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[The Neuroscientist Who Lost Her Mind](#)

# We Scientists Know So Little About Mental Illness

In most cases, exactly how the brain malfunctions remains a mystery.

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The United States spends significantly more on treating mental disorders than on any other medical condition—a whopping \$201 billion in 2013, according to a 2016 article in the *Washington Post* (Heart conditions, for which it spent \$147 billion that year, rank a distant second, the article notes.)

But even with these resources and the tremendous efforts of dedicated scientists and physicians, mental illness remains deeply enigmatic, its causes generally unknown, its cures undiscovered. Despite the overwhelming body of research to which new findings are added almost every day, we scientists still don't understand what happens in the brains of mentally ill people. We don't really know yet which brain regions and connections are malformed or undeveloped, or when the brain goes awry or why. Are people who become mentally ill destined to suffer because of a genetic predisposition, or did they experience something that broke their brains, mangled their neuronal connections, and altered their neurologic function?

The data suggest that mental illness is caused by a combination of heredity and environment, the latter involving multiple factors—including drug use and abuse—that act in complex interplay with one another and with our [genes](#). But it remains exceedingly hard to pinpoint the biological and chemical processes for mental illness, in part because these disorders are diagnosed through observations of behaviors rather than through more precise tests.

Unlike cancer and heart disease, mental illness has no objective measures—no biological markers that we can see on imaging scans or determine through laboratory tests—to tell us who is affected and who is not. In the aggregate, groups of people who suffer from mental illness may show differences in their brain structures or functions, but for now, individual patients can't be diagnosed using conventional measures such as blood tests, CT scans, or MRIs.

Diagnosing mental illness is all the more difficult because the constellation of symptoms not only varies from person to person but also often fluctuates over time within an individual. Not everyone afflicted with [schizophrenia](#)—the mental illness I have studied so closely—screams in distress, for instance; some people with the disease may shut down and stop communicating. Likewise, people with [dementia](#) may be attentive and engaged one minute and detached and withdrawn the next. Even more challenging, some indications of mental illness may be seen as exaggerations of normal [personality](#) traits, making the behaviors particularly hard to recognize as pathological. With people who are naturally frank and outspoken, the lack of judgment that can accompany dementia may at first be construed as their typical bluntness. Similarly, when introverted people become more withdrawn, others may not realize that they are exhibiting symptoms of Alzheimer's disease.

For researchers, it's becoming clearer that specific mental disorders are not well-defined categories of illness, each delineated by a distinct set of symptoms and biological indicators. The same symptoms may occur in different illnesses, so two people who exhibit the same erratic behavior may in fact be suffering from two completely different disorders. Or perhaps there is overlap among various mental disorders in terms of

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Today, scientists believe that the main site of disruption in people with schizophrenia is the highly evolved prefrontal cortex, which sits at the front of the brain, and its network of connections with other parts of the brain. But what these abnormalities are and how exactly the brain malfunctions in any given mental problem remains an unsolved puzzle.

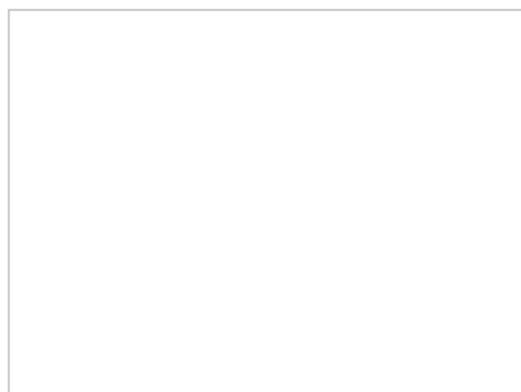
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Washington Post: [https://www.washingtonpost.com/news/to-your-health/wp/2016/05/19/guess-what-medical-condition-is-the-costliest-its-not-heart-disease-cancer-or-diabetes/?utm\\_term=.b53493a1175b](https://www.washingtonpost.com/news/to-your-health/wp/2016/05/19/guess-what-medical-condition-is-the-costliest-its-not-heart-disease-cancer-or-diabetes/?utm_term=.b53493a1175b)

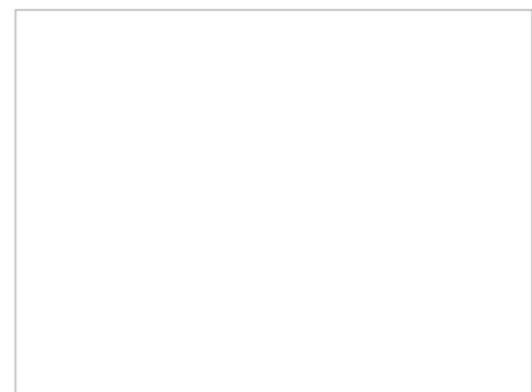


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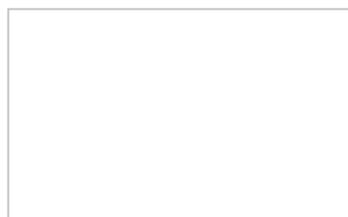
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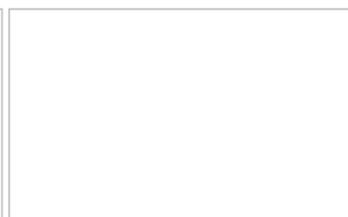
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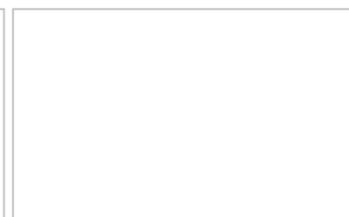
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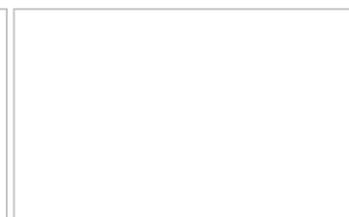
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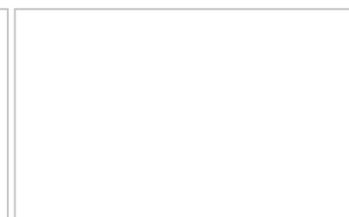
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