Can't place that face? The trouble may be in your neurons

July 28 2010

A specific area in our brains is responsible for processing information about human and animal faces, both how we recognize them and how we interpret facial expressions. Now, Tel Aviv University research is exploring what makes this highly specialized part of the brain unique, a first step to finding practical applications for that information.

In her "Face Lab" at Tel Aviv University, Dr. Galit Yovel of TAU's Department of Psychology is trying to understand the mechanisms at work in the face area of the [brain](#) called the "fusiform gyrus" of the brain. She is combining cognitive psychology with techniques like brain imaging and electrophysiology to study how the brain processes information about faces. Her most recent research on the brain's face-processing mechanisms was published in the [Journal of Neuroscience](#) and *Human Brain Mapping*.

The study of [face recognition](#) does more than provide an explanation for embarrassing memory lapses. For instance, it may help business executives better match names with faces, and more important can lead to better facial recognition software to identify terrorists or criminals. Similar to faces, bodies are also processed by distinct brain areas. How we perceive faces is not totally intuitive, she says, and therefore raises the question of how this information is combined in our brain to understand how separate face and body areas generate a whole body-image impression.

Identifying "face blindness"

In her research, Dr. Yovel has found that we are better able to recognize faces when we regularly see and interact with them in meaningful settings. It's as though the face-processing sections of the brain — the fusiform face area being the most distinct — recognizes faces holistically. Additions to your face, such as a beard or glasses, are assimilated into or incorporated into the face recognition gestalt of the brain, unlike other elements that are irrelevant to facial recognition, such as the chair you're sitting on. This may be why fashions in hairstyle and eyewear have become so important to personal appearance, she theorizes.

The inability to recognize faces is more common than most people think. Dr. Yovel says that two percent of all people are born with "face blindness," scientifically known as prosopagnosia. She hopes her research will enable these people to train themselves, via software and other methods, to better differentiate one face from another -- especially when the face is that of a loved one.

Recognizing the faces you meet

"Faces are important," says Dr. Yovel, who first began to study the neurological basis of face recognition as a post-doctoral student at the Massachusetts Institute of Technology. "We meet so many people every day, on the street or at work, and should know whether or not each face is important to us. In principle, faces are very similar to one another. That's probably why we've evolved these complex and specialized face areas in the brain — so that we can more accurately discriminate among the countless faces we encounter throughout our lives."

Dr. Yovel hopes her studies will lead to new algorithms that can help

computers do a better job of recognizing faces, as well as help people who somehow lack this critical social skill. She is currently collaborating with computer scientists at Tel Aviv University to explore new computational algorithms for facial recognition.

Provided by Tel Aviv University