

Stress inhibits spatial perception

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Neuroscientists of Collaborative Research Centre 874 at the Ruhr University Bochum have investigated the effects of stress on the perception of scenes and faces. In a behavioural study, they compared the results of stressed participants with those of an unstressed control group. They were able to show that stress inhibits the perception of complex spatial information. The reason for this lies in the processing of this information in the hippocampus, an area in the temporal lobe of the brain, which is influenced by the stress hormone cortisol. The journal *Psychoneuroendocrinology* has published the results of the study.

Research builds on previous studies

Previous studies within Collaborative Research Centre 874 have shown that the release of the [stress hormone cortisol](#) influences long-term memory in the hippocampus. Other research revealed that the hippocampus is not only responsible for memory, but that it is also involved in the perception of scenes. Faces are processed in adjacent regions of the temporal lobe. In their study the research teams of Prof. Dr. Oliver T. Wolf (Cognitive Psychology) and Prof. Dr. Boris Suchan (Clinical Neuropsychology) combined these two strains of research and investigated how stress effects the perception of scenes and faces.

Behavioural study induces stress

In a behavioural study with young men the scientists investigated how the perception of scenes and faces under stress differs to non-stressful perception. To induce stress and the release of the corresponding

[hormone cortisol](#), the scientists administered the socially evaluated cold-pressor test, a method well-established in stress research. During this procedure the participant is asked to immerse their hand in ice water for up to three minutes, while being filmed and instructed by a female researcher.

Impaired perception of scenes under stress

The evaluation of the following visual tasks showed that the stressed participants did less well in the discrimination of complex scenes than the non-stressed control group. For the perception of faces there was no significant difference between the groups. "Our results confirm the notion that whereas scenes are processed in the hippocampus, faces are processed in adjacent areas of the [temporal lobe](#)," explains PhD student Marcus Paul. "Stress has a deciding influence on the hippocampus. It not only affects memory, but also spatial [perception](#)." To confirm these findings, further research using magnetic resonance imaging must now be conducted to investigate activity patterns in the [hippocampus](#) during stress.

More information: M. Paul et al. Acute stress influences the discrimination of complex scenes and complex faces in young healthy men, *Psychoneuroendocrinology* (2016). [DOI: 10.1016/j.psyneuen.2016.01.007](#)

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