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A device for the objective assessment of ADHD using eye movements

Ankita Dosaj  
*Virginia Commonwealth University*

Jefferson Overlin  
*Virginia Commonwealth University*

Cassie Turnage  
*Virginia Commonwealth University*

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A Device for the Objective Assessment of ADHD Using Eye Movements

Team Members: Ankita Dosaj, Jefferson Overlin, Cassie Turnage

Faculty Advisor: Paul A. Wetzel, PhD

Abstract

Attention deficit hyperactivity disorder (ADHD) is a commonly diagnosed psychiatric disorder characterized by impulsive behavior, impaired focus, and hyperactivity. Current methods of pediatric diagnosis rely on subjective measures of activity and behavior relative to other children.[2] Proper diagnosis is critical in preventing unnecessary prescription of the powerful, habit-forming drugs used to manage ADHD, such as Adderall and Ritalin.[3] Research has shown that individuals with ADHD show abnormalities in reading and antisaccade tests, as these stimuli gauge ability to focus and suppress impulsive behavior, respectively.[4] Our goal was to design and construct a dedicated eye tracking device capable of accurately and objectively screening children for ADHD. The device was to be both inexpensive and accessible by non-experts in eye tracking, such as school nurses, optometrists, and family physicians.

Clinical Need

- ADHD is frequently misdiagnosed
- Requires extensive diagnosis time and must be performed by a physician
- Current testing is subjective
- Affects child’s academic and social development
- Treated with powerful drugs (Ritalin, Adderall)

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Design Approach

- A dedicated device easily used by non-experts
- Durable, portable, non-threatening appearance
- Limbus system for single-plane, monocular tracking
- Export quantitative results after analysis

Headgear

- Accounts for adjustment around the eye with 3D printed holder and flexible tubing
- Adaptable for each patient

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References