

Brain scans reveal differences in regret as people age

April 20 2012, by Bob Yirka

(Medical Xpress) -- New research using brains scans shows that many elderly people have over time either learned to not stew over things they regret or to not regret them at all. Those that don't learn such skills tend to become depressed, say researchers from University Medical Center in Germany, who have been conducting research into regret and aging using brain scans. The team, led by Stefanie Brassens has published the results of their efforts in the journal *Science*.

In their report, the team finds that young people and depressed older adults tend to rue decisions they've made and to fixate on them. In contrast, mentally healthy older adults tend to call it all water under the bridge and move on.

To find out such things, the team recruited sixty volunteers, 20 healthy young people, 20 mentally healthy [elderly people](#) and 20 elderly people who suffer from depression, to help them carry out an experiment. They asked each volunteer to play a video game of chance that involved several covered containers. Under each was either a gold ingot or a demon that would steal all the money they'd earned thus far. As each container was opened, the player got to keep the gold if it was underneath. As play progressed the odds of finding a demon increased, upping the anxiety. Also, to see what was going on in the [brain](#), players played the game while being scanned inside of an MRI machine.

The researchers looked specifically at the brain region known as the ventral striatum, which is known to respond to rewards. In analyzing the

players, the researchers found that young people and older depressed adults tended to show more activity than did the brains of older more complacent older people. By watching carefully, they could also measure the impact on players when they felt they opted out too early, or when they kept on playing but eventually lost all they'd won to the demon. This time, the younger players and those that were older but depressed showed less activity in the ventral striatum, indicating sadness or depression, meaning they were upset about how things had come out. The older, healthier players on the other hand showed little to no change, indicating they weren't nearly as worried or upset about how things had played out.

The team also found by looking at the anterior cingulate cortex, that older healthy adults did actually feel some remorse at some points in the game, but suppressed it.

The researchers repeated the whole exercise with another group of volunteers, only instead of testing them with an MRI machine, they tested their heart rates and skin for electrical response (indicating degree of sweating) during play. This time too they found that the older healthier players were more relaxed regardless of outcome, while the [young people](#) and older depressed people tended to sweat it out both while playing and then when reacting to the results of their own decision making.

And finally, to put it all together, the team interviewed the volunteers asking them if they had a lot of regrets and how strong those feelings were if they had them. Not surprisingly, the volunteers answers tended to mirror the results of the earlier experiments.

These results, the researchers say, show that as people grow older, those that do so in a healthy manner learn to not dwell on past mistakes or to suppress negative feelings about them, while those that don't tend to

become depressed.

More information: *Science* [DOI: 10.1126/science.1217516](https://doi.org/10.1126/science.1217516)

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