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Survival analysis: A tool for timing semantic and formal effects on derived and compound word recognition

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A critical point for many conflicting accounts of morphological processing is the relative time-course of formal (orthographic, phonological and morphological) and semantic effects during visual recognition of complex words. This talk address this question with the help of a nonparametric technique of survival analysis (Reingold & Sheridan, 2014, 2016), designed to estimate the temporal onset of an effect on behavioral response latencies. The technique considers distributions of response times to groups of words differing in a formal or semantic characteristic, and establishes the earliest timepoint at which the distributions reliably diverge and the effect of the target characteristic has its onset. We present worked examples for over 10 datasets of lexical decision and eye fixation latencies to derived words (Schmidtke & Kuperman, in press) and compounds in English and Dutch. We also discuss estimation of effect onsets for individual participants, as well as aggregated samples. The relative order of divergence points in response time distributions reveals that semantic effects are virtually simultaneous with formal ones. We also discuss how the absolute time signatures of behavioral effects in lexical decision latencies and especially the eye-movement record (120-250 ms) guide future research by constraining the expected timeframe of same effects in the brain activity.

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