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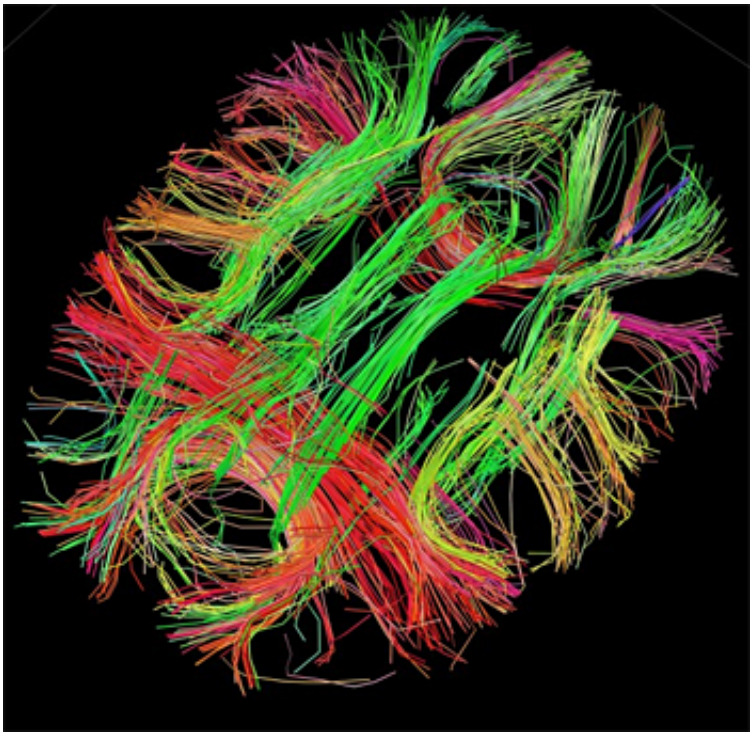
Brain structure could predict risky behavior

September 9 2014



White matter fiber architecture of the brain. Credit: Human Connectome Project.

Some people avoid risks at all costs, while others will put their wealth, health, and safety at risk without a thought. Researchers at Yale School of Medicine have found that the volume of the parietal cortex in the brain could predict where people fall on the risk-taking spectrum.

Led by Ifat Levy, assistant professor in comparative medicine and neurobiology at Yale School of Medicine, the team found that those with

larger volume in a particular part of the parietal cortex were willing to take more risks than those with less volume in this part of the brain. The findings are published in the Sept. 10 issue of *The Journal of Neuroscience*.

Although several cognitive and personality traits are reflected in brain structure, there has been little research linking brain structure to economic preferences. Levy and her colleagues sought to examine this question in their study.

Study participants included young adult men and women from the northeastern United States. Participants made a series of choices between monetary lotteries that varied in their degree of risk, and the research team conducted standard anatomical MRI brain scans. The results were first obtained in a group of 28 participants, and then confirmed in a second, independent, group of 33 participants.

"Based on our findings, we could, in principle, use millions of existing medical brains scans to assess risk attitudes in populations," said Levy. "It could also help us explain differences in risk attitudes based in part on structural brain differences."

Levy cautions that the results do not speak to causality. "We don't know if structural changes lead to behavioral changes or vice-versa," she said.

Levy and her team had previously shown that risk aversion increases as people age, and we scientists also know that the cortex thins substantially with age. "It could be that this thinning explains the behavioral changes; we are now testing that possibility," said Levy, who also notes that more studies in wider populations are needed.

More information: The *Journal of Neuroscience*, Sept. 10, 2014. DOI: 10.1523/JNEUROSCI.1600-14.2014

Medical Xpress

Provided by Yale University

Citation: Brain structure could predict risky behavior (2014, September 9) retrieved 25 April 2024 from https://medicalxpress.com/news/2014-09-brain-risky-behavior.html

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