinogradov, Vice Chairwoman of the Department of Psychiatry at the University of California, San Francisco, has shown that after eight weeks, patients using cognitive remediation experienced a boost in levels of brain-derived neurotrophic factors – believed to aid brain plasticity and brain cell connections – compared to their peers playing standard computer games.

Some second-generation antipsychotics that began emerging in the 1990s promised to aid cognition, but they mostly fell flat other than the fact that they don't make it worse, Buckley said. However, ironically, a drug needed to counteract the muscle stiffness the drug causes does hurt memory.

Researchers hope this no-new-medicines approach with no obvious side effects can be used in conjunction with the usual antipsychotics to help people with schizophrenia retrain their brains so they can focus and function better.

"We associate schizophrenia with hearing voices and seeing things, which is very disabling, but it's actually not being able to remember things, not being able to pay attention to things that keeps people from holding jobs and being more functional," he said.

Dr. Henry Mahncke, Chief Operating Officer and Senior Scientist at Brain Plasticity Inc., is project leader on the national study. "We are privileged to have Dr. Buckley and his team at Georgia Regents University helping to lead this ground-breaking study," Mahncke said. "Like Dr. Buckley, we believe that the brain is not hard-wired and can

positively adapt and change when provided the right tools – and the over 70 published studies of similar programs we have developed support this. I'm excited for the conclusion of the eCAeSar Study, which I hope will result in new treatment options for individuals with schizophrenia."

The company also is looking at the use of plasticity-based training programs to aid recovery from traumatic brain injury and improve social cognition disorders in autistic spectrum disorders.

Provided by Medical College of Georgia

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