Research Report
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Dyslexia Accessibility Features

Introduction:

Dyslexia is a condition where a person has difficulty reading due to not being able to recognize words. This is often because they see letters moving around and have trouble distinguishing between similar shaped letters such as, "p" "b" "q" and "d." This condition effects on average between fifteen and twenty percent of all adults in the United States (Wired). The goal of this research was to see which accessibility settings are most useful when designing an interface for people with dyslexia. How well a feature can help a user is measured by how many words per minute, also known as WPM, a participant can read, as well as how well they comprehend what they read.
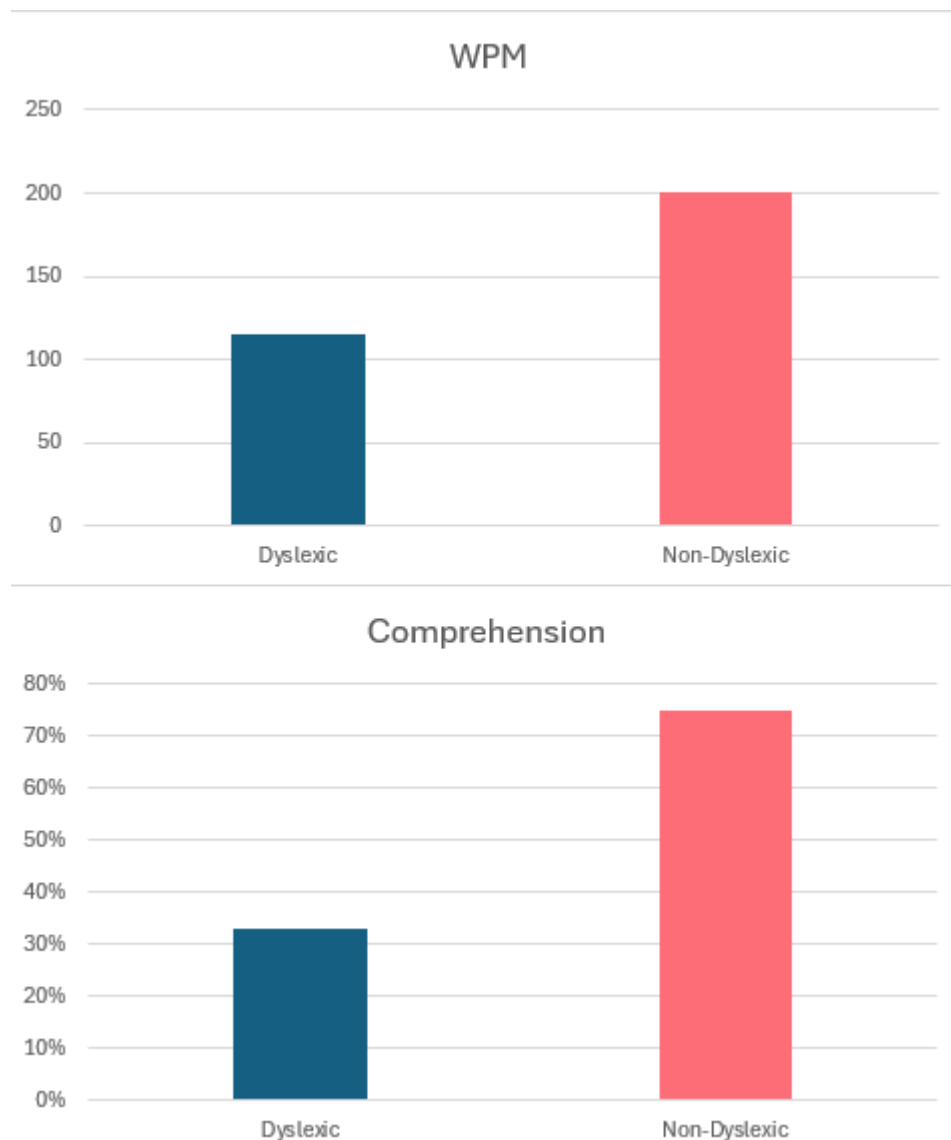
Research:

To begin my research, I looked into what features are most used on websites that are intended to help a dyslexic audience read more easily. The most common features were having a dark mode, increasing line spacing, increasing paragraph spacing, increasing letter and word spacing, and using fonts designed specifically for people with dyslexia (Glassman, 2021; Schiavo et al., 2021; Harvard, 2025; Anita, 2022; OpenDyslexic, n.d.). Using reading speed and comprehension tests from SwiftRead, I developed six web pages. Each page utilized a different accessibility tool, except for the control test. Four participants who had dyslexia took each test, and well as four participants without dyslexia. During these tests I recorded how long it took them to read and how many words they read. At the end the participants were given a series of questions to measure how well they were able to comprehend the information.

