Semantic Processing in the Context of the PRP Paradigm: Structurally or Strategically Bottlenecked?

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Abstract: It is widely believed that semantic activation from print is not capacity limited (i.e., that it does not need attentional resources). Prior research has tested this assumption by examining the Stroop effect in the context of the psychological refractory period (PRP) paradigm. These studies yielded additivity of the Stroop effect and SOA on RT, consistent with the hypothesis that semantic activation is itself capacity limited (given demonstrations that prior processes are not capacity limited). There is, however, an alternative explanation for such additivity: performance optimization (Miller and colleagues, 2009). Given that participants in PRP experiments are told to respond as quickly as possible, they may opt to process serially to improve performance. We investigated whether additivity of the Stroop effect (standard and semantic) and SOA in the context of PRP is best explained in terms of a structural bottleneck or performance optimization.