



Omit Needless Words: Sentence Length Perception

Nestor Matthews

Denison University - Department of Psychology, Neuroscience Program, Data Analytics Program



Introduction

- Short sentences typically promote readability, and therefore inclusiveness [1].
- Writers can optimize readability via visual search (finding their long sentences among their short ones) and numerosity judgments (comparing their sentence length to a desired word count).
- Visual search can depend on scene syntax [2-5].
- Does the scene syntax of a typical text page influence sentence length perception?

Participants, Stimuli & Task

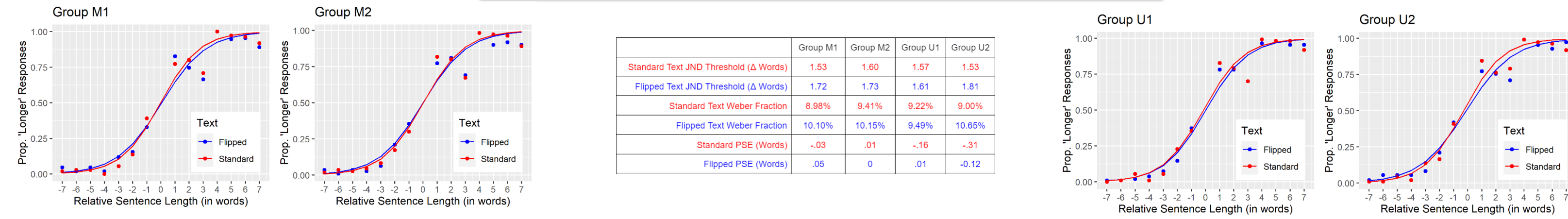
- 88 Participants from *Prolific* ran on *Pavlovia*.
- **Stimuli:** 2-second presentations of a standard, mirror reversed, or upside down text page.

Standard Text Mirror Reversed Text Upside Down Text

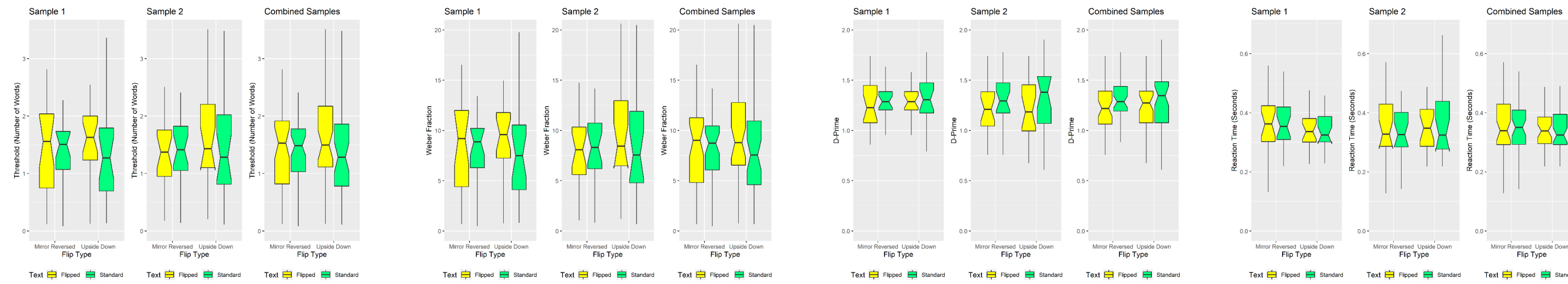


- **Task:** Participants judged whether the bolded sentence had fewer vs more than 17 words?
- **Hint:** “17 words typically span ~1.5 lines of text.”

