

SPARKLES

Scientific Summary

Introduction: Attention Deficit Hyperactivity Disorder (ADHD)

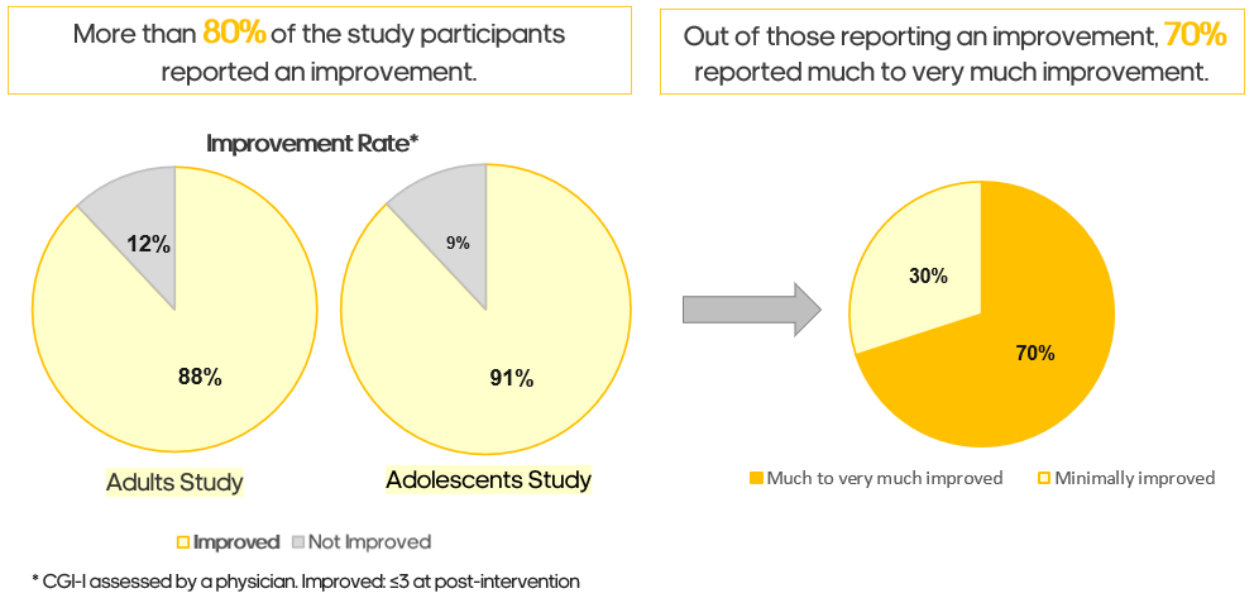
ADHD is a neurodevelopmental disorder characterized by difficulties in attention regulation, self-control, and functional activation. This condition manifests as challenges in maintaining focus over time, inhibiting irrelevant responses, and difficulties in organizing and planning tasks. Consequently, individuals with ADHD often experience decreased performance in academics, work, and daily activities, along with struggles in maintaining efficiency, consistency, and task completion. These functional impairments extend beyond academic or vocational domains, affecting social conduct, motivation, and information processing in everyday situations.

SPARKLES influence attentional functions and represent an innovative, non-pharmacological solution based on visual stimulation of the peripheral visual field. The technology utilizes personalized stimuli embedded in eyeglass lenses to provide immediate support for attention and concentration skills.

