

## Reading & Dyslexia - Research Assignment

### The role of attention or memory

Research Question : Dyslexic Reading - Does highlighted reading improve reading speed and comprehension?

We will be comparing normal reading to (automatically) highlighted reading

### Experimental design

- Experimental Group Procedure:
  - Present instructions to our participants :
    - You will be presented with paragraphs one at a time. Read each paragraph at a comfortable speed. Because there will be questions at the end of every 2 paragraphs.
    - There will be alternating trials every 2 paragraphs
    - The 1st two will be standard text we present
    - The following two will be text presented where each word will be highlighted individually at a specified pace.
    - Once you have completed reading a paragraph press the next button
  - Our experiment will involve 5 trials each with 2 paragraphs
  - In each trial the participant will be presented with a single paragraph to read. Once complete the participant will click the next button.
  - At the end of each trial there will be comprehension questions based on the current trials paragraphs.
  - The odd numbered trial will be a normal reading trial where the participants will be presented with just plain text to read.
  - The even numbered trial will be a highlighted reading trial where the participant will be presented a text where each word will be highlighted individually at a specified pace
    - note : the highlighted pace will be calculated based on the reading speed of the previous non-highlighted trial + 20%
  - This process will alternate until 5 trials are completed
  - Reading speed will be recorded at the end of each paragraph
  - Comprehension will be recorded at the end of each trial
- Control Group Procedure:
  - Participants in the control group will follow the same procedure as the experimental group, with the exception that they will read paragraphs without any highlighting.

We will have dyslexic and non-dyslexic participants in both experimental and control groups  
2x2 Design

Dyslexic v Non-Dyslexic  
Experimental v Control

## Initial Literature Review

### Dyslexia

- General Info
  - [Dyslexia Basics](#)
  - [Dyslexia: A Review about a Disorder That Still Needs New Approaches and a Creative Education](#)
  - [Dyslexia \(Mayo Clinic\)](#)
  - [Dyslexia \(NHS\)](#)
  - [Dyslexia \(Yale\)](#)
  - [A definition of dyslexia](#)
  - [Reading Fluency: Current Insights from Neurocognitive Research and Intervention Studies](#)
- Reading
  - [Relationship Between Eye-movement Patterns, Cognitive Load, and Reading Ability in Children with Reading Difficulties](#)
  - [From emergent literacy to reading: how learning to read changes a child's brain](#)
  - [Become a Better Reader](#)
- Comprehension
  - Understanding
  - Memory
  - [A Meta-Analytic Review of Comprehension Deficits in Students with Dyslexia](#)
  - [Language and reading comprehension for students with dyslexia: An introduction to the special issue](#)
- Attention
- Improving
  - [Different underlying neurocognitive deficits in developmental dyslexia: A comparative study](#)
  - [Assistive Technologies to Support Students With Dyslexia](#)
- Highlighting
  - [Keyword Highlighting Improves Comprehension for People with Dyslexia](#)

### Reading speed

- Explanation
- Timer : start button
- Present : Paragraph
- Done/next button
- How many paragraph
- Paragraph size : 4 sentences
- Generate paragraphs with chat gpt
- Alternating between highlighting and non highlight text every 2 paragraphs
- Measuring speed every paragraphs

### comprehension

- Add of two paragraphs ask 2 question per trial

#### Trials

1. non-highlight x2
  - a. Questions
  - b. Calculate reading speed for highlighting and use in highlighting trial
2. highlighted x2
  - a. questions
3. non-highlight x2
  - a. Questions
4. highlighted x2
  - a. questions

potentially add a control group that just does the trials with no highlighting

#### Application & Experiment

#### Participants

Example of present text perhaps:

*Gemma was only five minutes away from her parents' hut, but the jungle had already taken on a different personality. It was thicker. The trees had grown taller. The ti plants shaded the green forest a sinister red. There was no doubt about it- the jungle was more dangerous here, and Gemma loved it.*

#### Factors to account for

- People spend more time on the screen than took them to read
- Spend less time, skimming

#### Procedure:

##### Experimental Group Procedure:

- a. Participants in the experimental group will be provided with a timer and a set of paragraphs generated by ChatGPT.
- b. They will start the timer and read the first paragraph with non-highlighted text.
- c. After completing the paragraph, participants will click the "Done/Next" button.

- d. The timer will be stopped, and the reading speed will be recorded. They will repeat step b-c a second time.
- e. Two comprehension questions related to the content of the highlighted paragraphs will be presented.
- f. Participants will answer the questions.
- g. Steps b-f will be repeated for the next 2 highlighted paragraphs.
- h. This process will continue for a total of four alternating paragraphs (two highlighted and two non-highlighted).
- i. Reading speed and comprehension scores will be recorded for each paragraph.

#### Control Group Procedure:

- a. Participants in the control group will follow the same procedure as the experimental group, with the exception that they will read paragraphs without any highlighting.
- b. Reading speed and comprehension scores will be recorded for each paragraph.

#### Materials:

A timer with a start button will be used to record reading speed.

Paragraphs will be generated by ChatGPT, with each paragraph containing four sentences.

The experimental group will read paragraphs with alternating highlighted and non-highlighted text segments.

The control group will read paragraphs without any highlighting.

<https://chat.openai.com/share/6eca365b-b4e2-4b2b-b224-3ceb8f69e435>

#### Literature review

<https://github.com/TKendel/CognitivePsychologyAssignment>