Developing an Enhancement Tool for Arabic Speaking Children at Risk of Dyslexia

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Dyslexia is a neurodevelopmental disorder that primarily affects reading abilities. Early identification of dyslexia is crucial because early intervention can improve reading skills. However, many existing support tools are limited or costly, highlighting the need for accessible technological solutions to enhance reading skills among children with dyslexia. The goal of this research is to create a simple, affordable, and reliable tool that helps Arabic-speaking children with dyslexia read more efficiently by manipulating visual text parameters such as the font size, line and word spacing, and color of the background on the screen. An eye tracker was used to analyze the improvement in reading before and after applying the visual aids. Children with dyslexia read the three texts on a laptop under several conditions: without visual aids, with separated visual aids, and with all visual aids merged together. Their eye movements were recorded and analyzed through several statistical methods, including Cohen's d, repeated measures ANOVA, and the paired t-test. The results showed improvements in reading performance and eye movement stability when visual text parameters were adjusted. This research proposes a fast, affordable, and effective method for enhancing reading abilities in children with dyslexia using visual aids.

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