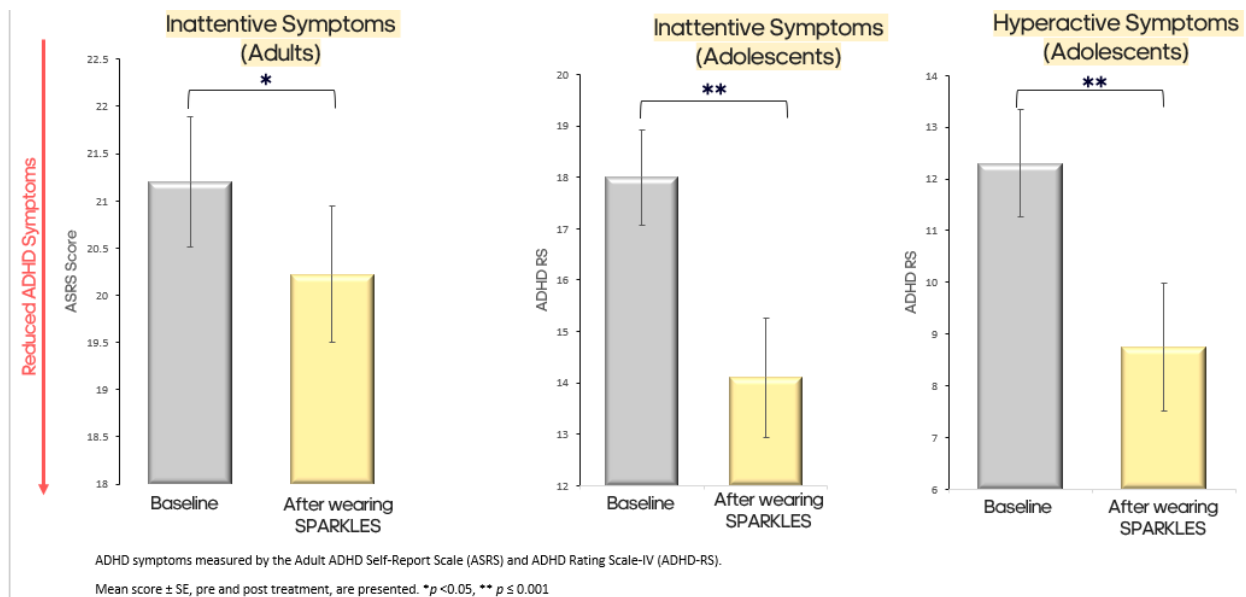
Efficacy and Safety of SPARKLES

Clinical studies conducted among adults ($n=108$, ages 18-40) and adolescents ($n=27$, ages 12-17) diagnosed with ADHD demonstrated that using SPARKLES for approximately two months led to significant improvements in both ADHD symptoms and daily functional abilities, including planning, organization, and task execution. These findings indicate a substantial contribution of SPARKLES to quality of life and cognitive function. Furthermore, the use of SPARKLES was found to be safe with no significant side effects.

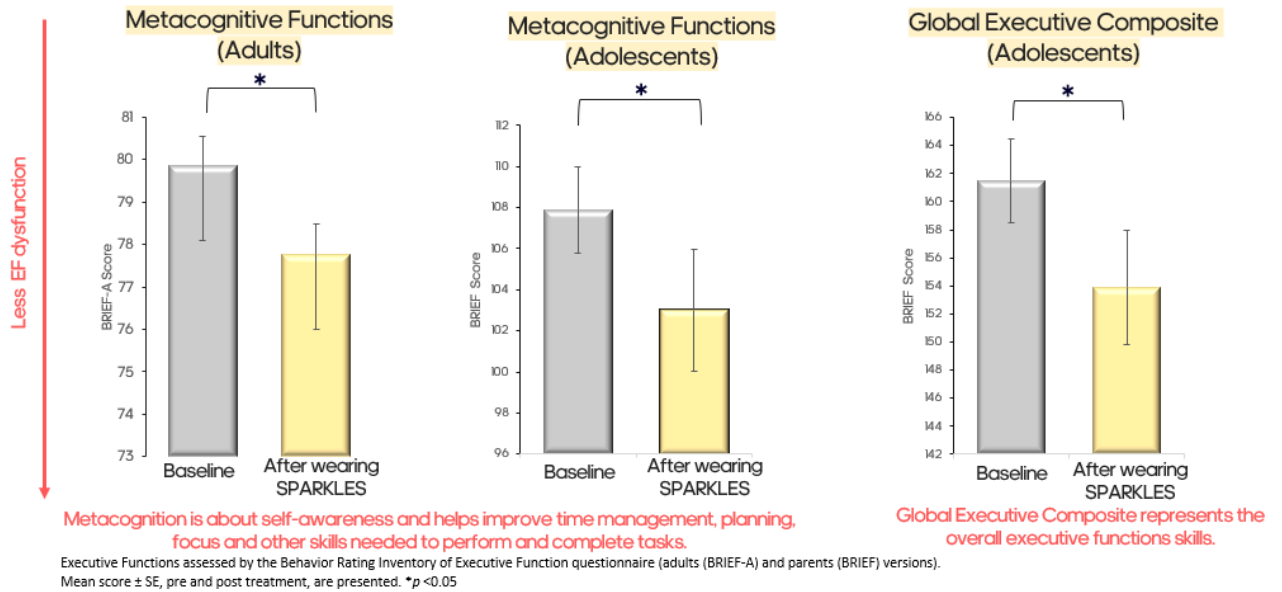
- **Improved Daily Functioning:** After two months of use, over **80%** of participants reported improvement in their overall functioning, with most classifying the improvement as significant to very significant.



