

# Font Size, X-Height, and Readability: How Typography Affects Reading Speed Across Different Sizes

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## BACKGROUND

- Larger print size is well-known to improve reading speed in low vision.
- Font x-height, the height of lowercase letters ('x'), is another important aspect of typographic "size".
- Crucially, x-height is distinct from print size; fonts at the same point size can have different x-heights.
- This distinction prompts investigating the combined influence of both print size and x-height on reading speed.

### Aim:

- To investigate the combined effects of print size and font x-height on reading speed.

### Questions:

- Does font x-height have an independent effect on reading speed?
- Do print size and x-height interact in their effect on reading speed?

## METHODS

### Participants

- 60 native English-speaking participants
- Age range: 25-69 (Mean: 42.7)
- Normal or corrected-to-normal vision

### Design

- Participants read passages presented in systematically varying print sizes.
- Within print sizes, fonts with different x-heights were used to manipulate the x-height factor.
- Reading speed was recorded, followed by comprehension questions.

### Analysis

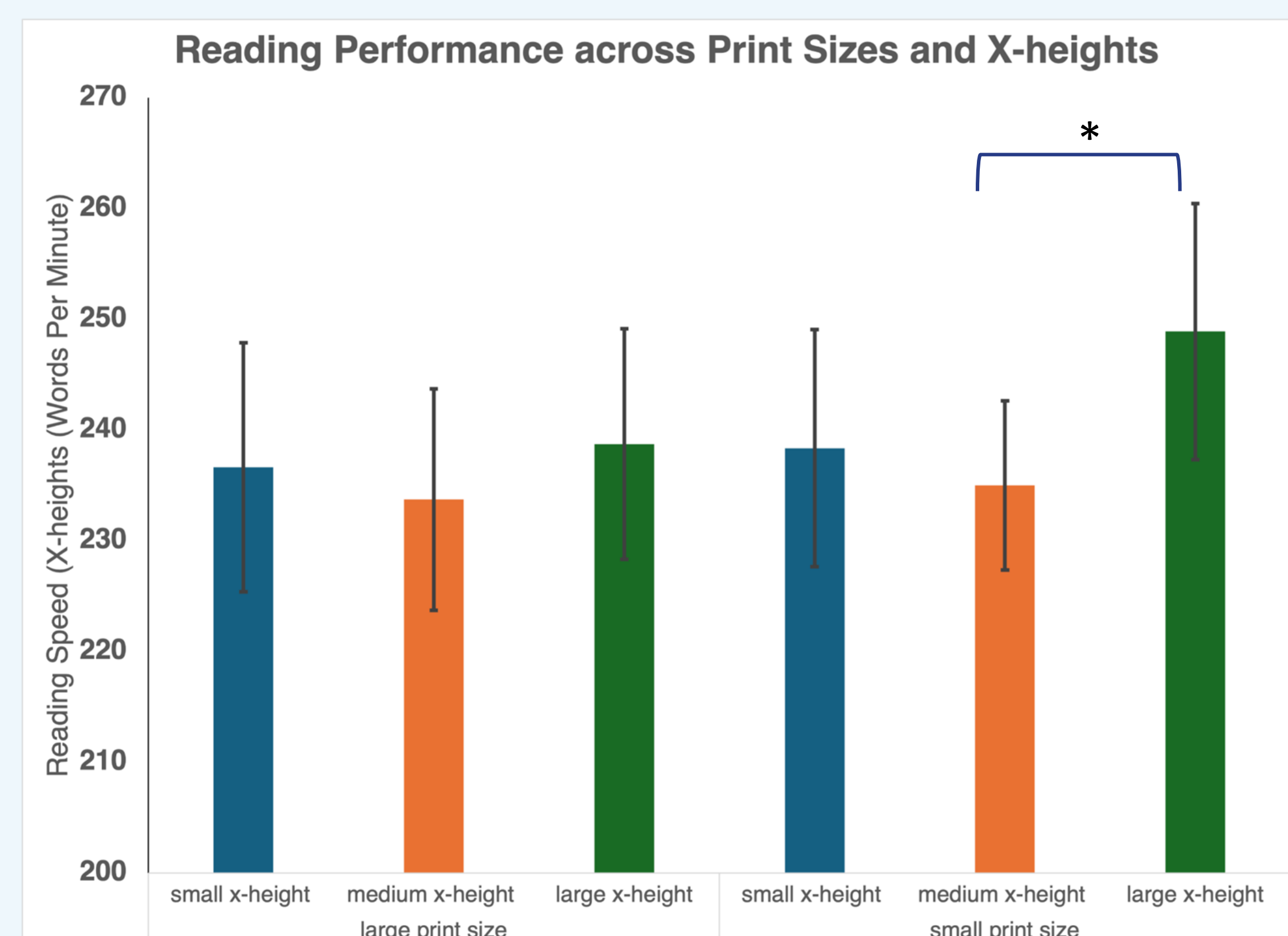
- Repeated-measures ANOVA assessed main effects; a linear mixed-effects model analyzed interactions and individual variability.

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## RESULTS

- While x-height alone did not significantly affect reading speed, an interaction between print size and x-height was observed.
- When the print size was small, participants read faster with fonts having larger x-heights (Mean = 248 WPM) compared to those with smaller x-heights (Mean = 232 WPM).
- This beneficial effect of a larger x-height was not observed when the print size was large.



## CONCLUSIONS

- **X-height's impact is most pronounced at small print sizes**, aiding readability under challenging conditions.
- The **contribution of x-height diminishes as print size increases** and reading becomes easier.
- Practical Implication: **When print size is constrained, choosing fonts with larger x-heights offers** an alternative way to enhance readability.