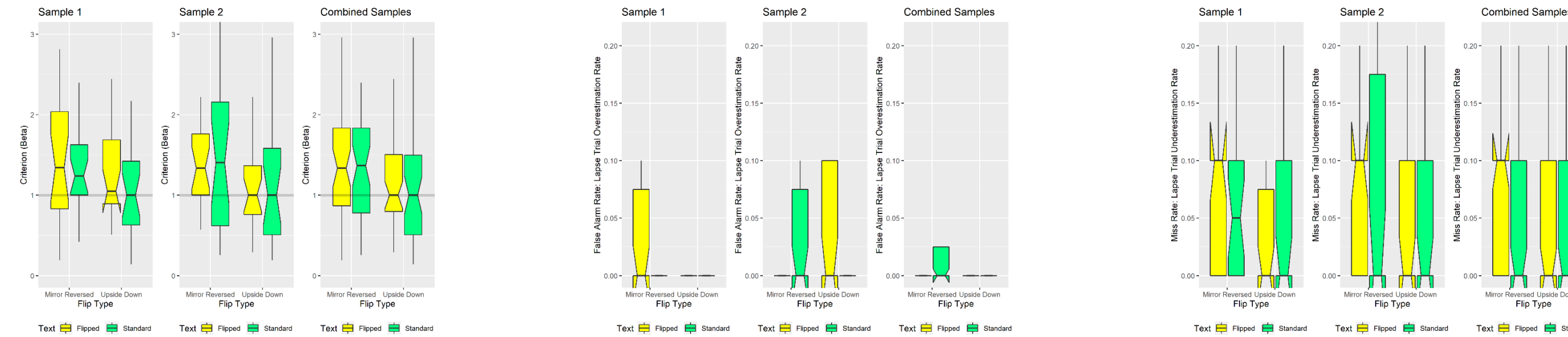
Results



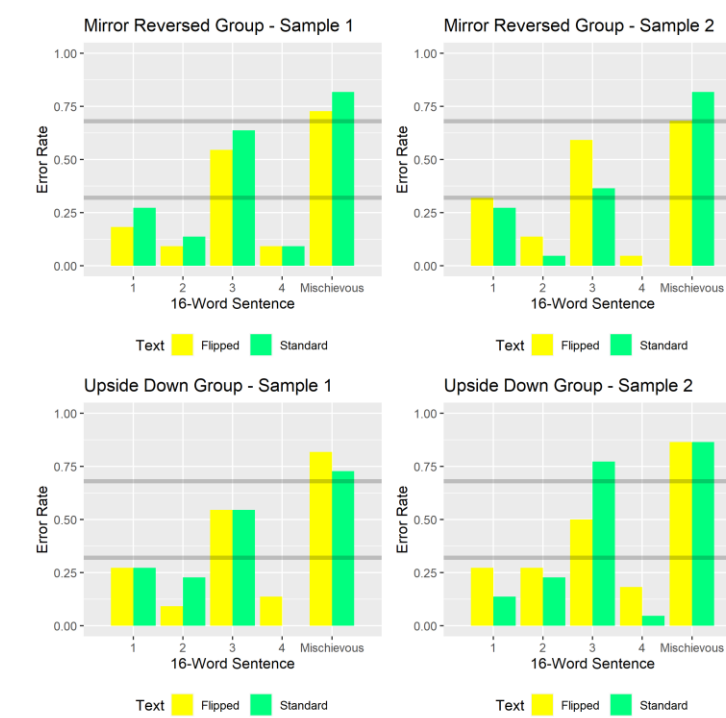
Precision & Speed



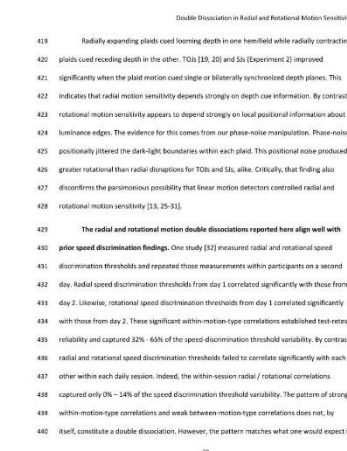
Bias & Lapses



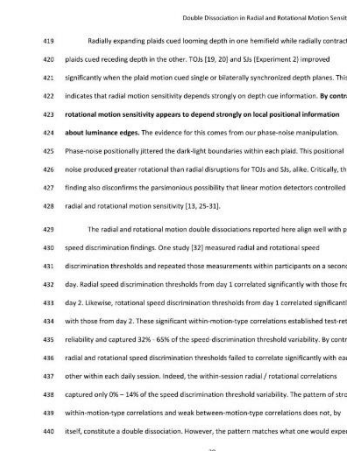
Strategy



No Mischief



Mischief!



Discussion

- *Naïve* participants perceived sentence length precisely and quickly.
- Flipped text generated no loss in the speed and nearly no loss in the precision of sentence length perception (SLP), unlike the large inversion effects for face recognition [6], body-position recognition [7], and reading [8].
- Participants achieved high SLP precision and speed by counting lines, not words (see “Mischief!”).
- Lapse analyses showed that participants significantly underestimated the length of mirror reversed – but not upside down, nor standard – sentences. These underestimates provide novel evidence for a left-laterally anchored scene syntax in visual search [2-5], i.e., spatial mismatches between guided-search “heatmaps” [5] and mirror reversed text.

References

1. Flesch (1979). How to write plain English. Harper & Row (New York).
2. Biederman (1977). DOI:10.1145/1024273.1024283
3. Vo & Wolfe (2013). PMID: 23842954
4. Boettcher et al., (2018). PMID: 30561493
5. Wolfe (2021). PMID: 33547630
6. Yin (1969). doi.org/10.1037/h0027474
7. Reed et al., (2003). PMID: 12807401
8. Koriat & Norman (1985). PMID: 3161988

Stimuli & data available on the Open Science Framework: <https://osf.io/89myj/>
 Preregistration on Open Science Framework: <https://osf.io/3k5cn>
 Run on Pavlovia: <https://run.pavlovia.org/nestormatthews/slp-smu>