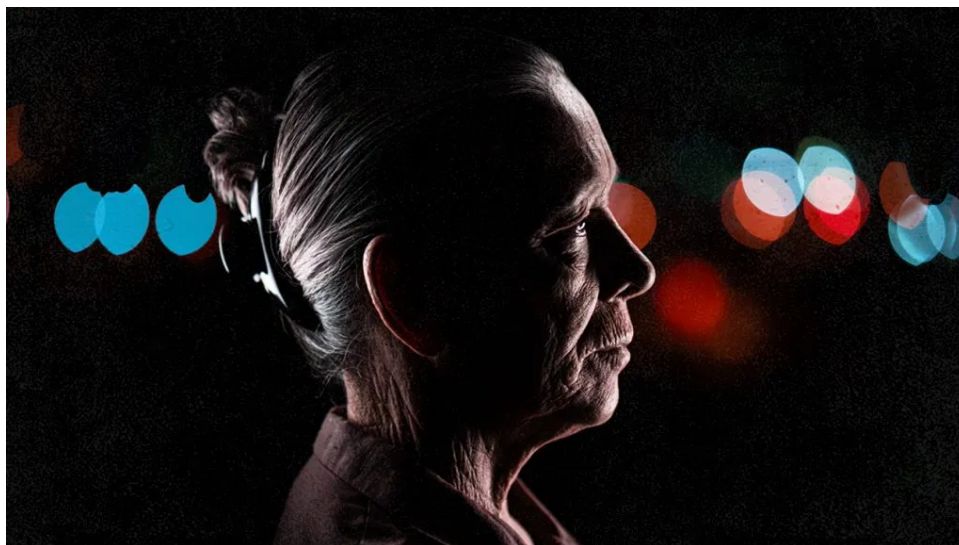


# Parkinson's disease: Does neuroticism increase risk?



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Could neuroticism increase the risk of Parkinson's disease? Jasmin Merdan/Getty Images

- People who score high on **neuroticism** in personality tests tend to experience more negative emotions and are more vulnerable to the effects of psychological **stress**.
- A study has found that such individuals had over **80%** greater risk of **Parkinson's disease** in the following decade compared with those who scored low on neuroticism.
- The association remained significant even after the researchers accounted for other risk factors for the disease, such as anxiety, depression, smoking, and low levels of physical exercise.

Neuroticism is one of the so-called **Big Five** personality traits that remain relatively stable throughout a person's lifetime.

The other four personal characteristics are extroversion, agreeableness, openness, and conscientiousness.

People who score high on neuroticism in personality tests are more prone to negative emotional states, such as worrying, mood swings, and irritability, and the effects of stress.

There is strong evidence that neuroticism is associated with [major depression](#) and brain disorders, such as [Alzheimer's disease and other types of dementia](#).

However, few studies have investigated possible links with Parkinson's disease, which is a degenerative brain disorder characterized by tremors, rigidity, and problems with movement and balance.

It is estimated that around [60,000](#) new cases of Parkinson's disease are diagnosed in the United States each year.

In the largest study of its kind, researchers led by Florida State University College of Medicine (FSU COM) in Tallahassee found that individuals who scored high on neuroticism were significantly more likely to develop Parkinson's disease.

**People who have Parkinson's often experience [anxiety](#) and [depression](#). However, the new study suggests that the psychological and biological effects of living with the condition are only partly to blame.**

"Some clinicians think that the anxiety and depression is just the result of Parkinson's," says [Dr. Antonio Terracciano](#), a professor of geriatrics at the FSU COM who led the study.

"However, our findings suggest that some emotional vulnerability is present early in life, years before the development of Parkinson's disease."

The research has been published in the journal [Movement Disorders](#).

The scientists followed 490,755 volunteers who were aged 40–69 years when they joined the ongoing [UK Biobank](#) project.

When the participants enrolled, the researchers used the [Eysenck Personality Questionnaire-Revised](#) to gauge their level of neuroticism.

**The test includes 12 questions related to the personality trait, such as:**

- **“Are you a worrier?”**
- **“Are you an irritable person?”**
- **“Do you worry too long after an embarrassing experience?”**

During an average follow-up period of 9 years, there were 1,142 diagnoses of Parkinson’s disease mentioned in medical or death records.

Among the top quartile, or the top 25%, of participants on the neuroticism scale, the risk of Parkinson’s disease was 88% higher compared with the bottom quartile.

The association remained statistically significant after the scientists accounted for known risk factors for Parkinson’s disease, such as age, [smoking](#), low levels of [physical activity](#), and mood disorders.

To account for the possibility that the participants were in the early stages of the disease when they took the test, the researchers excluded all the cases that occurred within the first 5 years of the follow-up.

Again, the association remained significant, which helps rule out the possibility that the effects of undiagnosed Parkinson’s disease made some of the participants more neurotic.

## **Pooled results from past studies**

In a separate analysis, the researchers pooled the results of four previous prospective studies that investigated the same question.

The analysis found that neuroticism was associated with an 82% higher risk of Parkinson’s disease.

The results were similar regardless of the follow-up period of each study, which ranged from 1 to 4 decades.

**than being an effect of it.**

“However, longitudinal studies are needed to thoroughly examine whether there are increases in neuroticism in the preclinical phases of [Parkinson’s] that could explain the observed association between neuroticism and [the disease],” they write.

Having a neurotic personality may directly lead to the brain changes that are responsible for the disease.

The authors note, however, that there is some evidence that neuroticism and Parkinson’s disease may have underlying genetic causes in common, which could also partly explain their results.

## **Some limitations**

The authors acknowledge some limitations of their study, which could have affected the findings.

For example, they say the medical and death records may have underrepresented the true number of cases of Parkinson's as a result of delays in or lack of diagnosis.

In addition, they write that their analyses did not account for other signs of undiagnosed Parkinson's disease, such as [rapid eye movement sleep behavior disorder](#), poor sense of taste and smell, and apathy.