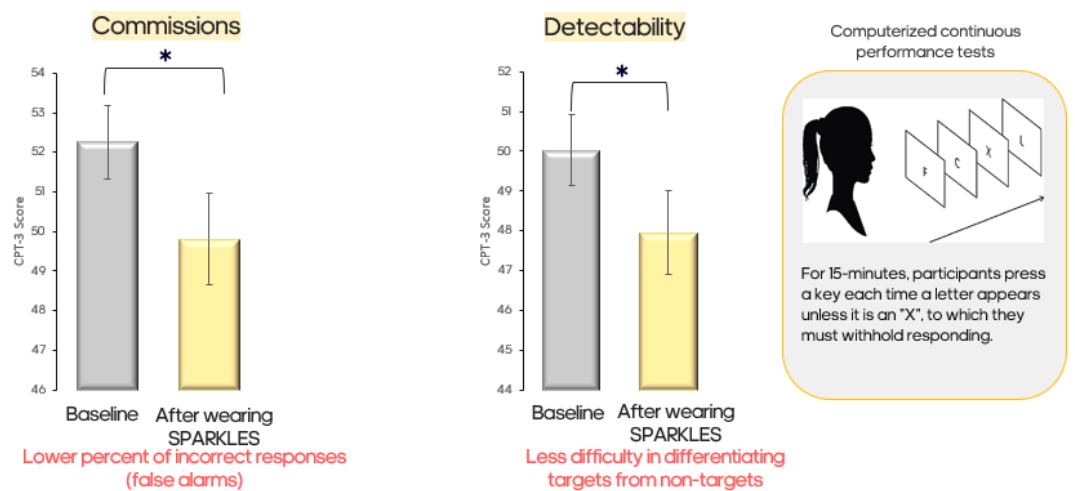
- **Significant Reduction in ADHD Symptoms:** In both adults and adolescents, SPARKLES effectively reduced attentional symptoms. In the adolescent population, an additional significant decrease in hyperactive symptoms was observed.



- Enhanced Executive Functions:** Executive functions are high-level cognitive skills used for managing daily tasks. Following SPARKLES use, there was an overall reduction in executive function difficulties, particularly in monitoring and control skills.

