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Interdependence of Fixations and Saccades

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Abstract: The present study investigates the relation between the reading process and text comprehension during naturalistic text reading. To that end, participants read easy and difficult texts while their eye movements were recorded. After each reading, participants filled-in comprehension questionnaires. We investigated classical measures of the reading process related to comprehension (fixation duration, regressive eye movements), as well as power-law scaling in eye movements that are indicative of degree of cognitive coordination during reading. The results show that text difficulty led to longer fixation durations and stronger power-law scaling in eye movements. Moreover, the degree of power-law scaling in eye movements was predictive of text comprehension. In line with previous research on natural text reading that utilized the self-paced reading method, power-law scaling turned out to be a superior predictor of reading comprehension compared to standard measures, suggesting that it is an effective measure of cognitive performance in complex reading tasks.