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## Brain regions responsible for optimism located

By [Will Dunham](#)

WASHINGTON (Reuters) - Imagine receiving a big chunk of cash in the future. Or winning a prize.

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Chances are, such optimistic thoughts are coming from two places in the brain that play an important role in enabling people to, as the old song says, accentuate the positive, New York University scientists said on Wednesday.

Pinpointing the brain regions involved in optimism and positive thinking about the future, the researchers said, may also have shed light on what might be going wrong in people with depression.

The researchers used sophisticated brain imaging to track brain activity in 15 young adults -- seven men and eight women -- while they asked them imagine future scenarios. They included getting a lot of money, winning an award, going to a birthday party or ball game or the zoo, being lied to, the end of a romantic relationship, going to a funeral and others.

When scenarios filled with optimism were imagined, two brain regions -- the rostral anterior cingulate and amygdala -- lit up with activity in the brain scans, the researchers said.

"What's interesting is these two regions that we saw that were involved in projecting optimistic futures are also the same two regions that we see affected in depression," Elizabeth Phelps, an NYU professor of psychology and neural science involved in the research, said in a telephone interview.

It had been unclear what was going wrong in these two regions that might contribute to depression. "But our data would suggest that one of the things they're doing is making it hard to think about things optimistically. Of course, one of the primary symptoms of depression is pessimism," Phelps said.

Phelps said the findings had the potential in the future to help guide new treatments for depression.

The research was published in the journal Nature.

### OPTIMISM BIAS

The rostral anterior cingulate is part of the brain's frontal cortex that may be involved in regulating emotional responses. The amygdala is an almond-shaped brain structure in the medial temporal lobe involved in emotion.

"Understanding healthy optimism is important because optimism is related to mental and physical health and to success. We can have people who are not necessarily depressed but have different levels of optimism," said another of the researchers, Tali Sharot of University College London who was at NYU when the study was conducted.

Phelps said the research team is not saying these are necessarily the only brain regions involved in optimism.

The researchers said they examined how the brain generates what some scientists call the human "optimism bias."

"Humans expect positive events in the future even when there is no evidence to support such expectations," the researchers wrote in the journal Nature.

"For example, people expect to live longer and be healthier than average, they underestimate their likelihood of getting a divorce, and overestimate their prospects for success on the job market," they wrote.

Phelps said the researchers had a hard time getting the volunteers to think of purely neutral events in the future.

"They tended to make them positive," she said. "We sort of stumbled upon this optimism bias that psychologists have talked about before."

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