

# What's your type? Psychophysics of variable fonts: Reading speed and comprehension measures

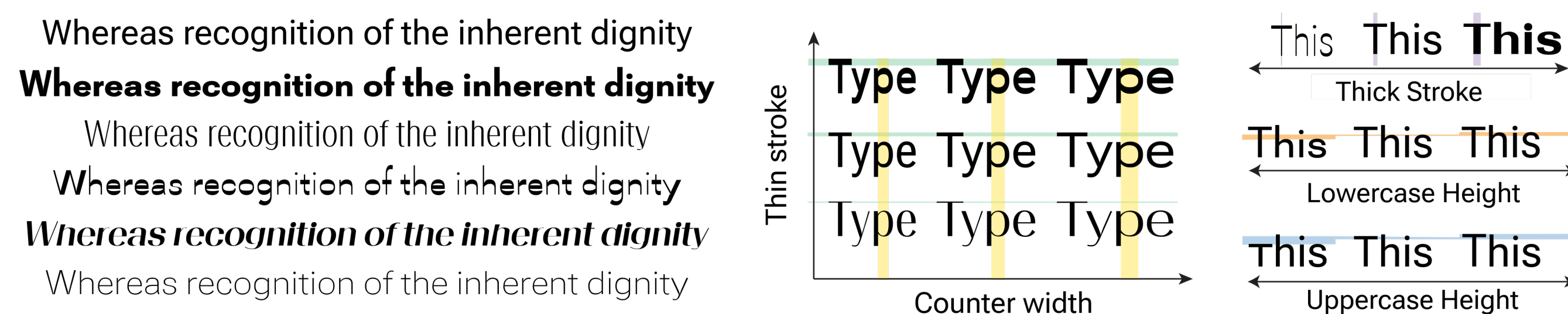


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APPLY LAB

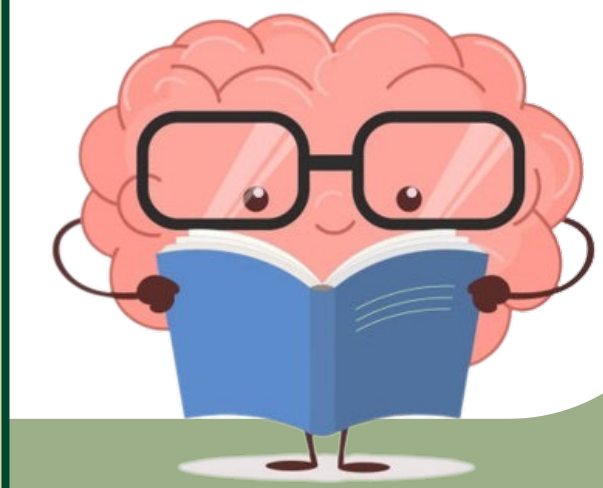
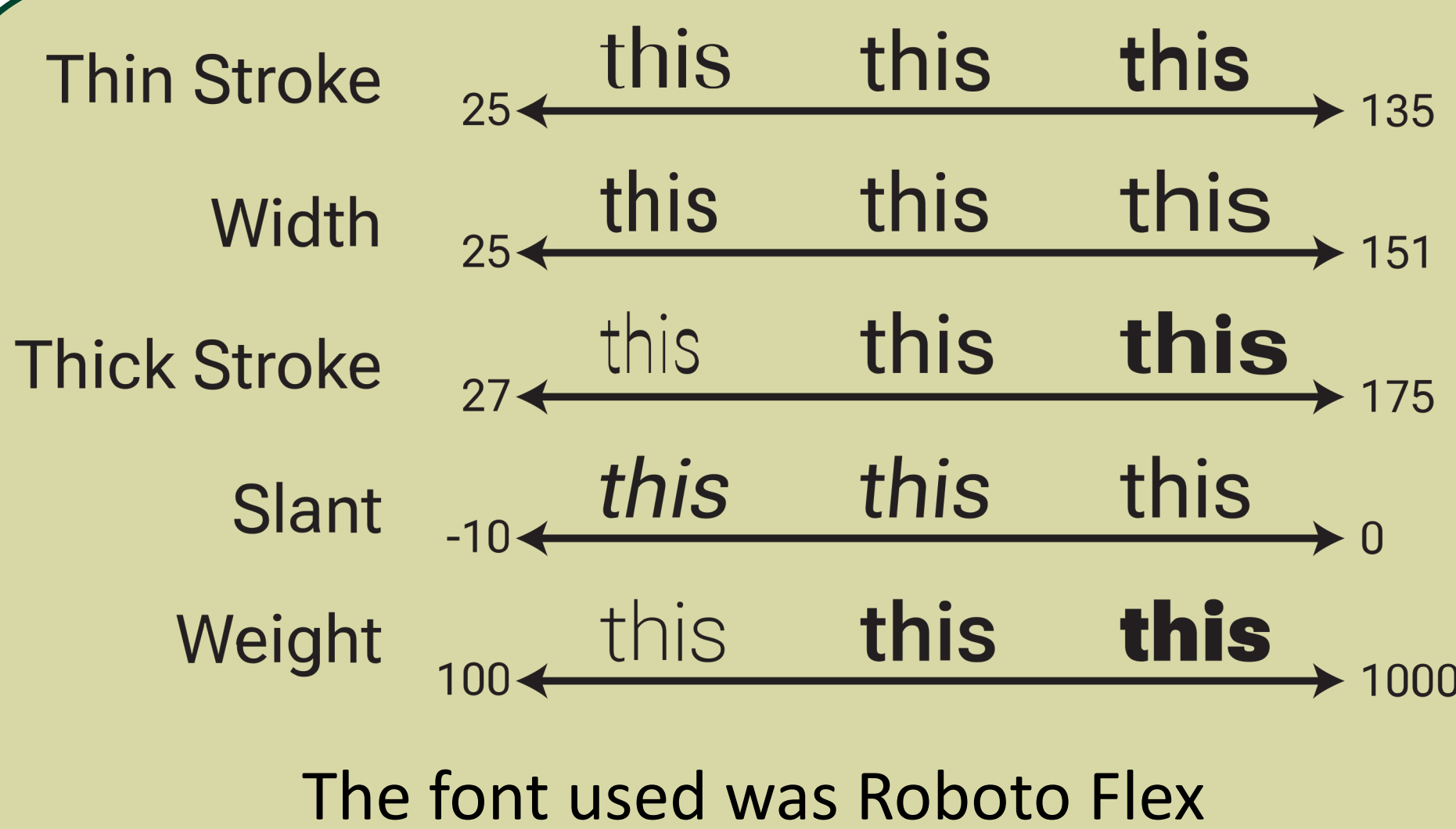
## Introduction

Variable fonts allow designers to manipulate how text appears along many continuous axes. This produces text that looks very different, from a single font file, and these continuous axes lend themselves to researchers using psychophysical techniques to study them.

