Press release

An opinion in milliseconds

Freiburg scientist has decoded brain processes associated with the subconscious evaluation of social groups

Humans assess each other within milliseconds, deciding whether someone is likeable or not. The Freiburg psychologist and neuroscientist Dr. **Bastian Schiller** and a team at the University of Basel in Switzerland are the first to have discovered the subconscious processes in the brain and the order in which they occur that determine how humans process social information such as likability or antipathy. Their findings have been published in the latest issue of the U.S. science journal „Proceedings of the National Academy of Sciences“ (PNAS).

The researchers employed the Implicit Association Test (IAT) in their study. The subjects reacted to positive and negative words and concepts that they associated with their own or a foreign group. Schiller and the Swiss research team of Prof. Dr. **Daria Knoch** and Dr. **Lorena Gianotti** administered the IAT in a group of soccer fans, for instance. While the subjects were responding to concepts such a „love“ or „death“, or the names of players on their own versus the opposing team, the researchers measured their brain waves on an electroencephalogram. They aimed to investigate individual information processing steps and their duration during subconscious social assessments. To do this, they analyzed functional “microstates” in the brain. These are short phases – some lasting just

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a few milliseconds – during which a neuronal network is activated to carry a particular processing step. Researchers had already learned that reaction times in the IAT are longer when people associate foreign groups with positive characteristics. What Schiller and the research team discovered in their analysis of the microstates is that the longer reaction times are not attributable to additional processing steps, but that some individual steps take longer. According to Schiller, „This study demonstrates the potential of modern electrical neuroimaging in helping to better understand the origin and time course of socially relevant processes in the human brain". A member of Prof. Dr. **Markus Heinrichs'** working group at Albert-Ludwig University in Freiburg, Schiller is currently investigating the extent to which this discovery can facilitate the diagnostics and therapy of mental diseases involving social deficits.

The trinational neuroscientific research network NEUREX financially supports current research projects being conducted at the Institute of Psychology at Freiburg University. NEUREX is a participant in Eucor – The European Campus, a consortium of universities on the Upper Rhine valley in Freiburg, Basel, Mulhouse-Colmar, Strasbourg, and Karlsruhe.

Original publication:

Schiller, B.*, Gianotti, R. R. L.*, Baumgartner, T., Nash, K., Koenig, T. & Knoch, D. (2016). Clocking the social mind by identifying mental processes in the IAT with electrical neuroimaging. In: *Proceedings of the National Academy of Sciences of the United States of America (PNAS).* (* shared first authorship)

Further information:

www.psychologie.uni-freiburg.de/abteilungen/psychobio

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Caption:
Tiny time frames: Researchers have analyzed microstates that occur in subjects' brains when social information is being dealt with.
Source: Bastian Schiller/University of Freiburg

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