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Eye Movements Can Help Diagnose ADHD, Parkinson's

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Reviewed by John M. Grohol, Psy.D. on September 8, 2012

Studying how people move their eyes while watching television could help identify those who have [attention deficit hyperactivity disorder \(ADHD\)](#), fetal alcohol spectrum disorder (FASD), and Parkinson's disease, according to a new study.

Researchers at the University of Southern California suggest that each of those conditions involve "ocular control and attention dysfunctions."

Such dysfunctions can be easily — and cheaply — identified through an evaluation of how patients move their eyes while they watch television.

Typical methods of detection for these disorders, including clinical evaluation, structured behavioral tasks and neuroimaging, are expensive, labor-intensive and limited by a patient's ability to understand and comply with instructions, the researchers said.

To solve this problem, doctoral student Po-He Tseng and Dr. Laurent Itti of the Department of Computer Science at the USC Viterbi School of Engineering, along with collaborators at Queen's University in Canada, devised the new screening method.

Study participants were instructed to "watch and enjoy" television clips for 20 minutes while their eye movements were recorded. Eye-tracking data was then combined with a computational model of visual attention to extract 224 quantitative features, allowing the team to use new machine-learning techniques to identify features that differentiated patients from control subjects.

With eye movement data from 108 subjects, the researchers said they were able to identify older adults with Parkinson's disease with nearly 90 percent accuracy, and children with either ADHD or FASD with 77 percent accuracy.

"For the first time, we can actually decode a person's neurological state from their everyday behavior, without having to subject them to difficult or time-consuming tests," Itti said.

Source: [University of Southern California](#)

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