The macro- and micro-neural network underlying the decoding of affective voices

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Vocally expressed emotions are a rich source from which listeners can infer the emotional state of the speaker. The human brain incorporates a distributed and specialized network of cortical and subcortical regions to decode the emotional information conveyed by the affective tone of a voice. Cortical regions mainly comprise the superior temporal and the inferior frontal cortex serving auditory processing and categorization of emotional vocalizations, while subcortical regions mainly involve limbic brain regions and the basal ganglia serving the emotional and temporal decoding of affective vocalizations. Though some of the functional roles of these brain region have been already described on a general level, recent high-resolution (f)MRI scanning approaches revealed that besides a macro-network of these cortical and subcortical regions, their seem to be intraregional micro-networks of subregions within each of these target regions. Rather than a general functional role, these intra-regional subregions obviously serve different and specific functional roles for the decoding of affective voices. In this talk I will outline the intraregional architecture and functions of subregions in the superior temporal cortex, the inferior frontal cortex, the amygdala and the basal ganglia, which underlie the processing of vocal emotions. Furthermore, based on the micro-structural architecture I will outline the macro-structural network of these cortical and subcortical brain regions, which shows a critical dependency on stimulus- and task-specific factors.