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## Professors Warn of Investment Scams Targeting Seniors

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By Valerie Ross Thursday, November 18, 2010 6

The invitations come in the mail, covered in large print: "Investment Workshop—Free Gourmet Lunch!" "Avoid the Biggest Financial Mistakes Seniors Make!" "Protect Your Financial Security!"

At the lunch, the salmon is accompanied by an investment pitch, with reminders that "there's a high rate of return," and "only a few opportunities are left."

Many of these free lunch seminars are scams aimed at retirees. Nearly six million seniors have attended such seminars in the past three years, the senior advocacy group AARP estimates—although conventional wisdom says that there's no such thing as a free lunch. Despite their years of experience, however, older people are more likely to err in their financial decisions by overemphasizing potential benefits and downplaying potential risks. Now insights from psychology, economics and neuroscience may help us understand why and how those errors occur.

Older adults aren't as upset by possible financial losses as young people are, psychological research has shown, and Stanford University researchers found in a recent brain-imaging study that seniors' brains don't anticipate a loss as much as younger ones do. That might be leading them to make less rational—and therefore less profitable—choices. But the news isn't all bad; a better understanding of why these mistakes happen may make it easier to prevent them.

### How aging affects financial choices

Economists have studied how aging impacts real-life financial behavior. Harvard University economist David Laibson and his colleagues looked at a variety of choices people make about loans and credit cards, in a study in 2009. They found that people on the younger and older ends of the age spectrum ended up making more mistakes—that is, decisions that cost them money—than did middle-aged people. For home equity loans, for instance, 25-year-olds and 80-year-olds had loans with annual percentage rates of about 6 percent; 50-year-olds had rates of 5.5 percent. On average, across the different types of choices, people made the fewest mistakes at age 53.

Good financial choices require both strategy and execution, an understanding of how financial systems work, and the mental acuity to find and choose the best option. Strategy becomes easier with age, Laibson suggests, but the execution gets harder. "Experience brings improvement," he says, "but after a point, that accumulation of experience starts to get overwhelmed by decline of cognitive function."

This hypothesis matches up with what psychologists know about cognitive aging. "There's a pretty straightforward story," says Scott Huettel, a cognitive neuroscientist who studies decision-making and aging at Duke University's Center for Cognitive Neuroscience. "More or less all of our cognitive abilities decline throughout the life span." A large body of research has shown that a wide variety of skills, including memory, analytical reasoning and processing speed, decrease as we age. The one thing that stays constant or even increases, Huettel says, is crystallized intelligence, a person's accrued knowledge about the world—in other words, experience.

But it's not just memory and reasoning that matter. "We use our gut feelings and our emotions to guide us to make decisions," says Mara Mather, a psychologist who studies aging, emotion and memory at the University of Southern California School of Gerontology. Contrary to stereotype, older people generally feel more optimistic than young people do, and are more likely to focus on the potential upsides of a situation. As people age and begin to feel that their time is limited, some researchers suggest, they seek out emotional

fulfillment. This tendency to focus on the positive changes the decisions older people make.

### **Brain changes and bank changes**

The Stanford team of psychologists and neuroscientists, meanwhile, are studying how those cognitive and emotional effects of aging play out in the brain during financial decision-making. Functional brain imaging can be notoriously difficult to interpret on its own, but combined with behavioral research, it may help researchers answer the question: As people age, what changes in the brain are tied to less change in the bank?

It's important to note that increased activity in a particular brain area doesn't mean that area is making people think or feel a certain way. Brain imaging lets neuroscientists associate a mental activity—like a thought or a feeling—and a brain region. The data do not inform on causation, but when brain scans are matched up with behavioral results, they can help scientists suss out which brain areas play a role in that thought process or emotion.

The researchers started by looking at how younger and older people react to the basic element of any financial task: the amount of money you stand to gain or lose. For their first study, published in *Nature Neuroscience* in April 2007, the researchers designed an experiment that assessed how study participants—some young adults, some older—felt as they anticipated a gain or loss. (*Scientific American* is part of Nature Publishing Group.)

