

How words get an emotional meaning

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Dr. Louise Kulke. Credit: Mega Photo GmbH Lehrte

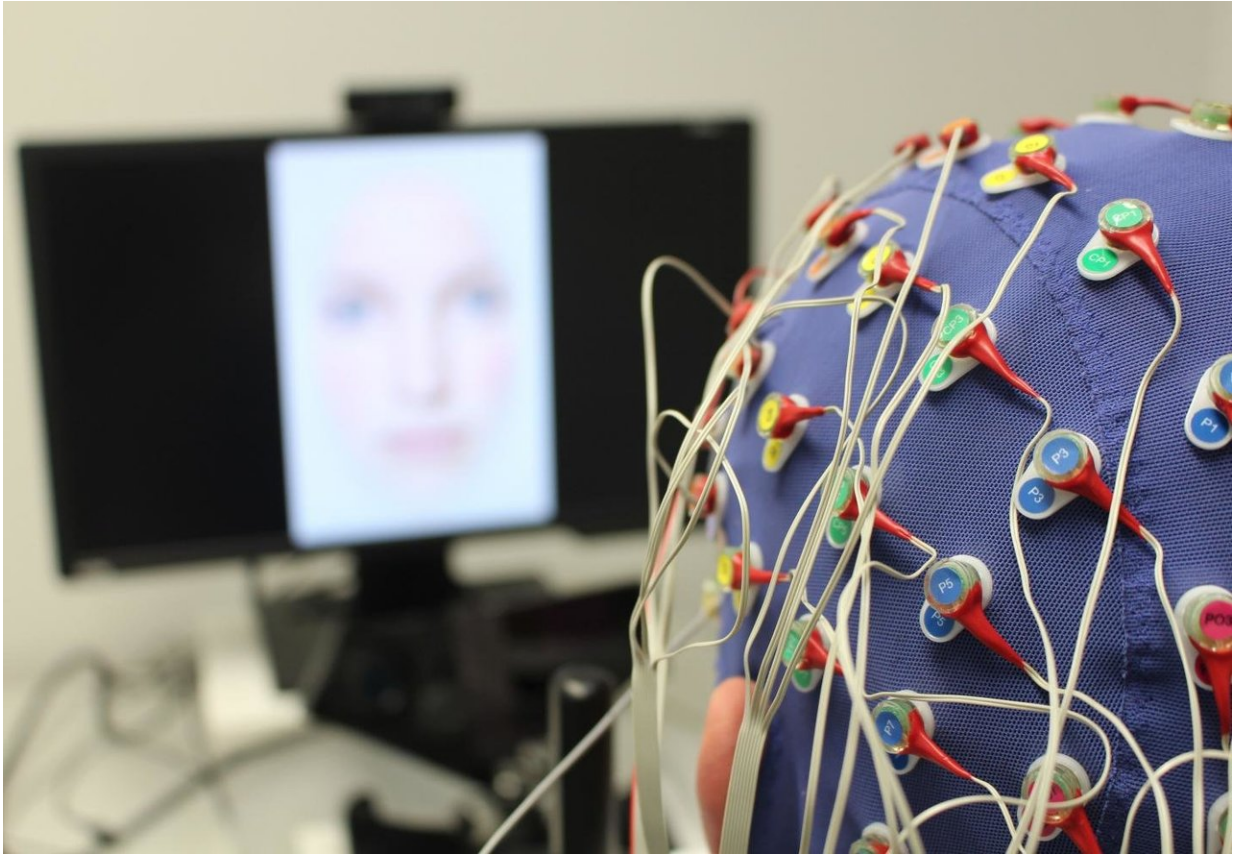
Many objects and people can convey an emotional meaning. A pair of wool socks, for example, has an emotional value if it was the last thing the grandmother knitted before her death. The same applies to words. The name of a stranger has no emotional value at first, but if a loving relationship develops, the same name suddenly has a positive connotation. Researchers at the University of Göttingen have investigated how the brain processes such stimuli, which can be positive or negative. The results were published in the journal *Neuropsychologia*.

The scientists from the Georg Elias Müller Institute for Psychology at the University of Göttingen analysed how people associate neutral signs, [words](#) and faces with emotional meaning. Within just a few hours, participants learn these connections through a process of systematic rewards and losses. For example, if they always receive money when they see a certain neutral word, this word acquires a positive association. However, if they lose money whenever they see a certain word, this leads to a negative association. The studies show that people learn positive associations much faster than neutral or negative associations: Something positive very quickly becomes associated with a word, or indeed, with the face of a person (as their recent research in *Neuroimage* has shown).

Using electroencephalography (EEG), the researchers also investigated how the [brain processes](#) the various stimuli. The brain usually determines whether an image or word is positive or negative after about 200 to 300 milliseconds. "Words associated with loss cause specific neuronal reactions in the [visual cortex](#) after just 100 milliseconds," says Dr. Louisa Kulke, first author of the study. "So the brain distinguishes in a flash what a newly learned meaning the word has for us, especially if that meaning is negative."

It also seems to make a difference whether the word is already known to the subject (like "chair" or "tree") or whether it is a fictitious word that does not exist in the language (like "napo" or "foti"). Thus, the existing

semantic [meaning](#) of a word seems to play a role in the emotions that we associate with that word.



Participant during EEG testing. Credit: Anap-Lab

More information: Louisa Kulke et al, Differential effects of learned associations with words and pseudowords on event-related brain potentials, *Neuropsychologia* (2018). [DOI: 10.1016/j.neuropsychologia.2018.12.012](https://doi.org/10.1016/j.neuropsychologia.2018.12.012)

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