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Brains of kidney donors seem built for generosity



Terry Rose, right, of Newport Beach donated a kidney to a total stranger. A new study of such donors suggests their brains are built for greater empathy. (Richard Hartog / Los Angeles Times)

By **GEOFFREY MOHAN**

SEPTEMBER 15, 2014, 4:57 PM

As if giving a perfectly good kidney to a total stranger wasn't enough of a distinction, it turns out that extreme altruists have bigger brains and are better than the rest of us at reading signs of distress in facial expressions.

That's what neuroscientists at Georgetown University found when they rounded up 39 kidney donors and scanned their brains, according to a study published online Monday in the journal

Proceedings of the National Academy of Sciences.

Psychologist Abigail Marsh thought it would be tough to round up a significant number of people who had donated kidneys to strangers. She was pleasantly surprised. They were easy to find because many now advocate for organ donation. And they really want to do good things.

“What was amazing about them – and I guess it shouldn’t have surprised me, in retrospect – was how incredibly easy they were to work with,” Marsh said. “They could not have been more delightful study participants.”

Many donors didn’t even want to accept reimbursement for the expense of traveling to Georgetown, thinking it was taking money away from science. “We had to insist they would take it,” Marsh said. “And they would show up hours and hours early for the study.”

The participants stayed motionless during multiple brain scans, patiently looked at lots of facial expressions flashed at them for milliseconds, and didn't take umbrage to answering 154 questions usually posed to those suspected of being psychopaths. And when the results came in, many thought the data proved just how much organ donation improves humans, Marsh said.

Researchers, however, believe it's the other way around: Extreme altruists appear to be built for better empathy.

Compared with regular folks, the 39 donors had slightly bigger brains, by about 9%. That’s not what interested researchers, per se. It was the marked difference in volume of the right side of the amygdala – a brain region that processes emotional stimuli such as fear or distress.

Marsh and her colleagues wanted to measure whether that region also was more active in response to facial expressions. The difference was significant, but not as extreme as their rare acts of altruism might suggest, they found.

“They weren’t so far from the average of the controls,” Marsh said. “They’re merely at the high end of the capacity for compassion and emotional sensitivity, which is sort of encouraging. It suggests that maybe there are many more people out there who might be interested in donating to a stranger than who actually donate.”

The researchers believe the data support the hypothesis that our ability to care about the plight of others falls within a spectrum, with psychopaths anchoring one end and extreme altruists the other.

While there are many ethical and moral explanations for altruism, scientists looking for a biological

one have been stumped. Why would someone behave in a way that could diminish their chances of survival, with no tangible benefit to them? Some suspect altruists merely expect a similar favor that might help them later, or are investing in the survival of DNA shared by kin or a social group. Neither theory has drawn a consensus.

Marsh leans toward an alternative hypothesis posed by others. Natural selection would favor those who can accurately read the meaning of their infant's facial expressions. After all, the size of the amygdala correlates with social complexity among animals, she noted.

“Because we are mammals that give birth to these very helpless young, we're predisposed to respond to anything that reminds us of a vulnerable, helpless infant,” she said.

Although it offers a hint at a biological predisposition to higher empathy, the study also suggests that many factors probably have to coincide to produce behavior as rare as donating a kidney to a stranger. About 1,400 people have done so in the U.S., Marsh said.

The study found no significant difference between the control group and extreme altruists across factors such as income, education, sex and race. But future studies will examine other environmental issues, such as the donors' sense of well-being, Marsh said.

The easy part, researchers now know, will be getting donors to participate.

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