

MRI Technique and Facial Recognition



According to new research, there is a single region of the brain where positive and negative feelings for faces take shape. MRI technique can be used to train the mental process and direct feelings about faces. This could potentially become a tool for psychological therapy.

The technique, called "DecNef" (decoded neurofeedback), detects and analyses specific activity patterns in the brain region that is associated with our mental state. 24 volunteers participated in the study and saw hundred of faces. They rated sentiments for each face on a scale of 1 to 10 where 1 was dislike, 10 was like and 5 was neutral. MRI was used to record the patters of activity in the cingulate cortex.

The team of researchers from Brown University and the Advanced Telecommunications Research Institute International in Kyoto, Japan, tested whether the cingulate cortex handles both sides of the emotion. They used a software called decoder to analyse the recordings and to identify patters in each volunteer's cingulate cortex with both positive and negative feelings.

Findings showed that the cingulate cortex handled both emotions with different activity patterns. The researchers established signature patterns and then divided the participants into two groups of positive and negative. After a few days, participants were shown a disk and were asked to use their minds to make it appear as big as possible. The participants did not know that the only way the disk would grow was when the MRI readings showed that they produced signature patterns of positive or negative feelings. In this way, people were trained to produce specific feelings or perceptions in specific contexts. A third group was asked to rate faces but were not asked to enlarge a disk.

Key findings showed that the positive group's ratings of the neutral faces moved up mildly but significantly (by about 0.6 on the 1 to 10 scale), while the negative group's ratings of the faces moved down a bit less but still significantly. Meanwhile the control group's ratings didn't change significantly at all.

"From all these results we conclude that association of originally neutrally rated faces with covert induction of activity patterns in the single brain region, the cingulate cortex, led to changes in facial preference specifically for those faces, and in a specific preference -- positive or negative -- direction," the authors wrote in the study.

In post-experiment interviews, subjects were asked if they knew what was really going on. None of them did. After informing them about the experiment, the researchers asked the participants to say whether they thought they were in the positive or negative group. The results did not vary much and suggest that preferences about neutral faces were not changed based on the participants' will or intention.

A strong association was found between brain activity and the amount of induced feeling. While even a small effect could be beneficial for people, patients could be trained for weeks to induce stronger feelings.

Source: [Brown University](#)
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