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Editorial: How emotion relates to language, memory, and cognition

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Editorial on the Research Topic

How emotion relates to language, memory, and cognition

In cognitive neuroscience, the role of the cerebral cortex in sensation and movement was known long before the emotion neural network (e.g., Libet et al., 1964). Similarly, theoretical models of reading and empirical research on word recognition had not considered the relevance of words' emotive content until about 20 years ago. Then, research supporting the automatic vigilance hypothesis (Pratto and John, 1991) and subsequent megastudies showed that affective dimensions such as emotional valence and arousal affect word processing, above and beyond sub-lexical, lexical and semantic word properties (e.g., Larsen et al., 2006; Kuperman et al., 2014; Cortese and Khanna, 2022). Using a similar approach, Grzybowski et al. generated a database of state, trait, and hybrid positive and negative Polish adjectives of moderate to high arousal, which complements existing Polish word databases, and can be used alongside them to create personality and mood questionnaires as well as for other affective language research, more generally.

Concurrently, neurophysiological research showed that emotive words can trigger fast and automatic activation of the emotion neural network, similarly to actual threatening objects or distressful scenes. For example, evolutionary-relevant words are distinguished from neutral words around 200–300 ms, when we match word forms to our mental lexicon, and long before we gain full access to a word's meaning (around 400 ms; e.g., Kissler et al., 2007; Citron, 2012).

Considering these findings, single words represent excellent tools to investigate and devise treatments for different psychopathologies. For instance, in the emotional Stroop task, words can activate disorder-related concepts (Khanna et al., 2016). Furthermore, texts or discourse describing personal situations can reveal information on mental health conditions (e.g., Herbert et al., 2019). In particular, through sentiment analysis, the use and frequency of certain linguistic features can indicate different psychopathologies. Interestingly, Du could predict mental states of writer Virginia Wolff from her diary and biography. Sentiment analysis represents a powerful tool not only with regard to literary texts, spontaneous speech and mental health; it can also be used to analyze political speech. In fact, Whissell identified changes and stable features over time in US presidential candidates' nomination acceptance speeches. Further to literary texts, Hugentobler and Lüdtké investigated the effect of semantic cohesion on aesthetic appreciation of poems. Aiming to isolate semantic cohesion from other potential sources of appreciation, they presented word lists as modern

micro poems to participants, who could more easily understand, appreciate and extract underlying concepts from cohesive micro-poems, as evidenced by several explicit and implicit measures.

Other empirical contributions in this Research Topic were concerned with more theoretical or conceptual distinctions with regards to affective language. In a novel ERP contribution, Wu et al. expanded their previous work on affective priming to explore the conceptual distinction between emotion-label and emotion-laden words originally posited by Altarriba and Basnight-Brown (2011); they tested the hypothesis that emotion-laden words cannot prime emotion-label words and provided a detailed timeline of these priming effects through ERPs. A very different contribution, also based on priming, comes from Rohr and Wentura, who reviewed and critically evaluated 20 years of research on evaluative priming paradigms, to then present a new model based on short-term memory representations. One of their conclusions was that the prime's emotional valence is automatically activated only if relevant to task goals.

However, language is first and foremost humans' means of communication, and verbal interactions are based on the comprehension of meaning in context. Three contributions go beyond single-word processing to examine the relationship of emotion and language in discourse. Struiksma et al. explored the electrophysiological responses to repeated insults toward the participant or a third party, comparing them with compliments and neutral statements, and revealing a very interesting picture. Israel et al. measured eye-movements and pupil dilation during the comprehension of humorous discourse, providing a timeline of situation model revision; the study also revealed an additional affective reaction compared to non-humorous discourse. Finally,

Lai et al. reported an ERP study showing participants' mood or affective state can influence conversational exchanges. In particular, mood had differential effects on discourse comprehension at late processing stages, when either world knowledge, discourse context or both are used to make sense of the discourse; mood did not affect meaning retrieval *per se*.

Author contributions

FMMC drafted the editorial. MMK and MJC further contributed to it. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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