Supplementary Materials

Word Skipping Analysis

Given that increased word skipping is a key index of age-related changes in reading (Paterson et al., 2020), we conducted a supplementary analysis of the total number of words skipped during older adults’ first-pass reading of the sentences. This analysis showed a significant effect of sentence difficulty because older readers skipped more words in easy versus hard sentences ($b = -0.07, SE = 0.03, t = -2.73$). There were also significant effects of both right window contrasts (3- vs. 9-letter: $b = 0.41, SE = 0.03, t = 12.32$; 9- vs. 15-letter: $b = 0.21, SE = 0.03, t = 6.21$). However, there were no significant effects of left window size (both $ts < 1$), reading proficiency ($t < 1$), or interactions between any of the factors (all $|t|s < 1.67$) on word skipping.

Combined Analyses

In order to assess the extent to which age modulated the impact of window size on reading, we conducted a set of analyses combining the present data with the young-adult data from Veldre and Andrews’ (2014) Experiment 2. Age was included in LMM analyses of the global reading measures as an effect-coded contrast as well as interactions with sentence difficulty, the right window contrasts, and the left window contrasts. Models included both random intercepts and random slopes for the highest order within-unit interaction for subjects and items, and excluded the correlation parameters (Barr, 2013; Barr et al., 2013). The models did not include proficiency because the two age groups completed different test batteries. In addition to the reading measures reported in the main analyses, we also conducted a combined analysis of word skipping because this is a key eye-movement index that has been associated with age-related changes in reading behavior. Below we report the main effects and interactions involving age group.
There was a significant main effect of age on reading rate ($b = -27.14, SE = 8.93, t = -3.04$), word skipping ($b = 0.62, SE = 0.15, t = 4.23$), and regression count ($b = 1.53, SE = 0.33, t = 4.64$) because older adults read more slowly overall, but skipped more words and made more regressions than younger adults. The two groups did not differ significantly on forward saccade length, fixation count, or average fixation duration (all $t$s < 1.87). The effect of age group on reading rate interacted with sentence difficulty ($b = 7.12, SE = 1.77, t = 4.03$) because younger adults showed a larger effect of sentence difficulty on reading rate than older adults.

Age modulated the effect of right window size on difference on reading rate (3- vs. 9-letter: $b = -13.43, SE = 2.17, t = -6.19$; 9- vs. 15-letter: $t < 1$), forward saccade length (3- vs. 9-letter: $b = -0.70, SE = 0.06, t = -12.30$; 9- vs. 15-letter: $b = -0.37, SE = 0.06, t = -6.55$), average fixation duration (3- vs. 9-letter: $b = -8.46, SE = 1.33, t = -6.38$; 9- vs. 15-letter: $b = -6.69, SE = 1.32, t = -5.06$), and regression count (3- vs. 9-letter: $b = -0.90, SE = 0.09, t = -10.39$; 9- vs. 15-letter: $b = -0.29, SE = 0.09, t = -3.35$), but not fixation count (both $t$s < 1). These interactions demonstrated that the indices of older adults’ reading behavior showed less sensitivity to the size of the right window compared to that of younger readers. There were also significant Age × Sentence difficulty × Right: 9 vs. 15-letter interactions on reading rate ($b = 10.71, SE = 4.73, t = 2.26$) and fixation count ($b = -0.61, SE = 0.31, t = -2.00$) because only young readers showed a differential impact of sentence difficulty between the 9- and 15-letter right windows on reading. Overall, the combined right-window results are consistent with the idea that, on average, older adults have a smaller rightward perceptual span than younger readers.

There were also significant interactions between age and left window size on reading rate (3- vs. 6-letter: $b = 6.65, SE = 2.17, t = 3.07$; 6- vs. 9-letter: $b = 3.12, SE = 2.16, t = 1.44$), forward saccade length (3- vs. 6-letter: $b = -0.14, SE = 0.06, t = -2.49$; 6- vs. 9-letter: $t$
< 1), fixation count (3- vs. 6-letter: \( b = -0.41, SE = 0.15, t = -2.72; 6\)- vs. 9-letter: \( b = -0.43, SE = 0.15, t = -2.85 \)), and regression count (3- vs. 6-letter: \( b = -0.34, SE = 0.09, t = -3.92; 6\)- vs. 9-letter: \( b = -0.25, SE = 0.09, t = -2.87 \)), but not average fixation duration (both \(|t|s < 1\)).

With the exception of forward saccade length, these interactions showed that older adults’ reading was more sensitive to the availability of information to the left of fixation than younger readers. In contrast, older readers’ forward saccade length was less impacted by the availability of leftward information than younger readers. Overall, the pattern of these interactions is consistent with the claim that older adults make more use of information to the left of fixation during reading than younger adults.