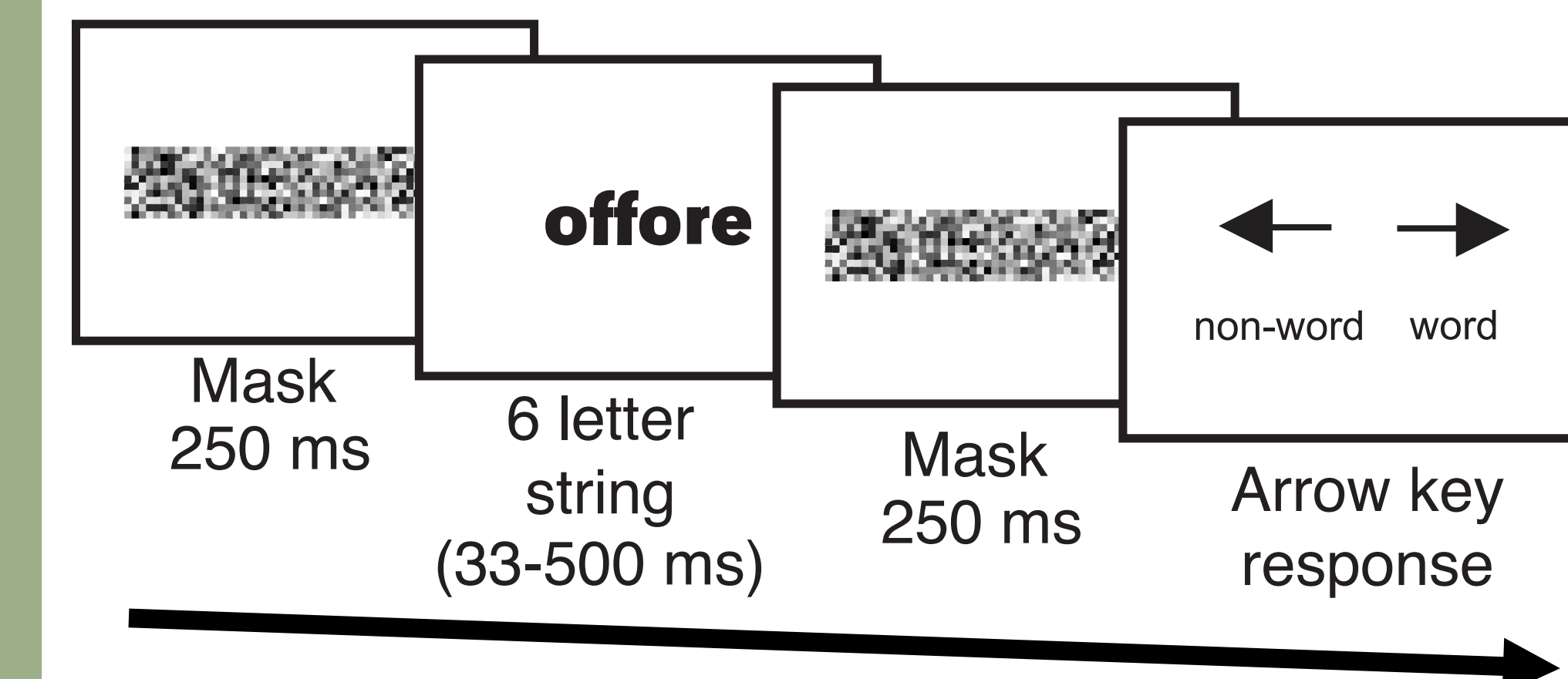


## Research Question

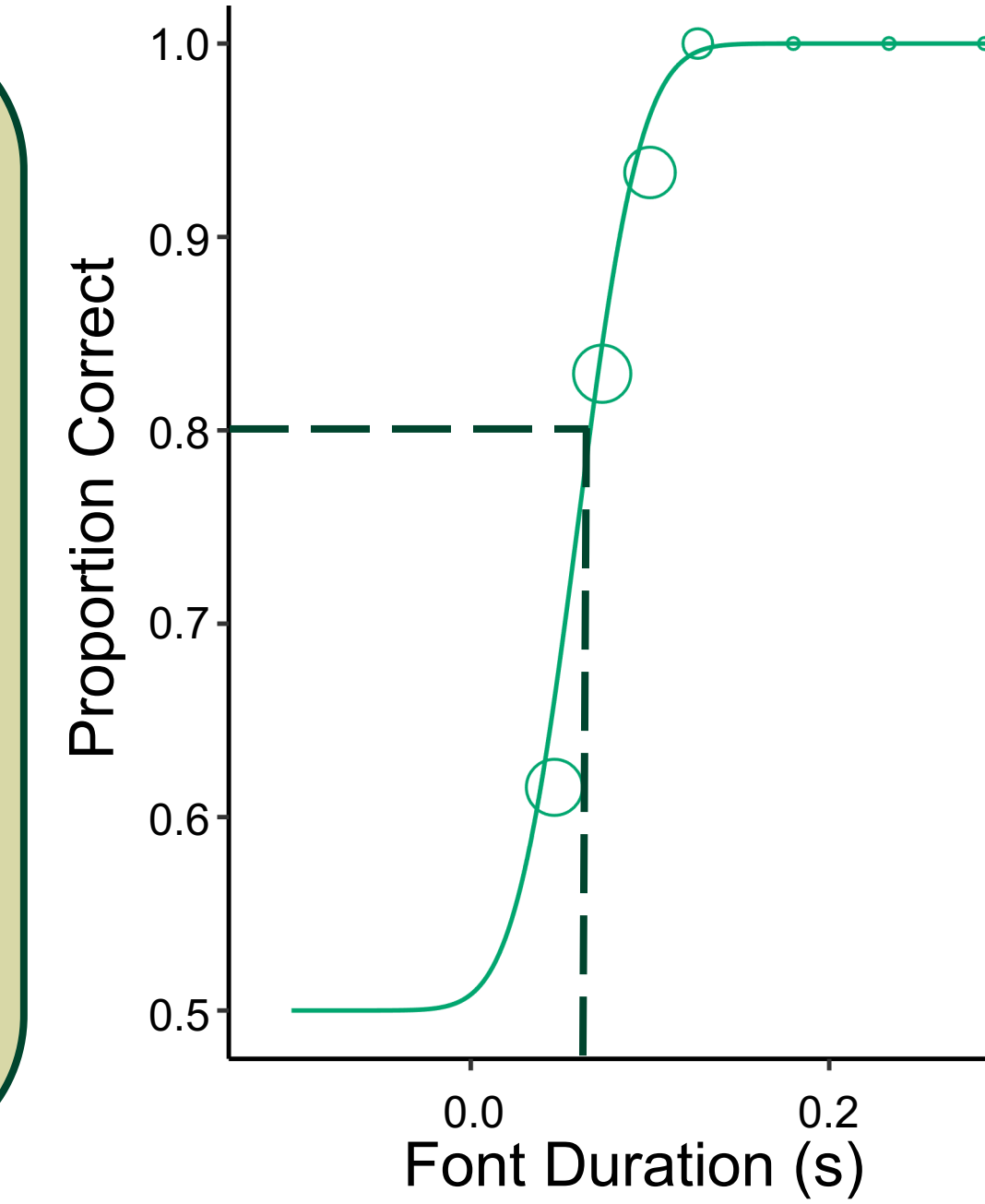
Which axes within a variable font have the largest effects on reading speed and comprehension? Does this vary by task?



