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A Device for the Objective Assessment of ADHD Using Eye Movements

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**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. Proper diagnosis is critical in preventing unnecessary prescription of the powerful, habit-forming drugs used to manage ADHD, such as Adderall and Ritalin. 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. 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

### References


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