

# The Relationship between Reading Fluency Improvement and Brainwaves in Children with Autism Spectrum Disorders

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## Abstract

The purpose of this study is to determine the relationship between reading fluency improvement and brainwaves in children with Autism Spectrum Disorders when using yellow overlay. The sample in this study consisted of sixteen ASD children aged between nine and eleven years from Sarawak, Malaysia. A correlational research design was used in this study. Results from the Pearson correlation test found a strong positive relationship between reading fluency improvement and beta brainwaves ( $r = 0.707$ ,  $p < 0.05$ ) at the frontal lobe using a yellow overlay. In addition, the temporal lobe results for reading fluency improvement and beta brainwaves ( $r = 0.560$ ,  $p < 0.05$ ) showed a moderate positive relationship while using a yellow overlay. However, the correlation results for alpha brainwaves at the frontal and temporal lobes were not significant because  $p = 0.320$  and  $p = 0.601$ , respectively. In conclusion, this study proved that yellow overlay has a positive significant relationship between reading fluency improvement and beta brainwaves at the frontal and temporal lobes.

**Keywords:** Autism Spectrum Disorders, Brainwaves, Reading Fluency, Yellow Overlay.

## Introduction

Reading is a medium to obtain information and ideas from something that has been written (Pradani, 2021). The reading process includes personal connections between texts, knowledge, and our life experiences (Altman, 2003; Merrifield, 2011). Reading fluency plays a vital role during the reading process. Individuals who are fluent in reading have good skills to read any written material in a better way (Miranda and Reflinda, 2022). Solari et al (2017) found that reading fluency can be considered one of the specific predictors for interventions in reading comprehension among children with higher-functioning autism (HFASD). Typically, people diagnosed with ASD experience many difficulties related to reading, including reading fluency, because of their concentration problems, literal thinking, and inability to understand their reading content. As a result, they cannot perform well in their academics and jobs (Merrifield, 2011; Yaneva et al., 2016).