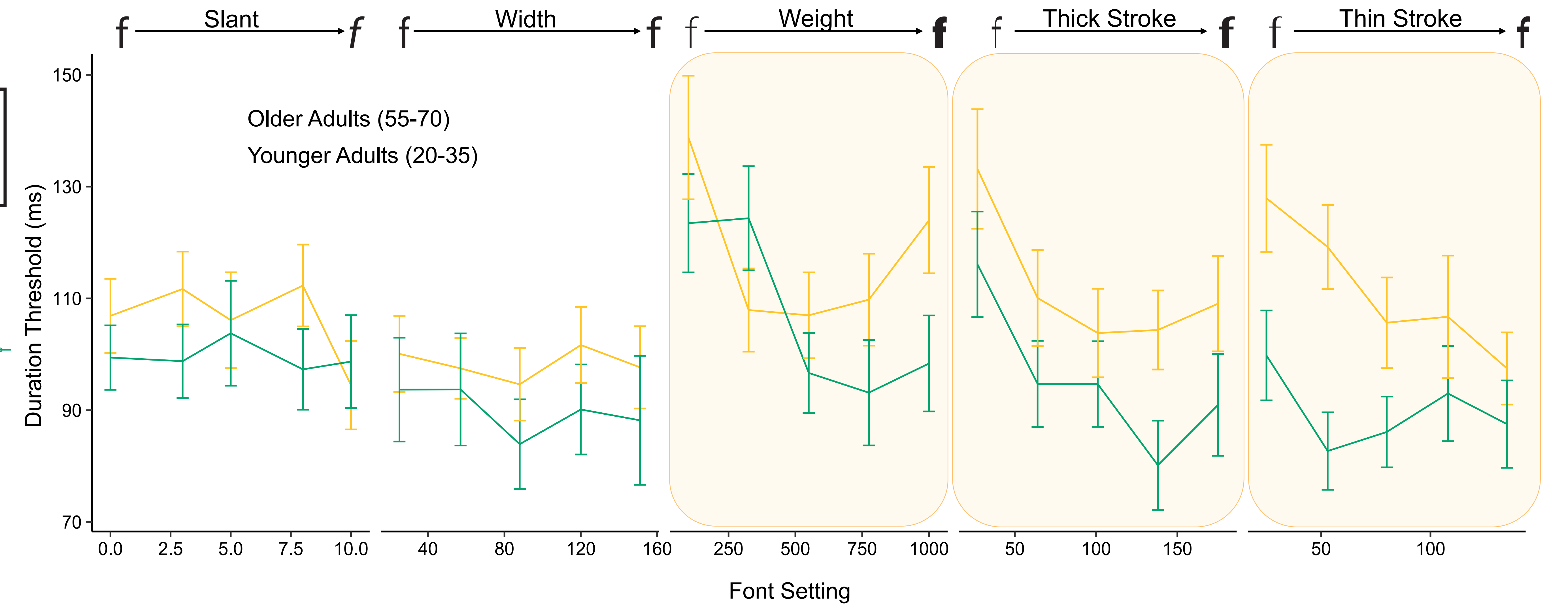
## Methods



How much time do you need to be able to distinguish a word from a non-word?  
N = 40 per axis  
Online (Prolific)  
Calculated an 80% duration threshold



## Exp 1: Lexical Decision Task



Effects are more pronounced for older adults and optimal font weight is different for older and younger adults  
Weight, thin stroke, and thick stroke all impact duration thresholds (no effects of slant or width)

## Exp 2: Passage-level Reading

## Methods

N = 14

Andrew Carnegie was one of the richest men who ever lived, known around the world for his successes in the steel, oil, and railroad industries, and admired for the generosity of his philanthropy. After gaining work and investment experience in the telegraph and railroad...

