

TechAndComputer (Dec. 3, 2012) □ A behavioral test widely used on rodents to study spatial learning and memory, the Morris water maze (MWM), was recreated using software developed to create custom video game environments. By creating a virtual reality analogue for humans, it was possible to obtain a direct comparison between the results of studies on a rodent model of temporal lobe epilepsy (TLE), whose spatial memory performance was found to be severely impaired, and patients with TLE.

The simulation program developed using the "Source Engine" (Valve™) software was used to create an environment comparable to the submerged water platform of the Morris water maze. The novel research tool and the striking results it produced were presented today at the American Epilepsy Society's 66th annual meeting here at the San Diego Convention Center.

In this study by researchers from the Neurology department at the Geisel School of Medicine at Dartmouth and the Department of Neurosciences and Mental Health, UCL Institute of Child Health in London, UK, eleven healthy volunteers and six patients with epilepsy were presented with laptop computers and a gamepad controller. After a habituation period, the subjects were "dropped" in the water-filled arena and asked to find a submerged platform as quickly as possible. Electrophysiological recordings were made in the patients with epilepsy to assess oscillatory and single-unit activity during the task and their results showed striking parallels between the patients with epilepsy and the previous rodent data.

"The water-maze is a familiar research tool and the virtual reality version holds great promise for translational research" says Ali S. Titiz, a PhD candidate at the Geisel School of Medicine, and the first author of the study.

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