O31

EMOTION WORD PROCESSING: EFFECTS OF EMOTIONAL VALENCE AND AROUSAL ON BEHAVIOURAL AND ELECTROPHYSIOLOGICAL MEASURES

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Emotion is characterised by a two-dimensional structure: valence describes the extent to which an emotion is positive or negative, whereas arousal refers to the intensity of an emotion, how exciting or calming it is. It is known that the emotional content of verbal material influences cognitive processing during lexical decision, naming, emotional Stroop task and many others (see Citron et al., 2009). Converging findings showed that emotionally valenced words (positive or negative) are processed faster than neutral words, as shown by reaction time and ERP measures, suggesting a prioritisation of emotional stimuli (Scott et al., 2009). Other studies report slower recognition of negative words compared to positive words suggesting an additional effect of automatic vigilance (Algom et al., 2004). These latter studies, though, failed to control for important lexical and semantic features of single words (Larsen et al., 2006). Furthermore, few studies have considered the effects of emotional arousal on word recognition and the relationship between emotional valence and arousal (Kanske & Kotz, 2007; Kissler et al., 2009).

The aims of our studies were to investigate the effects of both valence and arousal by using a direct measure of lexical access, namely a lexical decision task (LDT), and by carefully controlling for other lexical and semantic features; to quantify the extent to which emotion affects lexical processing; to determine at what stage of processing emotional effects take place by measuring event-related potentials (ERPs).

Reaction time results revealed a main effect of arousal and an interaction between emotional valence and arousal: high arousal words were responded to faster than low arousal words, and this difference was much more pronounced for negative words compared to positive ones. No significant difference between positive and negative words was found. Also, a regression analysis showed a unique contribution of the emotion factor in predicting lexical decision latencies, beyond other variables.

ERP results also showed an interaction between the two emotional dimensions around 200-300 ms, as indexed by a posterior negative component (EPN), with higher amplitudes for both negative-low arousal and positive-high arousal words. This interaction will be interpreted according to the approach-avoidance framework proposed by Robinson et al. (2004). More generally, the ERP results suggest that valence and arousal interact at a relatively early stage of processing, namely lexical access.

These findings highlight the importance of arousal and suggest the possibility to integrate emotion in models of lexical access. This research more generally contributes to understanding how the emotional dimensions interact and therefore has implications beyond psycholinguistics, for research on emotion, affective disorders, neuropsychology and rehabilitation.

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