Findings:

During my control test, participants with dyslexia read on average 115 WPM with a comprehension score of 33%, meanwhile participants without dyslexia read on average 200 WPM with a comprehension score of 75% (See chart 1).

Chart 1

Baseline *WPM* and *Comprehension* Test

WPM

250	
200	
150	
100	
50	
0	
Dyslexic	Non-Dyslexic

Comprehension

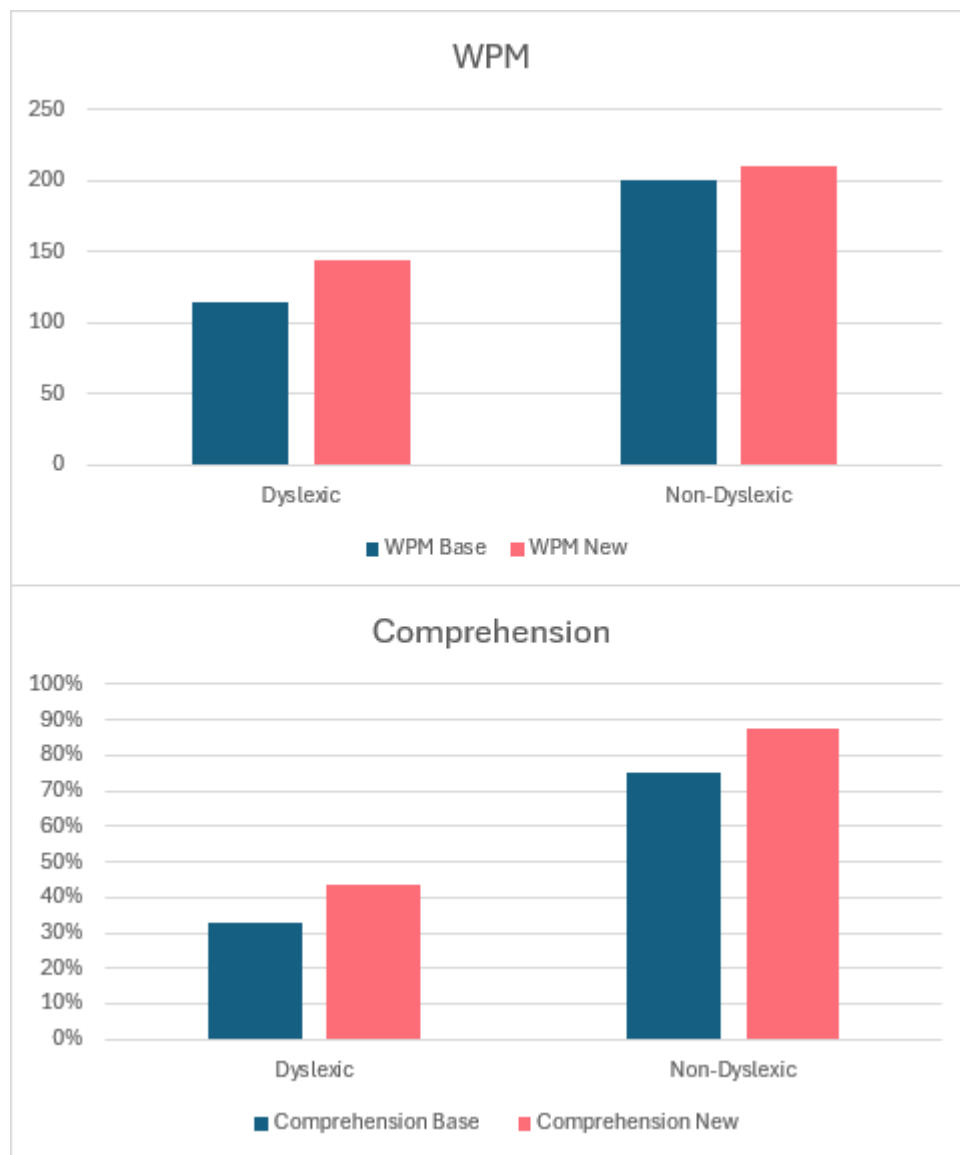|	
80%	
70%	
60%	
50%	
40%	
30%	
20%	
10%	
0%	
Dyslexic	Non-Dyslexic

The next test utilized a high contrast mode, often referred to as dark mode. In this assignment readers were given a reading speed and comprehension test that has a black background with white text. Users with dyslexia read on average 30 WPM faster than before, and users without dyslexia read on average 10 WPM faster

(See chart 2). Additionally, both groups improved their reading comprehension by between 11%–13%.

