

Alzheimer's Is Associated with Repetitive Negative Thinking

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Today we take the images from EEGs and MRIs for granted. They are a fundamental part of medical diagnosis and treatment. Yet the EEG is less than a century old and the MRI less than half that age. Before visionary scientists developed these technologies, the workings of the brain were deduced from the behavioral characteristics of patients with brain damage. When German doctor Hans Berger began to share his first EEG recordings in the 1930s, academic neuroscientists ridiculed his findings. Depressed and shunned, he committed suicide in 1941 (Tudor et al., 2005).

The technology eventually caught on, however, and has been developed to a remarkable degree. Think about how the screen of your current phone has a much higher resolution than the one you were using five years back. Similar technological breakthroughs have recently occurred with brain imaging machines. The latest models can track the activity of a single neuron.

Over the course of four years, researchers at University College London used the newest PET scanning technology to track the brains of 292 people aged 55 years and older (Marchant et al., 2020). The study measured the accumulation of two proteins in their brains. These molecules, beta amyloid and tau, are markers of Alzheimer's disease. They stick together to form gummy "plaques." These interfere with neural signaling, much the way gunk builds up in the plumbing under your sink, eventually stopping the flow.

Before the development of advanced PET scanners, the only way to measure the accumulation of tau and beta amyloid plaques was by sampling brain tissue, usually after death. Studies measuring behavioral traits in living people and comparing them to plaque deposits were not possible. Technological advances continue to make entirely new forms of research possible.

Science used to believe that Alzheimer's is a "purely genetic" disease. A signaling gene called

APOE is key. It comes in three flavors: APOE2, E3, and E4. People with APOE2 have very low risk of Alzheimer's. Those with two E4 genes, one from each parent, have an Alzheimer's risk over 90%.

The University College researchers looked at cognitive functions such as attention span and memory in their subjects. Over the course of four years, they noted which people had a faster accumulation of plaques and compared this with a host of lifestyle and psychological factors.

What had the strongest correlation with the buildup of beta and tau proteins? It wasn't the presence of the APOE4 gene or anything to do with the participants' lifestyle. The single factor with the greatest correlation was negative thinking—specifically, repetitive negative thinking (RNT). A habit of RNT meant a higher risk of Alzheimer's. Not only that, but the relationship between them scaled. The more RNT the faster the buildup of plaque.

Lead author Dr. Natalie Marchant commented that "depression and anxiety in midlife and old age are already known to be risk factors for dementia. Here we found that certain thinking patterns implicated in depression and anxiety could be an unlined reason why people with those disorders are more likely to develop dementia. Taken alongside other studies which link depression and anxiety with dementia risk, we expect that chronic negative thinking patterns over a long period of time could increase the risk of dementia."

Negative thinking behaviors included rumination about the past and worry about the future.

Neurologist Dr. Richard Isaacson, founder of the Alzheimer's prevention clinic at New York Presbyterian Hospital, noted that "this is the first study showing a biological relationship between RNT and Alzheimer's pathology. Many people at risk are unaware about the specific negative impact of worrying and rumination directly on the brain."

The researchers speculated about practices that might promote positive thinking. They plan a further study to test the possibility that meditation might reverse the process. Existing studies show that the more positive we are the lower our risk of death from strokes and heart attacks.

Millions of people, me included, are now getting genetic tests from companies like 23 and Me. They give you an impressive report showing your genetic risk for common diseases like Alzheimer's, diabetes, cancer, and heart attacks. Yet they make zero allowance for consciousness. They fail to recognize that the way we use our minds influences the activation of those genes.

You can train your brain using positive emotional states, just like training a muscle. One study found that meditating for just 12 minutes a day produced measurable positive changes in brain anatomy in eight weeks (Church, 2020). Gratitude has the same effect. So do happiness, compassion, and altruism.

These studies show that even "purely genetic" diseases are influenced by consciousness.

Consciousness may be our most underutilized asset. Many people allow themselves an infinite diet of RNT, unaware of the damage it may do to their brains.

Using your superpower of consciousness deliberately, you can direct your attention in healthy and uplifting ways. Choose positivity and you shape your brain and direct your gene expression. That's a superpower that every human being possesses.

References

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