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Comparing Semantic Dimensions with a Text Corpus and Free Associations

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Abstract: In order to efficiently access the meaning of a word, there should be some structure to the way meaning is stored in memory. One possibility is that semantic memory for words is organized in an n-dimensional space in which there are n features that collectively identify all words. This possibility underlies Mitchell et al's (2008) suggestion that 25 sensory-motor features can be used to model fMRI images produced by nouns from five different categories.

Another way to structure the semantic space is by looking for natural dichotomies within the space. For instance, antonyms could be used to define a single dimension in a high-dimensional semantic space. Using a simple computational model, we evaluate these sensory-motor and antonym approaches to semantic dimensions with Brants and Franz (2006) text corpus and new free association data.