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Title: The good, the bad, and the funny: An ERP study of laughter as a meaningful socioemotional cue

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Introduction: Laughter is a common vocalization that carries important information about the cognitive and emotional state of the laugher. In an evolutionary context, it was reliably associated with positive emotion (Provine, 2004). However, it has come to be used more flexibly to express a range of attitudes and emotions, such as irony or contempt. The present study examines the cognitive and neural underpinnings of laughter perception.

Methods: We recorded event-related potential (ERP) responses to words ("targets") that possessed either a pleasant or unpleasant valence in a method based on Steinbeis and Koelsch (2010). Each word was preceded by an auditory stimulus ("prime") belonging to one of three categories: (1) laughter, (2) a pleasant sound, or (3) an unpleasant sound. Participants were instructed to press one button if they thought the target word was pleasant, and a different button if the target was unpleasant. The present data were collected in a neutral context, but future data is planned to be collected under a mood manipulation to increase thoughts associated with social anxiety, which may reverse the behavioral and ERP patterns associated with laughs.

Results: Here we examined ERP evidence for two stages of emotion word priming: (1) an early stage of affective arousal that includes stimulus-driven processes from ~100-300 ms and a (2) later stage of top-down emotion appraisal, which includes the well-known "N400" effect, seen in studies of language-related (semantic) processing. Negative word targets evoked a greater right hemisphere fronto-central positivity when preceded by laughs and unpleasant sounds.

Conclusion: Laughter appears to influence target processing in a manner that may differ from other sounds. Results of the upcoming social anxiety manipulation may have important implications for theories of social anxiety and the role of early and late mechanisms of emotion.