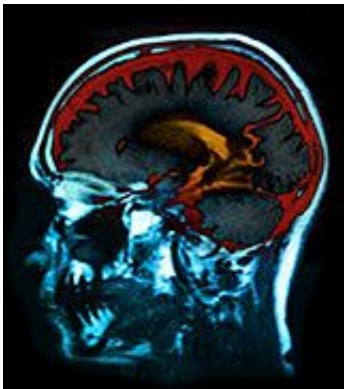


# Research pinpoints brain's 'Gullibility' center

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Changes in this region could explain why seniors, children are less doubting.

(HealthDay)—Whether it's an email from an unknown gentleman on another continent pleading for money or a financial scammer selling a promising penny stock, the young and old tend to be more easily duped than middle-aged people.

Now, researchers have pinpointed the area of the brain responsible for this gullibility and have theorized why it makes children, teens and seniors less likely to doubt.

The ventromedial area of the [prefrontal cortex](#) of the brain—a softball-sized lobe in the front of your head, just above your eyes—appears to be responsible for allowing you to pause after hearing or reading something

and consider whether it's true, according to a study published recently in the journal *Frontiers in [Neuroscience](#)*.

"When most adults hear or read something, they believe it at first, and begin to process it," explained study author Erik Asp, a researcher in the department of psychology at the University of Chicago who conducted the study while at the University of Iowa. "And then they start asking questions. But we're all susceptible to believing something initially."

In children, the prefrontal [cortex](#) is still developing, not reaching full maturity until the late teens or even early 20s. As you age, the brain area responsible for doubting may begin to deteriorate, gradually reducing your propensity to question. The area is the last thing to develop in the brain and may be the first area to begin to show some decline, Asp explained.

"The decline in function is normal. It can happen at 60, 70 or 90," Asp said. "But we found that people with prefrontal cortex damage tend to be less likely to question, more prone to believing [conspiracy theories](#) and overall have less nuanced thinking."

Asp said it's important to know that signs of gullibility in teens and seniors are biologically based, and not the result of sloppy thinking. "They aren't someone's fault. Knowing it's a natural process may help people anticipate the problem and deal with it effectively," he noted.

In the study, the University of Iowa researchers selected 39 participants from its Neurological Patient Registry and 10 healthy people for comparison. They showed eight consumer ads to 18 people with focal brain damage to the ventromedial prefrontal cortex, 21 people with focal brain damage outside that area, and also to the healthy individuals.

Those with damage to the specific area of the prefrontal cortex were far

more vulnerable to being deceived. They were more than twice as likely to believe misleading ads and were more inclined to purchase products advertised in those ads, as compared to those who had damage outside that area of the brain or who were healthy. This happened even when disclaimers saying the ads were misleading were visible.

The size of the damaged areas in the prefrontal cortex did not appear to affect an individual's tendency to doubt.

Asp explained that at the cellular level, cells called oligodendrocytes are responsible for putting myelin around a part of nerve cells called axons. Myelin insulates nerve fibers, not unlike how a household electrical wire insulates power. It permits the rapid transmission of impulses from nerve to nerve. Damage to myelin can cause some neurological diseases.

In the prefrontal cortex, one oligodendrocyte typically supports multiple axons. But in other parts of the brain, such as the posterior cortex, the average oligodendrocyte is only responsible for maintaining the myelin for a few cells.

Researchers theorize that the broader scope and responsibility of these cells in the prefrontal area of the brain has something to do with why there would be a decrease in doubting ability as people age.

Understanding these cellular differences could potentially lead to a treatment target, Asp said.

"This research moves the science forward about understanding the mechanics of how people interpret untrue information," said Dr. Paul Sanberg, a distinguished professor in the College of Medicine at the University of South Florida, in Tampa. "It might make people more understanding of gullibility."

The bottom line, said Jordan Graffman, director of the [brain](#) injury

research program at the Rehabilitation Institute of Chicago, is that families, friends and caregivers of older adults need to be available to support decision-making. "Being duped is more likely if you're isolated," he said.

**More information:** Learn more about your brain at the [U.S. National Institute of Neurological Disorders and Stroke](#).

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