

Women anticipate negative experiences differently to men

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Men and women differ in the way they anticipate an unpleasant emotional experience, which influences the effectiveness with which that experience is committed to memory, according to new research.

In the study, supported by a grant from the Wellcome Trust, [women](#) showed heightened neural responses in anticipation of [negative experiences](#), but not positive ones. The [neural response](#) during anticipation was related to the success of remembering that event in the future. No neural signature was found during anticipation in either positive or negative experiences in men.

Dr Giulia Galli, lead author from the UCL Institute of [Cognitive Neuroscience](#) said: "When expecting a negative experience, women might have a higher emotional responsiveness than men, indicated by their [brain activity](#). This is likely to then affect how they remember the negative event."

"For example, when watching disturbing scenes in films there are often cues before anything 'bad' happens, such as emotive music. This research suggests that the brain activity in women between the cue and the disturbing scene influences how that scene will be remembered. What matters for memory in men instead is mostly the brain activity while watching the scene.

This finding might be relevant for psychiatric disorders such as anxiety, in which there is excessive anticipation of future threat and memory is

often biased towards negative experiences."

In an experiment researchers showed a series of images to 15 women and 15 men. Before the image was revealed the participants were shown a symbol that indicated what kind of image they were about to see; a smiley face for a positive image, a neutral face for a non-emotive image and a sad face for a negative image.

Examples of the [negative images](#) show to the study participants are of severe disfigurement and extreme violence. Positive images included depictions of attractive landscapes and couples holding hands. Neutral images were mainly of objects, for example kitchen utensils.

In the time period between the participant being given the cue and being shown the image, scientists measured their electrical brain activity. After a 20 minute delay participants in the study undertook a memory task about the images they had seen. The results showed that when the cue signalled an imminent negative image, brain activity following the cue could predict if the image would be remembered or not. This was shown in women, but not in men. Neither women nor men showed any difference in electrical brain activity before seeing neutral or positive images

Dr Leun Otten, also from the UCL Institute of Cognitive Neuroscience and senior investigator said: "These findings suggest that women's enhanced emotional responsiveness extends to the anticipation of unpleasant events, affecting their encoding into long-term memory. Upon anticipation of an unpleasant event, women may spontaneously engage strategies to counter the impact of negative emotions."

More information: 'Sex Differences in the Use of Anticipatory Brain Activity to Encode Emotional Events' is published online in the *Journal of Neuroscience* today.

Provided by University College London

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