Virtual Reality Game Detects Condition Which Precedes Alzheimer's Disease

A new study by Greek researchers has demonstrated that a virtual reality game frequently used for cognitive training is effective as a screening tool for adults with mild cognitive impairment (MCI). The virtual supermarket (VSM) application was developed as part of a project which uses new technologies to screen, diagnose, treat and support patients with MCI. By engaging in a game which requires players to perform a financial planning task, MCI can be effectively detected without additional neuropsychological tests.

Virtual reality games have been used to engage older adults in cognitive training exercises. The computer games are considered to be an easy and enjoyable way to exercise the brain, and the hope is that VSM will be a more pleasurable way to be evaluated for MCI. The shift from training tool to screening tool was accomplished by scientists at the Aristotle University of Thessaloniki (AUTH), the Greek Association of Alzheimer's Disease and Related Disorders (GAADRD) and the Centre for Research and Technology Hellas/Information Technologies Institute (CERTH/ITI).

Game Detects Mild Cognitive Impairment

MCI is characterised by memory loss and an impaired ability to perform complicated activities. The condition can be a precursor to Alzheimer's Disease, the most common type of dementia. Not all individuals with MCI go on to be diagnosed with Alzheimer's Disease, although early detection of cognitive impairment at the "mild" stage is the subject of global research efforts. Many adults with MCI continue to live independently at home.

One of the functions which may be impaired in MCI is financial planning, which helps to explain the success of VSM as a brain training and screening tool. After performing a shopping task, participants must "pay" for their purchases. A screenshot of the VSM payment screen shows a supermarket cash register with the purchase total displayed on the screen. Players must choose from a selection of coins and bills to properly pay for the virtual purchase.

Remote, Automated MCI Screening

According to an article published on the subject in the *Journal of Alzheimer's Disease*, the VSM application correctly classified MCI in 87.30 percent of cases. This puts VSM on par with standardised neuropsychological tests for diagnostic accuracy. Such tests are the current gold standard for MCI detection, but are time consuming and often avoided. Further research is underway which will report on the use of VSM as a remote assessment tool.

The hope is that MCI screening through the VSM application may become automated and easily conducted at home, a kind of preventive healthcare tool. Game play could be monitored remotely, with an embedded algorithm informing adults when their performance falls below a certain threshold which signals possible cognitive impairment. At that point, they could visit their physician for further screening and possible treatment.

Source: IOS Press
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