



App for Stratifying Autism Spectrum Disorders

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a software test for differentiating individuals with autism spectrum disorder into two distinct types of contextual learners.

This tool may be used by primary care providers or by ASD psychologists to optimize interventions based on the individual's contextual learning skills.

Overview

Autism spectrum disorder (ASD) encompasses a wide cluster of neurodevelopmental disorders. Alongside the core social communication and repetitive behavior symptoms of ASD, there are common reports of atypical learning and visual attention. These atypicalities in learning and attention appear to be present across the autism spectrum, even in individuals with average or above-average IQ.

Theoretical work suggests that these features in ASD may reflect reduced use of contextual information to interpret current sensory information. However, it remains unclear how these theoretical frameworks apply to patterns of learning in ASD. Despite efforts, little is known about what learning strategies are optimal for each individual with ASD and what factors underlie the vast differences in learning styles of this population.

The Invention

UW–Madison researchers have developed a software test to differentiate ASD participants into two distinct types of contextual learners. The first group resembles a “Typically Developing” (TD) learning profile, and the second group does not modulate with context, indicating that they are not able to learn the embedded context.

Participants viewed a monitor divided into four quadrants and were asked to search for a visual target, then indicate the quadrant in which the target was located. Unbeknownst to the participants, contextual information about the target location was manipulated across sessions by varying the number of off-targets and the probability of the target being present in that quadrant. Search time as a function of the proportion of informative cues in the target quadrant was used as a measure of contextual learning.

Applications

- Software tool/app for use by primary care providers, or by an ASD psychologist, to optimize interventions based on the individual's contextual learning skills

Key Benefits

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- Understanding how learning and attention may differ in ASD is essential to inform therapy.

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- Behavior-based therapies often rely on teaching individuals to attend to informative cues (e.g., eye contact) and to learn associations between environmental cues and behaviors.

Stage of Development

The method has been tested and vetted. Results provide experimental evidence for at least two distinct contextual learning profiles within the autism spectrum, and have practical implications for the development of individualized treatments and educational approaches to maximize behavioral therapy gains.

Additional Information

For More Information About the Inventors

- [Peter Ari Rosenberg Maffia](#)
- [Brittany Travers](#)

Publications

- [This technology was a 2019 WARF Innovation Award finalist.](#)

Tech Fields

- [Education & Training : Educational tools](#)
- [Education & Training : Medical & health](#)
- [Information Technology : Computing methods, software & machine learning](#)

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846

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