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Neuroimaging suggests that truthfulness requires no act of will for honest people

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A new study of the cognitive processes involved with honesty suggests that truthfulness depends more on absence of temptation than active resistance to temptation.

Using neuroimaging, psychologists looked at the brain activity of people given the chance to gain money dishonestly by lying and found that honest people showed no additional neural activity when telling the truth, implying that extra cognitive processes were not necessary to choose honesty. However, those individuals who behaved dishonestly, even when telling the truth, showed additional activity in brain regions that involve control and attention.

The study is published in Proceedings of the National Academy of Sciences, and was led by Joshua Greene, assistant professor of psychology in the Faculty of Arts and Sciences at Harvard University, along with Joe Paxton, a graduate student in psychology.

"Being honest is not so much a matter of exercising willpower as it is being disposed to behave honestly in a more effortless kind of way," says Greene. "This may not be true for all situations, but it seems to be true for at least this situation."

The research was designed to test two theories about the nature of honesty - the "Will" theory, in which honesty results from the active resistance of temptation, and the "Grace" theory in which honesty is a product of lack of temptation. The results of this study suggest that the

"Grace" theory is true, because the honest participants did not show any additional neural activity when telling the truth.

To prompt participants to lie, the researchers created a cover story about the focus of their study. The research was presented as a study of paranormal ability to predict the future. Participants were asked to predict the outcomes of a series of coin tosses, and were told that the researchers believed predicting the future was more likely when given a monetary incentive and when the prediction wasn't shared in advance of the outcome. This gave the participants the opportunity to lie and say that they had correctly predicted the coin toss to win the money.

The researchers assessed the honesty of the individuals based on whether their number of correct responses was statistically feasible. Individuals who reported improbably high levels of accuracy were classified as dishonest, and participants reporting statistically feasible levels of accuracy were classified as honest. The researchers emphasize that the labels "honest" and "dishonest" describe only these individuals' behavior in the experiment and need not characterize their behavior more generally.

Using fMRI, Greene found that the honest individuals displayed little to no additional brain activity when reporting their prediction of the coin toss. However, the dishonest participants' brains were most active in control-related brain regions when they chose not to lie. These control-related brain regions include the dorsolateral prefrontal cortex and the anterior cingulate cortex, and previous research has shown that these regions are active when an individual is asked to lie.

While previous research has examined the brain activity of subjects who are told to lie for the purpose of a study, this is the first study to examine brain activity of people telling actual lies.

This study is also the first to examine instances of truth-telling among individuals who were otherwise dishonest, and the neural activity present when they chose whether or not to lie. Greene notes that there was an important distinction between the brain activity when the honest participants told the truth, and when the dishonest participants told the truth.

"When the honest people leave money on the table, you don't see anything special or extra going on in their brains at all," says Greene. "Whereas, when the dishonest people leave money on the table, that's when you saw the most robust control network activation."

If neuroscience is able to identify lies by peering into the brain of the liar, it will be important to distinguish between activity in the brain when lying and activity caused by the temptation to lie. Greene says that eventually it may be possible to detect lies by looking at someone's brain activity, although a lot more work must be done before this is possible.

Source: Harvard University (news : web)