

It disrupts decision-making pathways in the brain, neuroscientists find.

Scientists discover a mechanism for how anxiety may disrupt decision-making.

Anxiety doesn't just affect the way we feel — it can also have a significant impact on our daily behaviors, including our ability to make sound decisions.

A new study from neuroscientists at the University of Pittsburgh finds that anxiety disengages the prefrontal cortex, a brain region that's critical for flexible decision-making, as well as attention and higher-order thinking.

“Anxiety is a mental health issue that affects our day-to-day life, including our decision-making,” Dr. Bitá Moghaddam, a neuroscientist at the university and the study's lead author, told The Huffington Post in an email. “By understanding the biological processes that make this happen, we can hopefully come up with better ways of treating this aspect of anxiety.”

For the study, which was published last week in *The Journal of Neuroscience*, the researchers monitored the activity of neurons in the prefrontal cortex of rats to see how their brain activity affected their decision-making ability.

Half of the rats were given an injection of an anxiety-inducing drug while the other half received a placebo injection. The rats then completed two decision-making tasks in which they were challenged to make the most optimal choices that led to a reward.

When the rats completed the task, both groups performed similarly. However, when they completed it for a second time researchers included environmental distractions, which resulted in the anxious rats making poorer decisions.

Why does anxiety lead to bad decisions in the face of distractions? On a neurological level, the researchers found that anxiety had a numbing effect on neurons in the prefrontal cortex. In other words, anxiety has a selective effect on the type of neuron activity that supports decision-making.

“Behavior including making decisions is encoded by specific groups of neurons in the brain,” Moghaddam said. “Anxiety essentially weakens the encoding power of a group of brain cells in the prefrontal cortex that encode choice.”

This isn’t the first time scientists have shown a link between anxiety and impaired decision-making — other research has also suggested that the link work in the reverse.

In a study published last year in the journal Nature Neuroscience researchers found that poor decision-making might actually be a cause of anxiety, rather than an outcome of it. The study showed that people who are prone to anxiety are worse at making good decisions in the face of uncertainty, because they struggle to decipher whether the situation is stable or changing.

Of course, the new findings are preliminary and would have to be replicated in humans before any solid conclusions can be drawn. Still, they point toward a potential target for treating anxiety-related decision-making challenges.

“The fact that conflict-related decision making — and neurons that encoded for that aspect of the task — was selectively affected by anxiety, suggests that behavioral therapy ... that

specifically deals with that aspect of the behavior can be useful," Moghaddam said.

Source: The Huffington Post by Carolyn Gregoire