

Chemical communication in humans

Theo Murphy international scientific meeting

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Abstract

Title: Superior cortical processing of anxiety- and aggression-related chemosignals in women

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As indicated by chemosensory event-related potentials (CSERPs), women, but not men, intensively process chemosensory anxiety signals. Here, it is investigated how men and women process chemosignals of aggression.

Axillary sweat was sampled from 34 individuals (17 women). In the aggression condition, a fictitious opponent repeatedly frustrated the sweat donors who were free to react aggressively. Anger increased in all donors during the aggression as compared to the control condition (computer game evaluation). The pooled sweat samples were presented to 48 participants (25 women) via a constant-flow olfactometer, while an EEG was recorded (61 electrodes). CSERP peaks are related to early (P2), medium (P3-1), and late (P3-2) stimulus processing.

In women, the P3-1 and P3-2 amplitudes were most pronounced in response to male aggression-related sweat ( $p < 0.001$ ). Men responded strongest to female aggression-related sweat (P3-2,  $p < 0.05$ ). The P2 was not affected by the donors' emotions. Current source density maps (P3-1 latency range) reveal that in women only, centro-parietal cortical sources were accompanied by strong fronto-lateral deactivations.

In contrast to chemosensory anxiety signals, the processing of chemosensory aggression signals depends on the sender's gender. Women's brains distinctly (anxiety) and effectively (aggression) process chemosignals of emotion.

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