Usefulness and Validity of Continuous Performance Tests in the Diagnosis of Attention-Deficit Hyperactivity Disorder Children

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Abstract

Objective
Despite the popularity of continuous performance tests (CPT) in supporting the diagnostic procedure of attention-deficit hyperactivity disorder (ADHD), these measures are still controversial mainly due to limited sensitivity, specificity, and ecological validity. Thus, there continues to be a need for further validation of these objective attention measures. The purpose of this study was to evaluate the usefulness of a CPT that includes environmental distracting stimuli, in supporting the diagnosis of ADHD in children.

Method
Participants were 798 children aged 7–12 years (493 boys and 305 girls). The ADHD group included 339 children, whereas the control group included 459 children without ADHD. The study employed the MOXO-CPT, which incorporates visual and auditory stimuli serving as environmental distractors.

Results
Compared to their unaffected peers, children with ADHD received significantly lower scores in all 4 CPT indices: attention, timing, hyperactivity, and impulsivity. Specifically, ADHD children were less attended to the stimuli and performed fewer reactions on accurate timing. Furthermore, children with ADHD performed significantly more impulsive and hyperactive responses than controls. Receiver operating characteristic analysis revealed fair to excellent diagnostic ability of all CPT indices except impulsivity, which showed poor ability to distinguish ADHD children from controls. The test's total score yielded excellent diagnostic performance.

Conclusions
MOXO-CPT consistently distinguished between children with ADHD and their unaffected peers, so that children with ADHD performed worse than controls in all study indices. Integration of CPT indices improves the diagnostic capacity of ADHD and may better reflect the complexity and heterogeneity of ADHD.