Participants lay inside a magnetic resonance imaging (MRI) machine and watched as a screen showed an amount of money they could gain or lose, such as "+\$5" or "\$1". Then, after a short delay, they had to hit a button very quickly to get a favorable outcome, such as gaining the \$5 or avoiding the \$1 loss. After doing this 180 times with various amounts of money at stake, each person ranked how anticipating each gain or loss amount made them feel— from "very negative" to "very positive". The researchers also analyzed the MRI images to see which areas of the participants' brains were most active as they anticipated a gain or loss.

The researchers found that younger and older adults felt equally good when expecting a gain, and they showed the same increase in activity in the nucleus accumbens, a part of the brain important in anticipating rewards.

When expecting a loss, however, younger and older adults responded differently. Younger adults reported being more upset and showed higher blood flow in the insula, a part of the brain implicated in negative emotions. As the amount of money at stake increased, so did negative feelings and insula activation. The older adults, on the other hand, didn't feel as bad as younger adults did, and showed less activation in the insula.

This doesn't mean that older people don't care if they lose money, says Gregory Samanez-Larkin, then a Stanford doctoral student and lead author of the paper. Rather, it shows their bias toward the positive at work in their brains. "They weren't getting as anxious about the prospect of losing money as the younger adults were," he says.

Whereas looking on the bright side is emotionally beneficial, it has drawbacks in financial decision-making, when it's important to consider possible losses. Think of the "high rate of return" promised at the lunch seminar. Sounds great, but big returns usually require big risks. If they're not worrying about those risks, the seniors at that seminar might be more likely to sign up, even if the investment isn't a good one overall. The same could be true for a range of financial decisions. Seniors might shrug off a credit card's high interest rates, for instance, if they're focused on a program that offers great rewards.

### **The risks of random choices**

In a more recent study, published in *The Journal of Neuroscience* in January 2010, Samanez-Larkin and the other researchers asked younger and older adults to participate in an investment game, again while in an MRI machine. On each turn, people could choose among two types of stock, randomly deemed either "good" or "bad" by a computer, and a bond, which always yielded \$1. The participants, however, were not informed which stocks the computer labeled bad or good. Whereas the good stock yielded a \$10 gain half the time, 25 percent of the time it would yield nothing, and in the remaining percentage, a \$10 loss. For the bad stock, the probabilities of gain and loss were reversed, with a loss occurring half the time, etcetera. People weren't told the outcomes of each stock after each turn, but deduced them as the game went on—much the way people pick stocks to invest in based on past performance.

The researchers found that older people were just as skilled as younger people at balancing the safe bonds with the riskier stocks. In other words, they didn't make many mistakes because they acted in a risk-averse manner, as is often assumed of older people.

But when it came to choosing between the good and bad stocks, older people were significantly more likely to choose the bad one than younger people were. Before making a risky decision, all subjects showed increased activation in the nucleus accumbens, the same region that was activated by expecting a gain in the previous study. Now they were expecting the reward of a risky, but ultimately profitable, choice. But in older adults this pre-risk activity in the nucleus accumbens was much noisier, with more variability in its strength and timing.

This variability in nucleus accumbens activity could be linked to difficulty in picking the right stock, says Brian Knutson, a Stanford neuroscientist working on the study who researches emotion and decision-making. Older people "might be choosing more randomly when they take risks," due to fuzzier signals in the nucleus accumbens that don't clearly differentiate the good stock from the bad.

Anyone who invests in the stock market takes on some risk, but they generally do it expecting to make a profit. This study suggests it can be particularly hard for older people to differentiate profitable risks from unprofitable ones. Even if their current, more conservative portfolios will probably earn more than the new investment being touted at the lunch seminar, older people might be more ready to risk them after being misinformed by scammers because they are too optimistic about the chances of profitable returns on risky investments.

But a clearer understanding of the obstacles to good financial decision-making that older people face suggests some ways to clear the path. Providing clear information about the average payout of a stock—which many investment companies do—can help older people tell good risks from bad, Knutson says. If older people know they're prone to focus on the upside of their financial decisions, taking the time to think carefully about possible losses might help them avoid costly choices. And since they're more likely to err, older people can benefit from listening to a trusted advisor before making big financial decisions—and, perhaps, by throwing out any free lunch invitations that come in the mail, or at least attending and ignoring the scammers' pitch while eating lunch on their dime.

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