Abstract describing the poster (50 words maximum)

We investigate the role of valence, dominance, and arousal as organizing principles of the mental lexicon. Our findings indicate that the interconnectivity for a large number of words in a network derived from word associations can accurately predict these principles.

Supporting summary (500 words maximum, plain-text format)

Although there has been some research into the mental lexicon (the structure containing someone's knowledge of words), relatively little is known about what factors influence how this structure is organized. Previous research showed that age of acquisition and valence may play an important role in determining which concepts are connected: concepts that are learned at a young age generally show higher connectivity, and concepts with a positive valence elicit a greater amount of associations and associations that are more diverse.

In this study, we extend these findings by examining what role the affective dimensions valence, arousal, and dominance play in the connectivity of concepts in the lexicon.

To examine this issue, we make use of word associations; association data are extremely useful when investigation the mental lexicon, as the probability of producing a certain response to a cue is considered a direct measure of the associative strength between the cue and response in the mental lexicon. We use the Dutch Association Lexicon, a very large word association dataset derived from a continued association task, to construct a semantic network, with nodes corresponding to lexicalized concepts, and links indicating semantic or lexical relations between concepts.

In the first part of this study, we examine the affective similarity between cues and their corresponding associations. Combining association data from the Dutch Association Lexicon with norming data gathered with a traditional questionnaire, we examine 673,000 cue-association pairs. We find that when presented with a cue, participants tend to respond with associations of similar valence, arousal, and dominance, indicating that these dimensions play an important role in determining which concepts are connected in the mental lexicon.

In the second part of this study, we expand on these results, examining whether we can use a concept's position in a semantic network to determine its value on the dimensions valence, arousal, and dominance. For any node in the network, we calculate the cosine measure of similarity to the anchor points 'good' and 'bad' for valence, 'strong' and 'weak' for dominance, and 'active' and 'passive' for arousal. The node's (dis)similarity to each pair of anchor points is used to create an estimate of the node's position on the corresponding dimension. To improve the estimate, the cosine measure can include any number of the anchor points' nearest neighbors. To verify the validity of this method, we estimated valence, arousal, and dominance for 3,762 words, and compared these estimates to norm ratings gathered using a traditional Likert type approach. We found medium to high correlations (with a higher correlation when more of the anchor points' neighbors are included), suggesting that the association based semantic network can be used as a viable approach to estimating affective ratings.

In conclusion, we find that valence, arousal, and dominance have a large effect on connectivity in the mental lexicon, and that this connectivity can be used to estimate a concept's value on these affective dimensions. We discuss the relationship between the assortivity observed in association responses, and properties derived from the anchor point procedure.