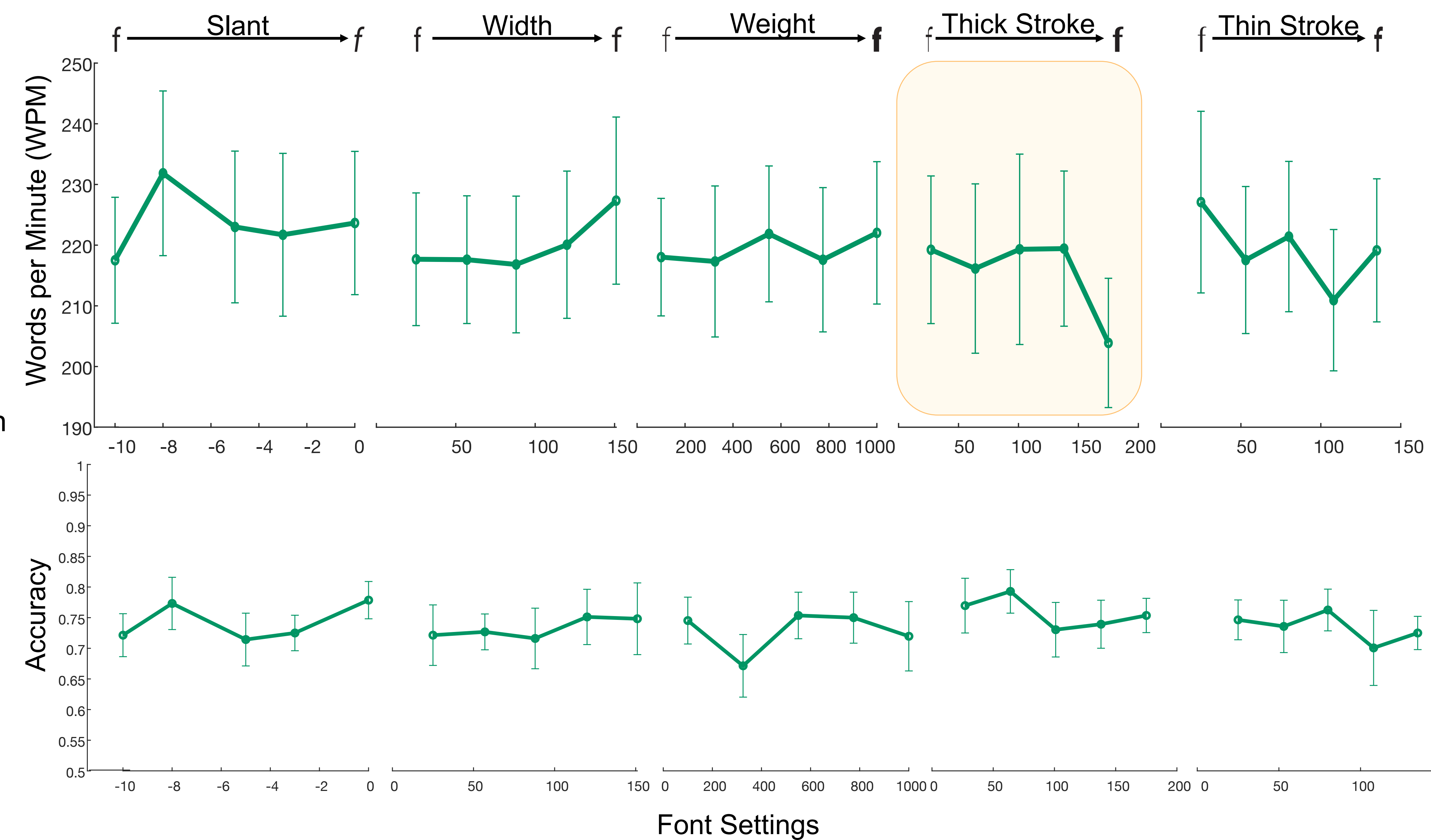
4 passage screens<sup>1</sup> (self-paced)

When did Carnegie begin to focus his work on the steel industry?  
a) Carnegie began to focus his work in the steel industry before he worked in the telegraph industry.  
b) Carnegie began to focus his work in the steel industry before he worked in the oil industry.

5 comprehension questions

Modern technology can do some pretty incredible things. It's possible, with current technological capabilities, to transmit digital information over long distances using coding and decoding processes without losing the contents of the original information. The best part is we don't have to do anything besides send the message and wait for it to be received. Consider, for instance, the cellular phone. It wasn't until the early 1980s...

Next passage



## Reading Speed

Reading speed decreases at extreme thick strokes  
No other significant effects

## Comprehension

Comprehension is stable across font manipulations  
No speed-comprehension tradeoffs

## Conclusions

The effects of axis manipulations within a variable font **depend on task and age**

Consistent with previous work<sup>2,3</sup>, extreme manipulations of font weight decrease reading speed

What's next? Examining individual differences in optimal font settings and the combined effects of manipulations across multiple axes

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References: [1] Wallace, S. et al., *ACM Trans. Comput. Interact.* 29 (2022). [2] Dobres, J., Reimer, B., Chahine, N., *AutoUI*, (2016). [3] Bernard, J. B., Kumar, G., Junge, J., Chung, S. T. L. *Vison Res.* 84, 33–42 (2013).