

Sometimes more is less: How representational complexity impacts processing Dynamics

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A primary goal of psycholinguistics is to better understand the cognitive mechanisms that control the speed and accuracy of language processing. In this talk, I will discuss how representational complexity impacts the memory encoding and retrieval processes that are required for successful sentence comprehension. Previous research on complexity effects shows a mixed profile. Some studies have found that more complex targets slow down processing at retrieval sites (e.g., Murphy, 1985; Frazier & Clifton, 2005), some have found that they speed up processing (e.g., Hofmeister, 2011; Hofmeister & Vasishth, 2014), and others report null effects (e.g., Frazier & Clifton, 2001; Martin & McElree, 2008; Paape et al., 2017). I suggest that this variability likely reflects a Type S (sign) error due to insufficient statistical power and show using a combination of computational modeling and high-powered reading time experiments that not all complexities are created equal. In the verbal domain, complex target VPs involving post-modification speed up processing at retrieval sites, but complex VPs involving pre-modification do not. Interestingly, this effect does not extend to the nominal domain, with null effects observed for both pre- and post-modified NPs. The contrast between VPs and NPs is unexpected under current models of sentence processing and suggests that there are fundamental differences in how we encode and access these phrases in memory. In discussion, I will elaborate on these differences and offer some suggestions for how we might extend current processing models to capture the observed effects.