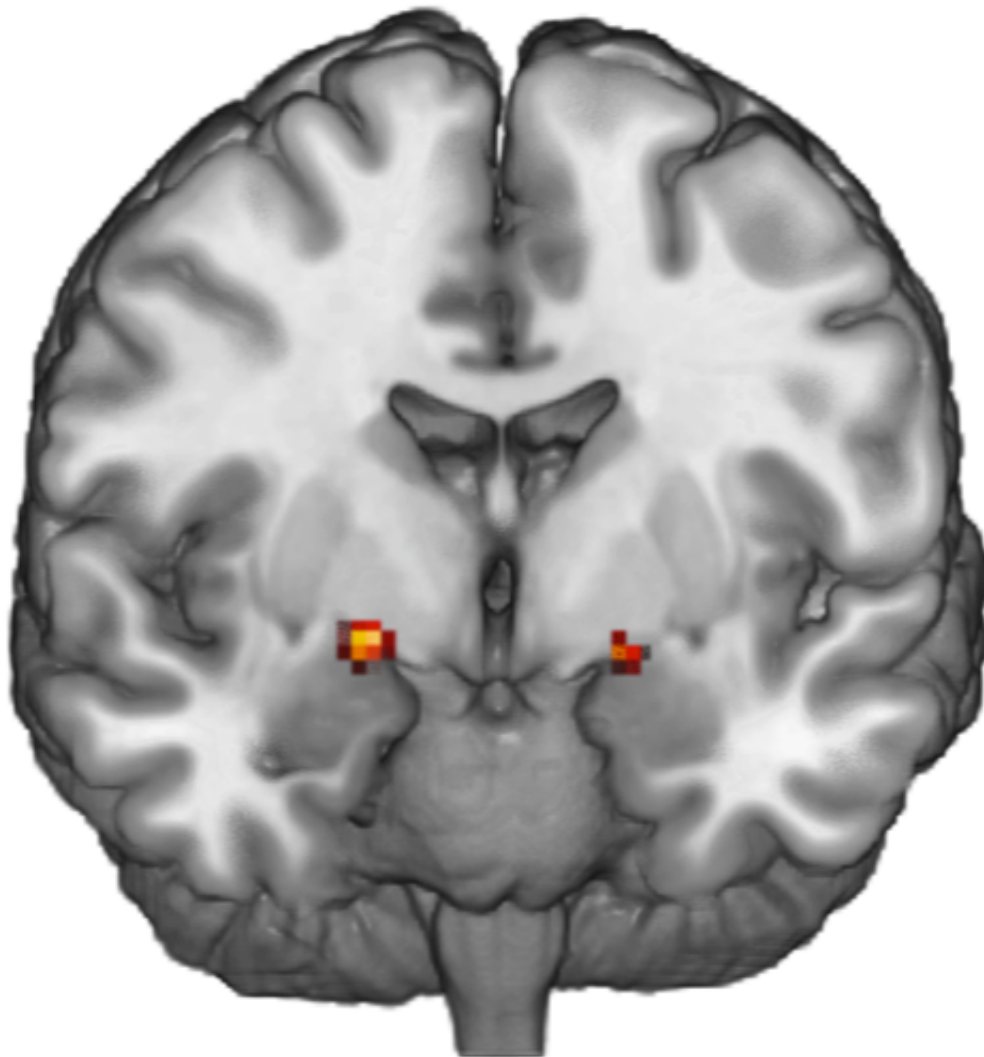


Brain scans explain quickness to blame

December 4 2015



As shown in this functional MRI image, the amygdala, a part of the brain involved in processing emotions, is more active in people who are blaming others for their negative actions. Credit: Lawrence Ngo

New research from Duke University helps explain the paradox of why we are quick to blame people for their actions, but slower to give them credit.

We constantly read others' intentions in what they do—from seeing someone help an [elderly person](#) cross the street or cutting in line or committing a heinous crime. Judgments about intentionality are threaded deeply within our legal system and pervasive in our support of [political candidates](#), and have been the focus of discussion for the past decade in the philosophical literature.

Published Dec. 4 in *Scientific Reports*, the Duke study is "the first to use neuroscience research tools to try to explain why people are biased toward treating negative actions as intentional but positive actions as unintentional," said the study's lead author Lawrence Ngo, now a first-year resident in internal medicine at the Moses H. Cone Memorial Hospital in Greensboro, N.C.

Take this scenario commonly used in the field of experimental philosophy:

The CEO knew the plan would harm the environment, but he did not care at all about the effect the plan would have on the environment. He started the plan solely to increase profits. Did the CEO intentionally harm the environment?

If you said 'yes,' then you align with the majority: In previously published work, 82% responded that the CEO was deliberate. When the researchers replaced the single word "harm" with "help" in the scenario, however, only 23% deemed the CEO's actions intentional. The research team found similar results when they posed numerous similar situations to study participants.

"There's no logical reason why we would call something intentional, just because it causes a bad outcome as opposed to a good outcome," said corresponding author Scott Huettel, professor of psychology and neuroscience and member of the Duke Institute for Brain Sciences.

"Intentionality implies purpose on the part of the person, and that should be there for good as much as it is for bad. But it's not," Huettel added.

To understand why, Huettel's team assessed differences in personality traits and other psychological measures. Using functional magnetic resonance imaging, a type of non-invasive brain scan, the researchers also analyzed activity of individuals' brains while they read the scenarios.

The team found that people use two different mechanisms to judge how intentional an action was. If the action produced a negative effect, participants were more likely to draw on brain areas involved in processing emotion (in particular, the amygdala, a pair of almond-shaped structures deep in the brain that is well known for its role in processing negative emotions).

The greater the emotional reaction the participant reported having to a particular story, the stronger it activated their amygdala. But if an action produced a positive effect, it was less likely to set off the amygdala.

On the other hand, for positive outcomes people relied less on emotion and more on statistics. That is, they thought about how often people in a particular situation would behave in a similar way. In the example of the CEO who makes a profit and also helps the environment, participants were more likely to say that because CEOs commonly aim to make money, helping the environment was an unintentional side-effect.

How intentional a crime was often affects the final ruling, and our broader moral judgments. But the new study, Huettel said, shows that the

arrow can go in both directions: Moral judgments about whether an action harmed others can influence judgments about how intentional that action was in the first place.

More generally, "the most rewarding part of the work was how seeing how the intersection between philosophy and neuroscience gave us new insights about both fields," Ngo said.

Duke researchers are already making strides toward bridging these disparate fields. Huettel and his collaborators are planning new studies on trust, deception and altruism.

More information: "Two Distinct Moral Mechanisms for Ascribing and Denying Intentionality," Lawrence Ngo, Meagan Kelly, Christopher G. Coutlee, R. McKell Carter, Walter Sinnott-Armstrong, and Scott A. Huettel. *Scientific Reports*, December 4, 2015.

Provided by Duke University

Citation: Brain scans explain quickness to blame (2015, December 4) retrieved 26 April 2024 from <https://medicalxpress.com/news/2015-12-brain-scans-quickness-blame.html>

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