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Authors

Berzak, Yevgeni

Levy, Roger

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Eye Movement Traces of Linguistic Knowledge

Yevgeni Berzak

MIT, Cambridge, Massachusetts, United States

Roger Levy

Massachusetts Institute of Technology, Cambridge, Massachusetts, United States

Abstract

This study examines how linguistic knowledge is manifested in eye movements in reading, focusing on the effect of two key word properties: frequency and surprisal, on three progressively longer standard fixation measures: First Fixation, Gaze Duration and Total Fixation. Comparing English L1 speakers to a large and linguistically diverse group of English L2 speakers, we obtain the following results. 1) Word property effects on reading times are larger in L2 than in L1. 2) Differences between L1 and L2 speakers are substantially larger in the response to frequency than to surprisal. 3) The functional form of the relation between fixation times and frequency and surprisal in L2 is superlinear. 4) In L2 speakers, proficiency modulates frequency effects as a U shaped function. We discuss the implications of these results on theory of language processing and acquisition, as well as the general interpretation of frequency and surprisal effects in reading.