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Novel insights in morphological processing from Dynamic Survival Analysis and Quantile Regression

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We present two statistical methods that make it possible to assess whether the effect of predictors on a response variable vary within the distribution of the response. Dynamic survival analysis is applicable to durational responses such as reaction times, fixation durations, and acoustic durations. Quantile regression can be applied to any kind of measurement, not only durations but also tongue positions or the amplitude of the brain's electrophysiological response to some stimulus. Dynamic survival analysis applied to auditory lexical decisions to English compounds revealed early effects of compound frequency and late effects of modifier frequency, replicating Schmidtke et al. (2017). The competing risks setting of dynamic survival analysis enabled a further analysis of the nonword responses, indicating that such error responses are likely to arise due to intrusion of the modifier. A quantile regression applied to articulatory trajectories of the tongue as revealed by electromagnetic articulography showed that regular present and past tense inflections of English verbs are co-articulated more strongly when more frequent, and that this effect was especially prominent when the general position of the tongue was higher. Both sets of results argue against decompositional theories of morphology, and fit well with the discriminative perspective on lexical processing as well as with Word and Paradigm morphology.

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