

Expecting women keeping cool: Pregnancy prevents the chemosensory transmission of anxiety

Katrin T. Lübke<sup>1</sup>, Anne Orth<sup>1</sup>, Matthias Hoenen<sup>1</sup>, Benoist Schaal<sup>2</sup> & Bettina M. Pause<sup>1</sup>

<sup>1</sup>Department of Experimental Psychology, Heinrich-Heine-University Düsseldorf, Germany

<sup>2</sup>Centre des Sciences du Goût, CNRS/Université de Bourgogne, Dijon, France

Research has shown that humans effectively communicate anxiety via chemosensory signals. As pregnant women show diminished responses to stress signals, the current study aimed to investigate how pregnancy affects the neuronal response to human chemosensory anxiety signals.

Using cotton pads, axillary sweat was collected from 28 men while waiting for an important oral examination (anxiety condition), and during ergometer training (control condition). Using a constant-flow olfactometer, odor samples were presented to 12 non-pregnant women, 14 women in their first and 18 in their third trimester of pregnancy in an oddball paradigm. EEG was recorded from 60 scalp locations, and chemosensory event-related potentials in response to deviant stimuli were analyzed.

In general, both women in their 1<sup>st</sup> ( $p = .04$ ) and women in their 3<sup>rd</sup> ( $p = .01$ ) trimester of pregnancy showed smaller P3-amplitudes than non-pregnant women. Moreover, only non-pregnant showed larger P3-amplitudes ( $p = 0.01$ ) and shorter P3-latencies ( $p = .002$ ) in response to anxiety compared to control sweat. In response to anxiety sweat, both women in their 1<sup>st</sup> ( $p = .05$ ) and women in their 3<sup>rd</sup> ( $p = .001$ ) trimester of pregnancy showed longer P3-latencies than non-pregnant women.

Results show both delayed and reduced processing of chemosensory anxiety signals during pregnancy, suggesting an attenuated chemosensory transmission of anxiety. This reduced central nervous responsiveness might reflect the earliest component of a stress protection mechanism during pregnancy, possibly mediated by hormonal factors.

Poster presented at the *clinical CHEMOSENSATION 2014*, in Dresden, Germany

Lübke, K. T., Orth, A., Hoenen, M., Schaal, B. & Pause, B. M. (2014, November). Expecting women keeping cool: Pregnancy prevents the chemosensory transmission of anxiety. *Clinical Chemosensation: The International Meeting of the Committee on Olfaction and Gustation of the German Society of Otorhinolaryngology, Head and Neck Surgery 2014*.