The Amygdala And Fear Are Not The Same Thing

January 26, 2012

In a 2007 episode of the television show Boston Legal, a character claimed to have figured out that a cop was racist because his amygdala activated – displaying fear, when they showed him pictures of black people. This link between the amygdala and fear – especially a fear of others unlike us, has gone too far, not only in pop culture, but also in psychological science, say the authors of a new paper which will be published in the February issue of *Current Directions in Psychological Science*, a journal of the Association for Psychological Science.

Indeed, many experiments have found that the amygdala is active when people are afraid. But it also activates at other times, for example in response to pleasant photographs and happy faces.

The misconception came from how scientists first approached studying the brain. A lot of people came to the amygdala from the study of fear, says Wil Cunningham of Ohio State University, who co wrote the new paper with Tobias Brosch of New York University. “It’s a great emotion to study because it’s very important, evolutionarily, and we know a lot about fear in animals,” Cunningham says. Almost every study of fear finds that the amygdala is active. But that doesn’t mean every spark of activity in the amygdala means the person is afraid.

Instead, the amygdala seems to be doing something more subtle: processing events that are related to what a person cares about at the moment. So if you’re in a scary situation or have an anxious personality, the amygdala might be activated by a frightening image. But hungry people have increased amygdala activity in response to pictures of food and people who are very empathetic have an amygdala response to seeing other people.

“When we’re studying emotion, people want to find specific brain parts that are associated with different emotions,” Cunningham says. Especially in the early days of neuroscience, scientists hoped that soon it would be possible to use MRI and other brain-imaging techniques “to get under the hood and find out what people are really thinking.” A lot of the time, people really don’t know, or won’t say, what they’re thinking, and it would be nice to be able to look at a picture of their brain and know the answer. But the brain is too complicated for that. Cunningham also thinks many scientists have gotten too attached to a rigid definition of emotions—anger, fear, sadness, happiness, and so on.

However you may feel, it seems that many different parts of the brain are involved. ”Emotion is going to be distributed across the brain,” Cunningham says.