Supplementary materials for *Reading proficiency and eye-movements in L1 and and L2*

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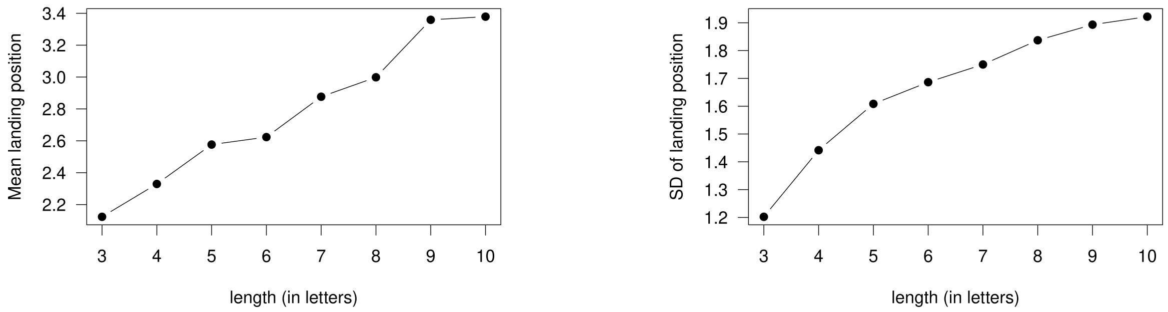
S1: Functional form of word length and launch distance effects on initial landing positions

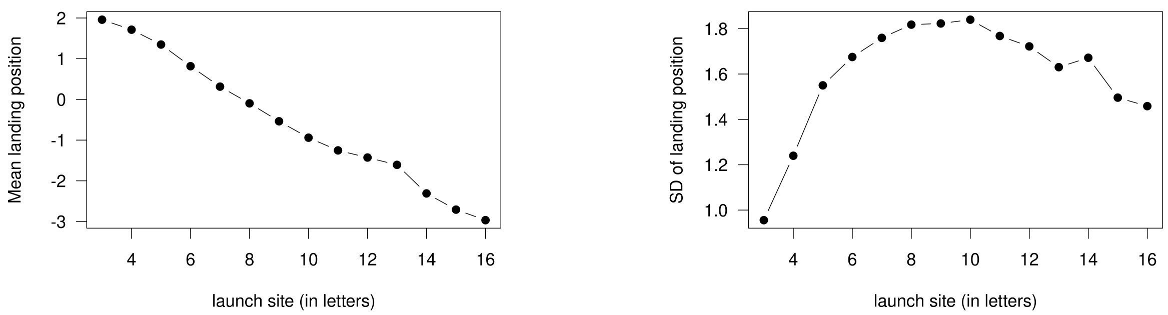
Estimated parameters from the best-fitting theoretical distributions revealed several noteworthy patterns. First, longer words came with a rightward shift in initial landing position farther into the word, with the mean values being at or slightly before the center of the word, in line with multiple earlier reports (Krügel & Engbert, 2010; McConkie et al., 1988; Rayner, 1979), Figure 1a. Increase in word length also came with a monotonic, non-linear increase in dispersion (see Figure 1b): Longer words come with a greater variability in landing positions but the increase in standard deviation is diminished in very long words (9-10 letters).

Launch site distance also systematically affected initial landing positions. If a given saccade's launch site was closer to the beginning of the word, the initial landing position of that saccade shifted farther into the word, in line with McConkie et al. (1988). The shift was non-linear showing little change across very remote launch sites (-13, -11, and -9), possibly reflecting a cut-off of the perceptual span (or, more precisely, reflecting the gradual decline of the visual acuity of the eye away from the point of fixation) in the direction of reading (Rayner, 1998), Figure 2a. The effect of launch site distance on dispersion of initial landing positions had an inverted U-shape (see Figure 2b), with the greatest values of standard deviation observed at launch sites of -5 and -4 and a steep decrease associated with more extreme (remote or close) launch sites. We suggest that the inverse-U pattern emerges because a greater proportion of saccades from very remote and very close launch sites land outside of a target word (undershooting or overshooting it, respectively) and thus are removed from our calculation of dispersion for that launch site. As a result, distributions of landing positions for saccades launched from very close or remote sites appear more homogeneous and give rise to lower values of SD.



(a) (b)

Figure 1. The estimated mean (a, left panel) and standard deviation (b, right panel) of initial landing positions aggregated across samples as a function of word length.



(a) (b)

Figure 2. The estimated mean (a, left panel) and standard deviation (b, right panel) of initial landing positions aggregated across samples as a function of launch site.