Chart 2

High Contrast WPM and Comprehension Test

WPM

Dyslexic   Non-Dyslexic

■ WPM Base   ■ WPM New

Comprehension

Dyslexic   Non-Dyslexic

■ Comprehension Base   ■ Comprehension New

The next assessment had increased spacing between each line, which is supposed to help prevent readers from skipping over lines when reading paragraphs. Surprisingly, users with

dyslexia did not improve their reading speed by any noticeable margin, whereas users without dyslexia decreased their reading speed. Additionally, comprehension scores for users with dyslexia went down from 33% to 25%, whereas for users without dyslexia comprehension went up from an average of 75% to 83% (See chart 3).

Chart 3

Increased Line Spacing WPM and Comprehension Test

WPM

Dyslexic   Non-Dyslexic

■ WPM Base   ■ WPM New

Comprehension

Dyslexic   Non-Dyslexic

■ Comprehension Base   ■ Comprehension New

The next assessment increased paragraph spacing. Although that is similar to line spacing, this yielded much better results. On average users with dyslexia increased their reading speed by 91 WPM and users without dyslexia increased by 102 words per minute, while maintaining their original reading comprehension scores (See chart 4).

Chart 4

Increased Paragraph Spacing WPM and Comprehension Test

WPM

Legend: WPM Base, WPM New (Dyslexic, Non-Dyslexic)

Comprehension

Legend: Comprehension Base, Comprehension New (Dyslexic, Non-Dyslexic)

The next assessment tested to see if increasing the space between letters helped users read. This is intended to help users with dyslexia tell the difference between letters that have similar shapes. Readers with dyslexia on average increased reading speeds by 90 WPM and had their comprehension score go up by 17%. Readers without dyslexia maintained the same reading comprehension but were able to read faster by 40 WPM (See chart 5).

