Omit Needless Words: Sentence Length Perception

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Introduction: Most measures of text readability quantify sentence length. Short sentences typically promote readability, and therefore inclusiveness. Omitting needless words from one's own writing entails skimming the text for long sentences (targets) among short sentences (distractors) -a visual search task followed by a numerosity task. Do these tasks depend on perceptually learned global text orientation?

Method: Before collecting data I pre-registered the hypotheses, predictions, methods, and statistical power analysis on the Open Science Framework (https://osf.io/3k5cn). Subsequently, the web-participant service "Prolific" recruited 88 adults who reported English as their first language and completed the experiment online using the pavlovia.org platform. Each trial began with a 2-second presentation of a text page containing one bolded sentence among numerous non-bolded sentences. Across trials, the text appeared either in standard orientation (like the page you are reading now) or flipped (upside down or mirror reversed). Participants judged whether the bolded sentence contained more or fewer than 17 words.

Results & Conclusion. The experiment generated four findings. First, naive participants showed excellent precision in judging sentence length: thresholds approximated 1.3-word fluctuations around a 17-word mean sentence length (Weber Fraction = ~7.4%). Second, the precision and speed of sentence length judgments remained virtually unchanged after flipping standard-orientation-text either vertically or horizontally. Third, error patterns indicated that participants estimated sentence length by counting the lines of text rather than by counting individual words. This "chunking" strategy has the advantage of bringing sentence-length estimates into the subitizing range: 1 to 3 lines versus 10 to 24 words. Fourth, interleaving standard text and upside down text had no effect on response biases. However, interleaving standard text and mirror-reversed text significantly biased participants toward underestimating sentence length in both conditions. The specificity of this underestimate provides evidence for a laterally anchored scene syntax in visual search (Wolfe, 2021).

Word Count: 300

2. Response precision and reaction times for sentence length judgments remained virtually identical after flipping text either vertically or horizontally.

3. Error patterns indicated that participants estimated sentence length by counting the lines of text rather than by counting individual words. This "chunking" strategy has the advantage of bringing sentence-length estimates into the subitizing range: 1 to 3 lines versus 10 to 24 words.

4. Interleaving standard text and upside down text had no effect on response biases. However, interleaving standard text and mirror-reversed text significantly biased participants toward underestimating sentence length in both conditions. The underestimate could arise from a strategy in which participants remain uncertain about whether to orient to left-justified-right ragged-text or vice versa.