A direct gaze enhances face perception

August 13 2008

Gaze direction is significant for the processing of visual information from the human face. Researchers in an Academy of Finland funded research project have discovered that the visual system of the brain processes another person's face more efficiently when the person's gaze is straight ahead than when the gaze is averted. The research is part of the Academy's Research Programme on Neuroscience (NEURO).

This finding demonstrates the key importance of gaze direction in human interaction and shows how another person's gaze direction affects even the most basic facial perception. "Our studies also show that the eye contact between two persons and an averted gaze affect the functions of the neural mechanisms that regulate approach and avoidance behaviour. Another person's direct gaze prepares for an approach, an averted gaze for avoidance," said head of the research, Professor Jari Hietanen from the University of Tampere at the Academy's Science Breakfast.

The results of the research, which measured the function of the brain's frontal lobes by means of electroencephalography (EEG), indicate that during the observation of a direct gaze the left frontal lobe of the test subjects was more active than the right frontal lobe. During the observation of an averted gaze the situation was opposite. The left-dominated activation asymmetry is linked to an approach and the right-dominated to avoidance. This was the first time it was shown through physiological measurements that another person's gaze direction affects brain systems that are involved in the regulation of fundamental human motivational reactions.

New methods to diagnose autism and mental disorders

The results of the project shed useful light on emotional reactions related to the perception of human faces and how these reactions develop. "The deviations related to eye contact in people with autism are one of the earliest and most typical problems, and our studies make it possible to find out why people with autistic behaviour avoid eye contact," Hietanen said.

As atypical emotional reactions to various social stimuli, for instance other people's facial expressions, most likely play a key role in different types of mental disorders, the knowledge generated by the research project also provides an opportunity to develop efficient methods for the diagnosis and treatment of mental disorders.

Source: Academy of Finland