Chart 5

Increased Letter and Word Spacing WPM and Comprehension Test
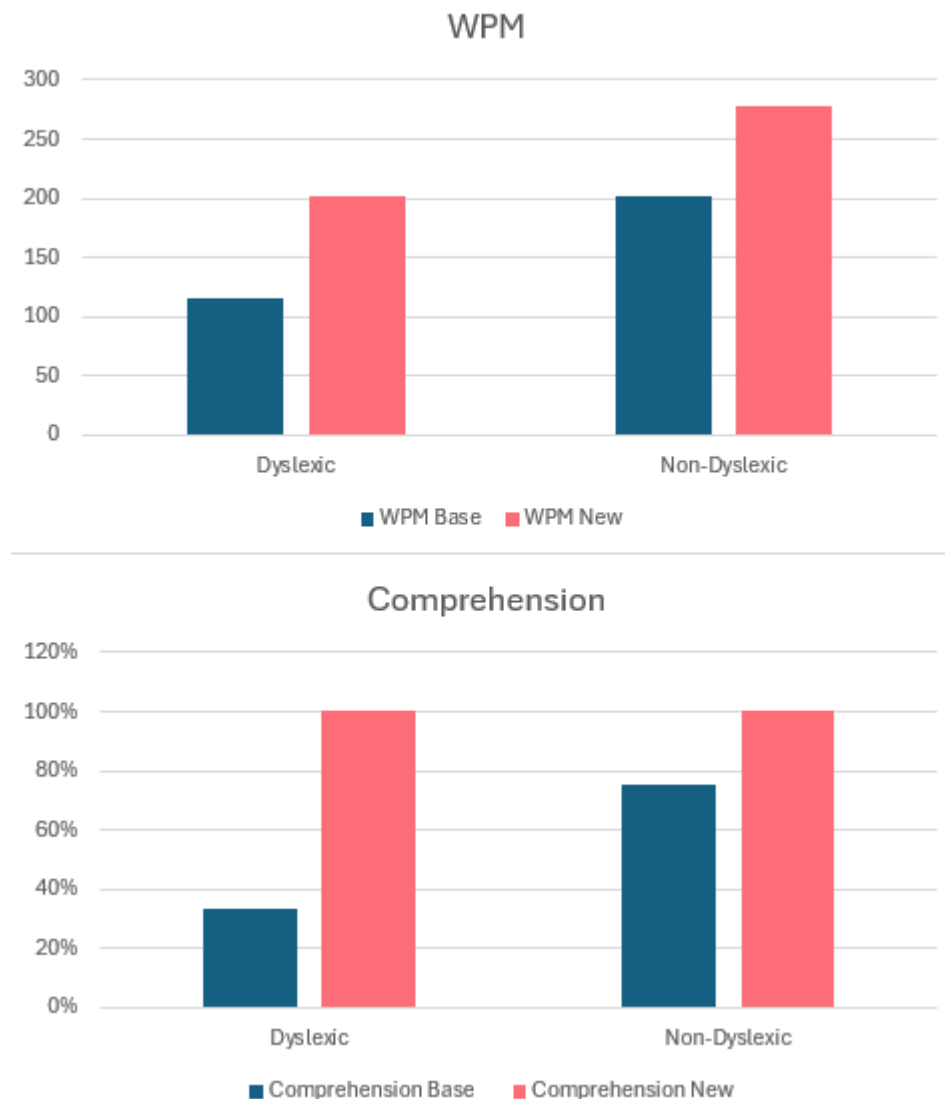
WPM
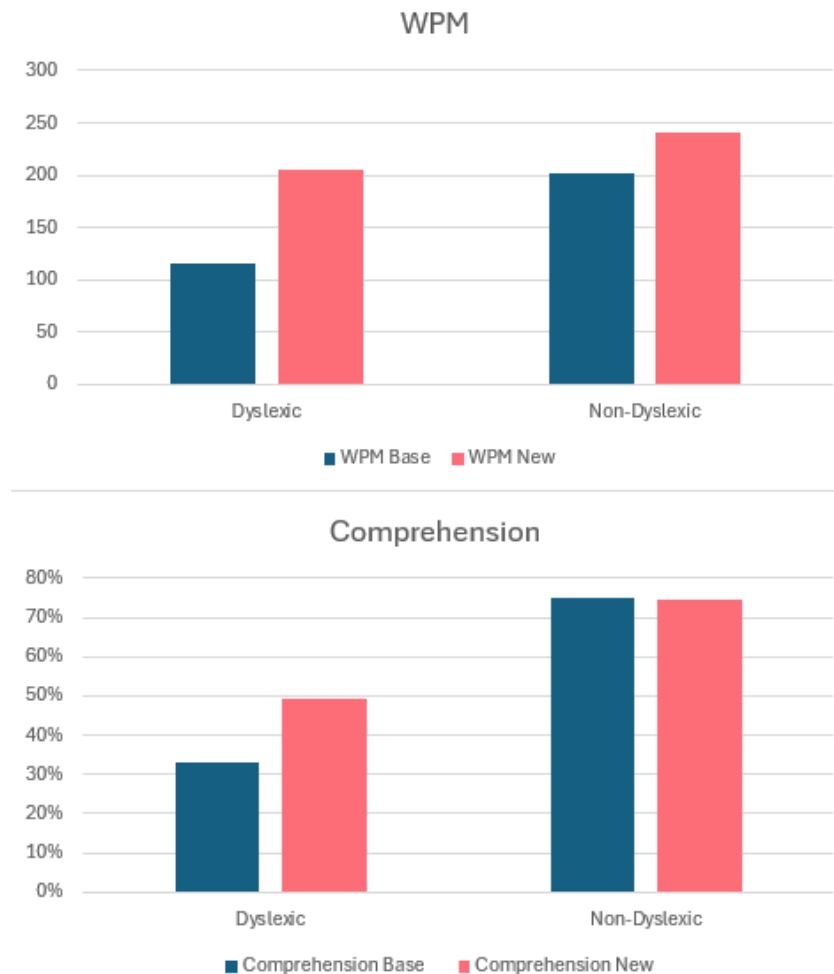
Comprehension

Lastly, I had the participants do a reading speed and comprehension test using a font called OpenDyslexic, which is a free open source font designed specifically to help users with dyslexia. Both groups scored 100% on reading comprehension. Users with dyslexia read on average 87 WPM faster with this font, and users without dyslexia read on average 77 WPM faster (See chart 6).

Chart 6

OpenDyslexic Font WPM and Comprehension Test

WPM

300		
250		
200		
150		
100		
50		
0		
	Dyslexic	Non-Dyslexic

■ WPM Base ■ WPM New

Comprehension

120%		
100%		
80%		
60%		
40%		
20%		
0%		
	Dyslexic	Non-Dyslexic

■ Comprehension Base ■ Comprehension New

Conclusion:

In my research I found the most effective way to make a document or web page more accessible for users with dyslexia was to include four of the features I tested. The most helpful features are high contrast modes, increasing paragraph spacing, increasing letter spacing, and

using a dyslexic friendly font. Not only does this help people with dyslexia, but it also helps almost all users read faster and better comprehend what they are reading.

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