

“May I activate your amygdala please” – Realtime modulation of the limbic brain system by live affective speech

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Affect signaling in communication involves cortico-limbic brain systems for affect information decoding, such as expressed in a speaker’s vocal tone. To more realistically address the socio-dyadic and neural context of affective communication, we used a novel real-time neuroimaging setup that adaptively linked live speakers’ affective voice production with limbic brain signals in listeners as a proxy for affect recognition. We show that affective communication is acoustically more distinctive, adaptive, and individualized in dyadic than in non-dyadic settings and more efficiently capitalized on neural affect decoding mechanisms in limbic and associated networks. Only vocal affect produced in adaption to listeners’ limbic signals was linked to emotion recognition in listeners. While live vocal aggression directly modulated limbic activity in listeners, live vocal joy modulated limbic activity in connection with neural pleasure nodes in the ventral striatum. This suggests that evolved neural systems for affect recognition are largely optimized for dyadic communicative contexts.