Insomniacs' Brains Are Wired Differently, Science Says

By Ana-Marija Dolaskie — April 8, 2016

The importance of sleep for the body's overall well-being has not been lost on those who suffer from insomnia, but unlike many of us, insomniacs simply can't shut off their brains and dive into REM sleep. The sleep disorder has kept many researchers up at night, too, perhaps until now.

According to a recent study, insomniacs' brains may be wired differently than those of people who don’t suffer from insomnia, which may lend credence to the long-suspected theory that anxiety and depression may not be the sole contributors to the disorder.

The study, published in the journal Radiology, compared normal sleepers' brains to those of people suffering from the disorder. They found that insomniacs' brains have fewer amounts of white matter, which weakens neural communications, particularly to and from the thalamus, which regulates consciousness, alertness, and sleep.

Past studies had not been able to observe the significance of white matter in the brain, though in 2014, researchers discovered troubling evidence that the reduced amount could be a precursor of stroke and dementia. Now, using sophisticated techniques, Chinese researchers were able to determine that it serves as a connector between parts of the brain, a crucial functional role. In insomniacs' brains, there is less white matter in the pathways which are associated with regulating sleep and alertness.

Researchers, though, are still baffled by the chicken-or-the-egg scenario: whether the weakened connections are the root of the problem, or the result of lack of sleep.

Still, the study answers significant questions about a disorder which occasionally affects more than a quarter of the U.S. population, with 3-to-5 percent of Americans suffering from primary insomnia, the chronic inability to fall asleep that's not attributed to psychiatric, medical, or environmental causes. Chronic insomnia can cause mood swings, irritability and memory loss.

"The mechanism underlying insomnia [and] sleep is quite complicated," Shumei Li, a researcher at Guangdong No. 2 Provincial People's Hospital in Guangzhou, China, and the lead author of the
study told [5] Live Science. "The exact neural circuit of sleep control still needs to be further investigated by other techniques in terms of function and neurophysiology."

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