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Investigating the effect of distance entropy on semantic priming

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Abstract

Recent studies have found that people are sensitive to the large-scale network structure of semantic free associations. The current work aims to conduct a stronger test of people's sensitivity to structural nuances within the semantic network by going beyond measurements of path lengths between word pairs (e.g., Kumar et al., 2019). Here we examine the influence of distance entropy on semantic priming. Distance entropy is the entropy of the shortest paths from a target word to all other words in the network. Simulations suggested that nodes with lower distance entropy (i.e., many shortest paths of similar lengths) led to more "democratic" spread of activation overall—with higher median and less variable activation levels among nodes—and hence should be more "effective" primes. However, analyses of Semantic Priming Project data were not conclusive and targeted experiments are needed to further examine the effect of distance entropy on semantic priming.