Emotion in word processing – from linguistic to social significance

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Both language and emotion have intrinsically communicative functions but they arguably differ in their evolutionary age and in their elaborateness. Still, classic cross-cultural studies using the semantic differential technique have identified three simple fundamental dimensions of word meaning, namely evaluation, activation, and potency. Remarkably similar dimensions (valence, arousal, and dominance) have been suggested as constitutive for emotional processing. In emotion research, behavioral and physiological correlates of these dimensions have been identified during responding to various emotional environmental stimuli such as picture or sound media. The present talk will focus on emotional language and give an overview of behavioral and neuroscientific studies from my group that addressed how the processing of words with emotionally relevant contents differs from the processing of neutral words. Firstly, I will demonstrate that during reading, emotional words capture attention more than neutral words and I will show the electrophysiological correlates of this effect. Secondly, I will address the issue of processing speed, revealing that emotional words are also processed faster than neutral words, which is reflected both in lexical decision reaction times and in brain event-related potentials. Within emotional words, behavioral responses are particularly fast for positive contents and the concomitant electrophysiology reveals a specific response-facilitation for positive contents, whereas perceptual facilitation applies for both positive and negative words. Faster access to the mental lexicon also applies for both positive and negative compared to neutral words. Turning to the intrinsically interactive role of language, two recent studies addressed the question of how word processing changes even in minimal social contexts, such as evaluation by humans versus intelligent machines. Here, cortical response amplification is consistently found when participants think that they are interacting with another human rather than a machine, even when in actual fact both conditions are perceptually identically. Moreover, response to emotional feedback is further amplified in the human condition, demonstrating that the implied communicative context is implicitly factored in when humans respond to emotional stimuli. Finally, I will sketch an integrative model of the above findings, identifying mechanisms of emotional language processing that appear common to a range of emotional

stimuli, such as attentional highlighting via re-entrant processing in the brain, as well as those that seem more specific to language stimuli, such as engagement of left hemisphere semantic structures, proposing a dynamic interaction of the two.