Word identification in reading is constructive: Refixations seek new visual information

Yunyan Duan & Klinton Bicknell

Northwestern University

When reading, readers move their eyes to gather visual information in order to identify the text. Yet the precise role of visual information for word recognition in fluent reading is still unresolved. The words-as-objects account suggests that words are recognized holistically, and this process is most efficient when the word is centered in the visual field. Alternatively, word identification could work constructively, combining views of a word from multiple fixations to achieve identification. Thus, the most efficient position from which to finish identifying a word would depend on the previous visual information obtained. We tease apart these two accounts by examining where readers choose to refixate a word. On the words-as-objects account, refixations always target the word's center. In the constructive account, refixations are more likely to move backwards when the reader had less information about the word's beginning prior to fixating it - when the prior fixation was further from the word. We confirm the latter prediction in an eye-movement corpus (controlling for initial fixation location on the word). Further analyses rule out alternative explanations, and simulations with E-Z Reader, a words-as-objects model, do not reproduce this result. Together, these results support a constructive model of word identification in reading.