

Innovative technique gives vision researchers insight into how people recognize faces

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It is no surprise to scientists that the largest social network on the web is called Facebook. Identifying people by their face is fundamental to our social interactions, one of the primary reasons vision researchers are trying to find out how our brain processes facial identity.

In a study recently published in the *Journal of [Vision](#)*, scientists used an original approach — a method that "shakes" the [brain](#) gently and repeatedly by making an image appear and disappear at a constant rate — to evaluate its sensitivity to perceiving facial identity. The technique is called steady-state visual evoked potential (SSVEP).

"If we measure global human [brain activity](#) when one face is viewed, it cannot be differentiated from brain activity when another face is viewed," said author Bruno Rossion, PhD, a researcher at the Institute of Psychology and Institute of Neuroscience, Université Catholique de Louvain, Belgium. "This is why we relied on a method in which brain activity is compared between repetition of the same face and the presentation of different [faces](#) in succession."

During the experiment, 12 participants were presented with a series of faces appearing at a frequency of 3.5 faces per second. The result showed the brain signal at that specific frequency only was much larger when a sequence of different faces was presented at that rate than when an identical face was repeated.

The research team was positively surprised by the resulting large size of

the difference between the two conditions, obtained only after one minute and a half of testing, and was equally astonished that the difference in conditions did not exist when the faces were inverted. The study also confirmed that the region for face perception lies primarily in the posterior part of the brain's right hemisphere.

The ability to recognize a face is a common problem in cases of sudden onset of posterior brain damage, neurodegenerative disorders like Alzheimer disease and other forms of dementia and social disorders such as autism. Rossion points out that an advantage of using this highly sensitive SSVEP methods is that it can be used and compared objectively in different human populations — adults, infants, children, neurological patients, people with long-life face recognition impairments or autism - without requiring complex instructions and a long testing duration.

"Face recognition involves the most complex aspects of perception and memory and, for this reason, understanding how it works has large-scale implication," Rossion adds. "Ultimately, through a better understanding of this function, we will make tremendous progress in our understanding of how the brain works in general, develop tools to detect its dysfunction and hopefully help remedy it."

Provided by Association for Research in Vision and Ophthalmology

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