Contributions of Arousal and Valence to Word Recognition

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Abstract

Common words such as "kitten" and "coffin" have emotional connotations that are often described in terms of arousal (from calming to exciting) and valence (from negative to positive). Moreover, these factors of arousal and valence are automatically detected, and they influence the recognition of and responding to words. Specifically, negative words such as "coffin" tend to elicit slower responses than positive words such as "kitten", and arousing words such as "dead" tend to be recognized faster than calming words such as "sad". However, the relationships among arousal, valence, and word recognition are the subject of much current debate. First, some argue that arousal and valence are independent factors, but others argue that they are inherently related. Furthermore, some argue that valence exerts a categorical effect on word recognition, such that moderately negative (e.g., "dirt") and extremely negative words (e.g., "death") are recognized equally slowly, whereas others argue instead that valence has a graded influence on word recognition. To examine (a) the relationship between arousal and valence in ordinary language, and (b) their independent and/or interactive contributions to word recognition, we aggregated emotionality ratings of over 10,000 English words and merged it with response times and accuracy rates in the lexical decision and reading aloud tasks (acquired from E-Lexicon). Regression analyses revealed that arousal and valence (1) are non-independent, (2) contribute uniquely to word recognition, and (3) exert graded effects on word recognition. Implications for neuroscience research are discussed.

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