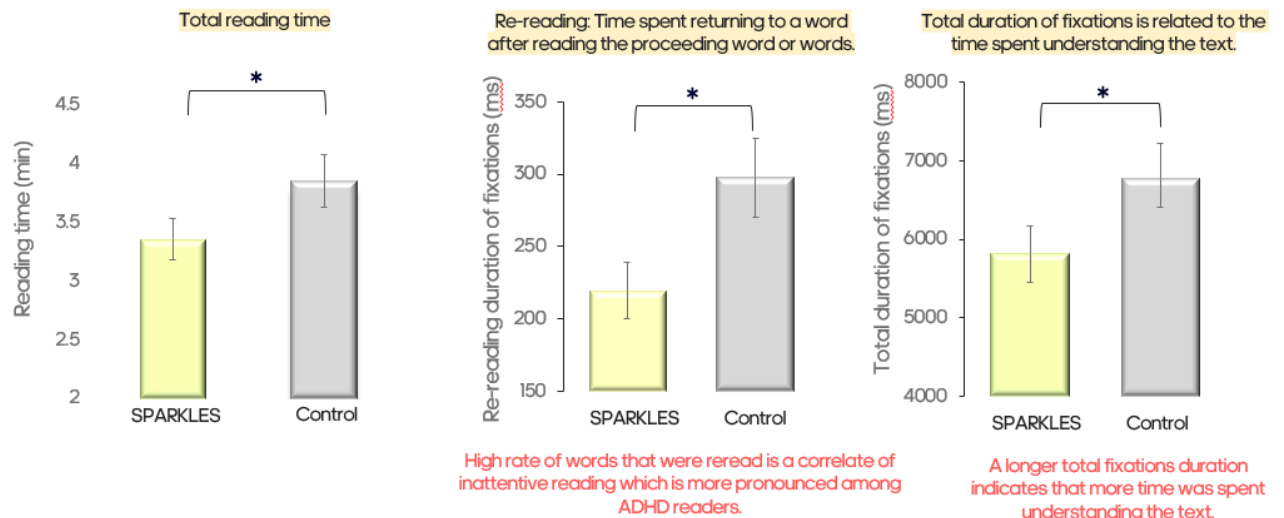


- Reduced Attentional Control Deficits:** Attentional control is a critical cognitive mechanism for regulating and sustaining focus. In adults, SPARKLES led to improved response inhibition (supported by a decrease in Commissions error rates) and improved sensitivity in distinguishing targets from distractors. Adolescents showed a similar positive trend.



A computerized continuous performance tests was used (Conners continuous performance test (CPT—3). Mean T-score ± SE. * $p < 0.05$ ** $p < 0.01$ paired-samples t-test. Results presented for the Adults study, trend towards improvement was observed in the adolescents study.

- **Improved Reading Skills:** People with ADHD often read slower and are easily distracted. SPARKLES led to a marked improvement in reading fluency, characterized by faster reading speeds and a significant reduction in word repetitions.



Reading patterns were assessed using an Eye Tracker device. Adults with ADHD (n = 24) were asked to complete two reading tasks: one with SPARKLES and one with control glasses without stimuli ("Control"). Mean T-score $\pm$ SE. * $p \leq 0.005$ paired-samples t-test.

Safety Profile

Based on clinical data and commercial experience, SPARKLES is safe and has no effect on visual acuity. During the initial adaptation period, mild and transient effects such as headaches or eye strain may occur; therefore, a gradual start is recommended during the first week.

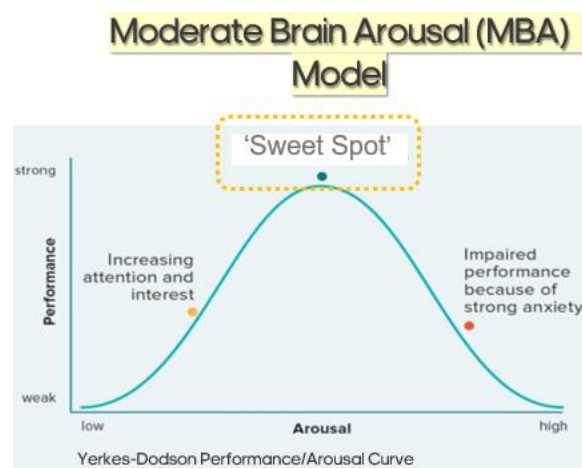
Mechanism of Action: Regulating Brain Arousal for Improved Attention

Attentional functions depend on healthy levels of brain arousal- the state of alertness and readiness of the nervous system to process information. When arousal levels are sub-optimal (hypo-arousal), as is common in individuals with ADHD, the ability to maintain focus and sustained attention is impaired.

By leveraging the principle of Stochastic Resonance, Sparkles introduces controlled, subtle visual 'noise' into the peripheral field to enhance the efficiency of neural information processing. This

sensory input acts as a physical catalyst, boosting weak neural signals and directly activating the Reticular Activating System (RAS)—the brain’s internal power station for alertness.

This 'outside-in' stimulation instantly elevates the brain's state of vigilance, shifting the user into the Moderate Brain Arousal (MBA) 'Sweet Spot' of cognitive performance. By stabilizing arousal levels at this optimal point, Sparkles eliminates the brain's biological drive to seek external distractions, fostering immediate focus and building long-term attentional resilience through a personalized, non-invasive approach.



Summary of Key Effects

Research findings indicate that SPARKLES is an effective and safe tool for the comprehensive improvement of attentional functions and daily capabilities. SPARKLES lead to a significant reduction in inattention symptoms and an increase in metrics related to focus and task persistence, as measured by both subjective and objective assessments.

References

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