Psych Labs: Background Information for Face Rating Experiment

This project explores facial expressions of emotion and the possibility that some emotions are displayed more strongly in one side of the face than the other. Many researchers believe that there are six or seven distinct emotions that can be displayed on the face. This project will involve four of them: **anger**, **fear**, **happiness**, and **sadness**. In 2015, students in the Introduction to Neuroscience course prepared sets of photographs using their own faces. The students were instructed to make a face illustrating one of the specific emotions described below, and then have another student take a photo of that expression.

aggressive anger – you are ready to attack

fear – a man with a chainsaw is in your closet

happiness – having a good time with friends

sadness – you experienced a deep loss

We collected these photos of facial expressions illustrating the four emotions: **anger**, **fear**, **happiness**, and **sadness**. These photos were then processed by splitting them in half vertically and recombining the halves to create faces with two left halves (LL face) or two right halves (RR face). Everyone was surprised at how different the two artificial faces looked… which demonstrates that we don't realize how asymmetrical our own face is.

Other students not involved in producing the photos then rated the perceived emotional intensity of each photo. Before we describe the pattern of results, think through the following questions:

1. **Generating Emotional Expressions**—The photos were produced by having students consciously attempt to arrange their facial muscles in a way that expresses each of the emotions. Based on your own experiences and your observations of others, do you believe that there is a difference between "forced" or "fake" emotional expressions generated by conscious control of your facial muscles and "natural" facial expressions generated automatically and unconsciously when you perceive experience emotional events? If so, do you think that fake expressions would display more emotional intensity or less emotional intensity?
2. **Controlling Facial Muscles**—Each hemisphere of the brain has a region called the motor cortex, also called the motor strip. The left motor cortex controls the movements of the right side of the body, including the right half of the face, while the right motor cortex controls the left half of the face. So, when you are viewing an LL face (constructed from two copies of the left side of an individual's face), which brain hemisphere was responsible for contracting the facial muscles to make the expression?
3. **Hemispheric Differences in the Perception and Expression of Emotion**—Previous research has shown that, for most people, the right hemisphere is superior in perceiving or recognizing emotions in other people. For example, the *right hemisphere* is better at *perceiving emotion* in the tone of a person's voice. Do you think that the right hemisphere will also be better at *expressing emotion* (on the left side of a person's face)? If that is true in general, would it also be true of each specific emotion, or would some emotions be expressed more strongly by the *left hemisphere* (controlling the right side of the face)?

Our initial results showed a small advantage for the right hemisphere overall, in that the LL faces were rated as slightly higher in emotional intensity than the RR faces. That was especially true for **anger** and **fear**. But the pattern was different for **happiness**, with higher intensity ratings for the RR faces. There was no difference between the LL and RR faces for **sadness**, perhaps because a sad face requires very few muscle movements.