The Effect of Coloured Backgrounds on Short-Term Memory of Dyslexics in a Reading Comprehension Task

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INTRODUCTION

- Dyslexia is defined as a brain-based developmental type of learning disability that affects a person's literacy ability (Roitsch and Watson, 2019).
- It is extremely common with 10% of the UK population being dyslexic (British Dyslexia Association (BDA), 2023),

Common Symptoms	Other Symptoms
• Confusing Similar Words • Difficulty Scanning Text • Slow Reading and Writing speed • Rereading to gain Understanding • **Forgetfulness**	• Difficulty Focusing • Unable to Distinguish Left from Right • Mental Overloading • Organisation Difficulties • Poor self-esteem (late diagnosis)

Figure 1: *Symptoms of Dyslexia (BDA, 2001)*

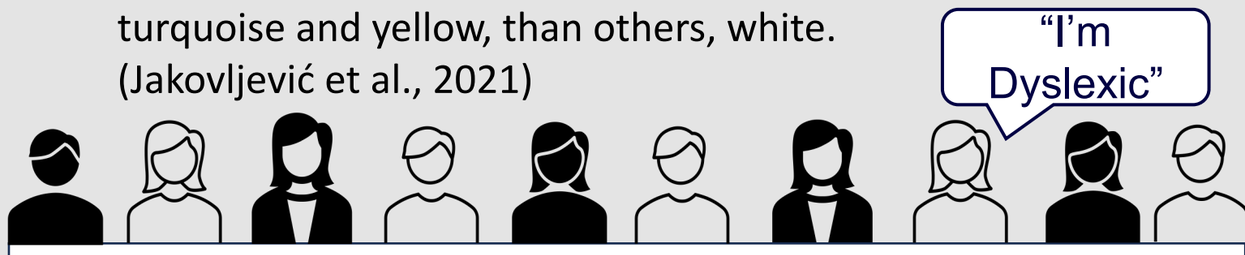
METHOD

- **Design:** Between-subjects study. The independent variables were the background colour, with 3 levels; white, turquoise and yellow.
- **Participants:** 75 dyslexic participants were recruited on social media. Exclusion criteria of being colourblind.
- **Materials:** Reading comprehension task (Maszczynski, 2023) to gain a score for the study
- **Procedure:** Once online, participants were randomly allocated to one of three conditions, where they read a text about an air stewardess called Sally, with either a turquoise, yellow or white background. After reading the three slides of text they were asked some memory recall questions about the text.

DISCUSSION

- Results showed high significance and that the turquoise background helped the memory recall; supporting the hypothesis.
- Could be used to create dyslexia-friendly schooling like the BDA (2023) suggest.
- Non-dyslexia-friendly schools are a risk factor for early withdrawal from school (Anderson, 2009)
- Could also lower the self-esteem issues surrounding dyslexia (BDA, 2023; Carawan, Nalavany and Jenkins, 2016)

- Although dyslexia is a well-studied learning disability, however, the memory aspect of the condition is not.
- Memory research has always concluded that colour increases memory (Wichmann et al., 2002)
- Moreover, Coloured backgrounds have always been used to remedy dyslexia's literacy challenges (Ritchie, 2010).
- Leading to the hypothesis that colour would also help the memory of dyslexics in a real-life setting such as reading.
- Some colours are more helpful for dyslexics, such as turquoise and yellow, than others, white. (Jakovljević et al., 2021)



RESULTS

- Before analysis, results were screened to check parametric assumptions. The skewness level for the turquoise condition was less than -1 and the variance was too large to have homogeneity of variance.
- Non-parametric testing was used; a Kruskal-Wallis ANOVA. Mann-Whitney U tests were used to see significance between the different independent variable levels.

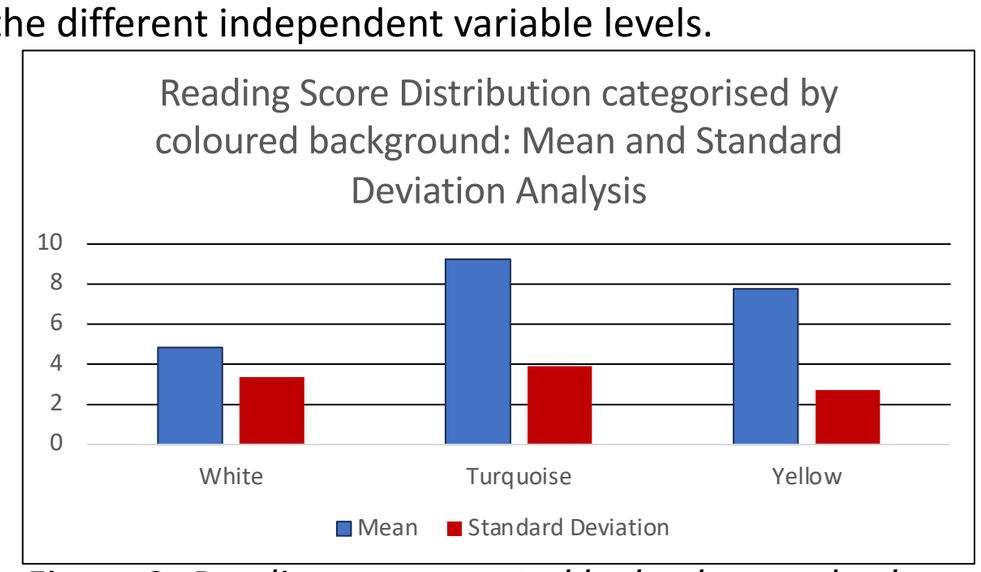


Figure 2: *Reading scores sorted by background colour*

- The results were significant and when applying this to Cohen's (1988) guidelines, there was a large effect size.

- Further research will be needed to see the effect on those who aren't dyslexic to ensure it is not disadvantaging them and look at personal information alongside the study such as gender.
- Study was of a small scale; it could be replicated on a larger scale and see if the findings are still significant.

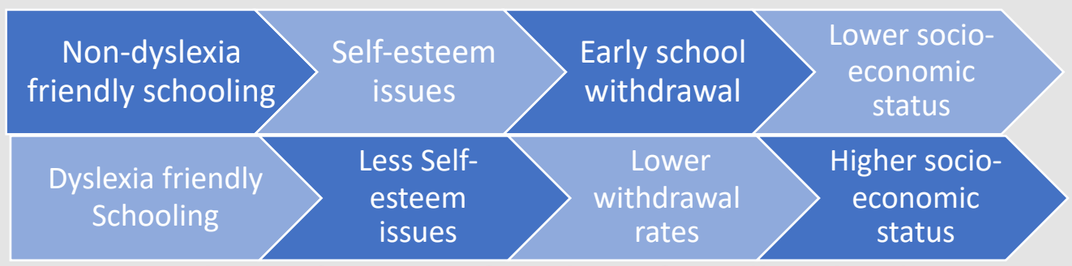


Figure 3: *Chain of events of Dyslexia friendly schooling*

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