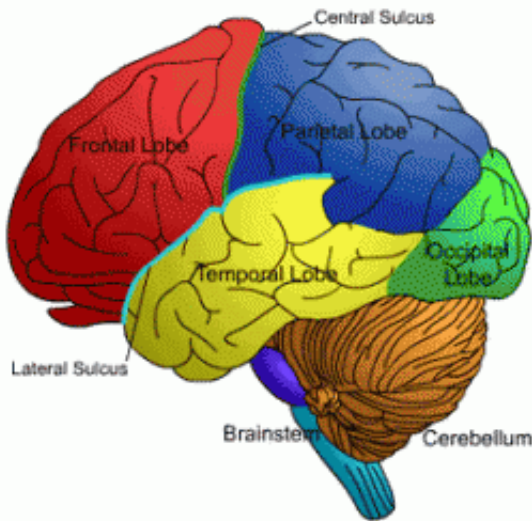


The brain co-opts the body to promote pro-social behavior

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Brain diagram. Credit: dwp.gov.uk

The human brain may simulate physical sensations to prompt introspection, capitalizing on moments of high emotion to promote moral behavior, according to a USC researcher.

Mary Helen Immordino-Yang of the USC Brain and [Creativity](#) Institute and the USC Rossier School of Education found that individuals who were told stories designed to evoke compassion and admiration for virtue sometimes reported that they felt a physical sensation in response. These psycho-physical "pangs" of emotion are very real - they're detectable with brain scans - and may be evidence that pro-social behavior is part of human survival.

Immordino-Yang's hypothesis, borne out thus far by her research, is that the feeling or emotional reactions in the body may sometimes prompt introspection, and can ultimately promote moral choices and motivation to help or emulate others.

"These emotions are foundational for morality and social learning. They have the power to change the course of your very life," Immordino-Yang said.

Her article appears in the July issue of *Emotion Review*.

In one instance cited in the article, a participant responded to a story of a little boy's selflessness toward his mother by reporting that he felt like there was a "balloon or something under my sternum, inflating and moving up and out." While pondering this physical sensation, the participant paused for a moment and considered his own relationship with his parents. Ultimately, he voiced a promise to express more gratitude toward them.

Researchers noted similar reactions to varying degrees in the test's other participants. Immordino-Yang's team has performed about 50 of these qualitative analyses in Beijing and at USC. The researchers provide the emotional story, then record the participant's reaction, and also use [brain](#) scans to record the physiological response.

"It's a systematic but naturalistic way to induce these emotions." Immordino-Yang said. After being told an emotional true story during a private, taped interview, the participant is simply asked to describe how he or she feels.

Immordino-Yang said she isn't surprised at the findings, though she is excited by them.

"We are an intensely social species," she said. "Our very biology is a social one. For centuries poets have described so-called gut feelings during social emotions. Now we are uncovering the biological evidence."

Future analysis of the data her team has gathered will focus on discovering to what degree culture and individual styles and experiences influence these reactions, as well as how they develop in children

and how they can be promoted by education.

Provided by University of Southern California

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