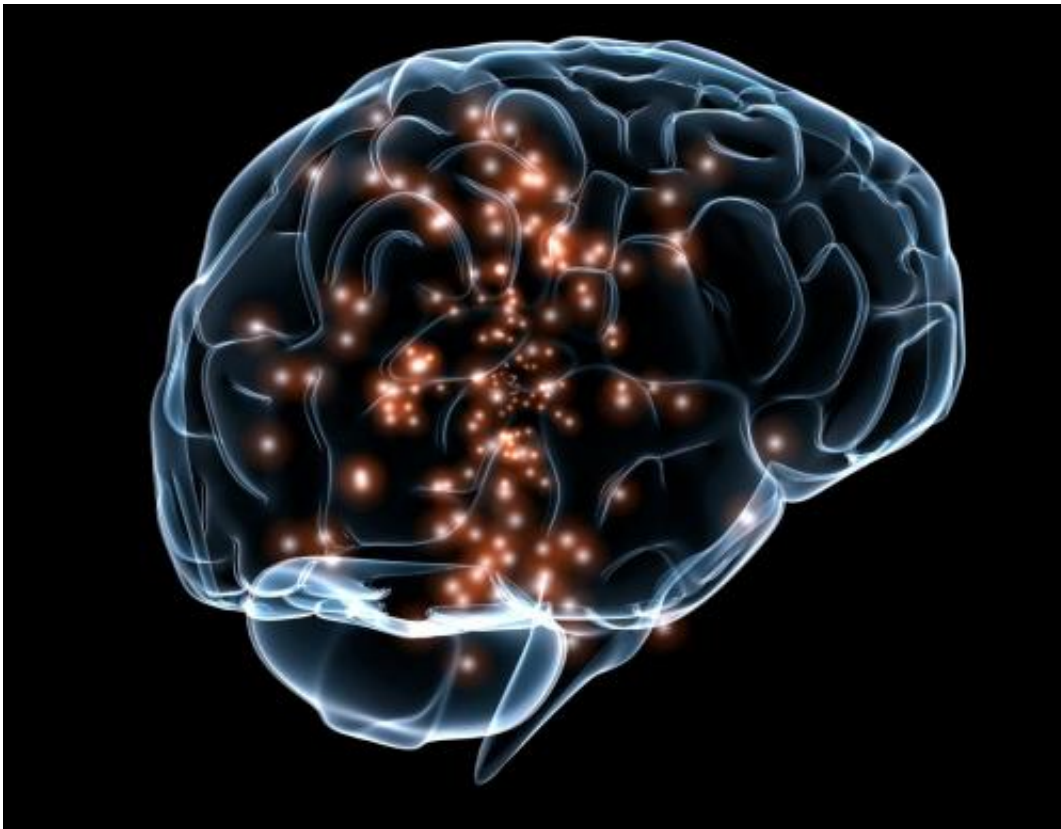


Brain changes in older adults increase risk for scams

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Credit: Wikimedia Commons

Older adults who have been scammed by friends, relatives or strangers seem to behave just like elders who have avoided rip-offs. They are able to balance their checkbooks. They can remember and evaluate information. Their personalities are normal, and their arithmetic is fine.

But their brains are different.

For the first time, researchers have found a biological basis for [financial exploitation](#) in the elderly. The team is led by a Cornell scientist with collaborators at York University in Toronto.

The exploited older people in their study had more atrophy and less connectivity in two key areas of the brain. One region signals a person when something significant is happening around them, and the other tells them how to read social cues, like other people's intentions. The team published their work March 28 in the *Journals of Gerontology*.

Together, these age-related changes in the brain may make [older adults](#) more vulnerable to financial exploitation – especially when one considers that family members are the most common perpetrators of financial abuse, said the study's lead author, Nathan Spreng, assistant professor of human development and a Rebecca Q. and James C. Morgan Sesquicentennial Faculty Fellow.

"It's not their fault they've been abused. It's not because they made a bad decision. There are biological reasons why these abuses have occurred, and we're trying to get a handle on that," said Spreng, who directs Cornell's Laboratory of Brain and Cognition.

"Older [adults](#) are having a harder time navigating these tough social situations. We need to start treating this as a medical problem and not a societal one," he added.

Previous studies have shown that family members are the most common financial abusers. In the study, a grandson continued to steal from a study participant even after she confronted him. A daughter charged \$2,000 to a study participant's account without permission. In another instance, a son's girlfriend borrowed \$4,000 and never paid it back.

Nearly one in 20 older adults can expect to be financially exploited beyond age 60, an incidence rate that is higher than many age-related diseases like cardiovascular disease, cancer and arthritis.

But this area is not very well studied, Spreng said, because many older adults are unaware or unwilling to report exploitation, embarrassed to reveal they have been scammed or want to protect their privacy. "It's hard to get scientific traction," Spreng said.

He and his colleagues tested 26 older adults, half of whom had been robbed by [family members](#) or neighbors or scammed online or by phone. The other half had been exposed to a rip-off scheme but had recognized and avoided it.

The researchers did extensive behavioral tests on both groups to see if they behaved differently. Using 45 assessments, they measured the study participants' memory, ability to pay attention to information and evaluate it, inhibitory control, aspects of personality and financial reasoning.

The only difference in behavior between the two groups was exploited elders reported feeling more anger and hostility.

But more significant differences showed up in the brain images.

The exploited elders had atrophy in the anterior insula and fewer connections from it to a broader brain network. The anterior insula signals when something salient is happening in the environment. In general, this area isn't as responsive in older adults compared with the young, particularly in negative situations, Spreng said.

"If older adults are, say, gambling, they get the same excitement that they might win something as younger adults do, but they don't have the same feeling of dread or disappointment for the losses. So, they're not as

sensitive to losing money," he said.

This region was particularly atrophied in the study's exploited group, suggesting that the [brain](#) wasn't signaling they were facing a risky situation.

The exploited elders also had more atrophy and fewer neural connections in the [medial prefrontal cortex](#), which helps us appraise social situations, like inferring the thoughts or intentions of others.

Surprisingly, the networks of the anterior insula and the medial prefrontal cortex were more connected to each other. This suggests that poor sensitivity to financial risk combined with reduced detection of untrustworthiness may leave older adults vulnerable to scams.

More, larger studies are needed to validate the neural mechanism, but this study could be a first step in identifying a way to predict who might be vulnerable to financial exploitation, Spreng said.

The time is right, Spreng said, because the current generation of elders is the wealthiest ever.

"There's a huge amount of money locked up in our elders' assets," he said. "And people are actively pursuing them."

More information: R. Nathan Spreng et al. Financial Exploitation Is Associated With Structural and Functional Brain Differences in Healthy Older Adults, *The Journals of Gerontology: Series A* (2017). [DOI: 10.1093/gerona/glx051](https://doi.org/10.1093/gerona/glx051)

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