

Japanese researchers find norepinephrine levels may be linked to gambling addiction

February 22 2012, by Bob Yirka

(Medical Xpress) -- Because addictions cause so much havoc in the lives of millions of people, researchers the world over are constantly looking for both their causes and ways to treat them. One such addiction, to gambling, has proven to be particularly tricky. To date, not a single approved medication has been found to help people who suffer from this category of addiction. Now however, thanks to the work of a team of scientists from the Kyoto University graduate school of medicine, researchers might be getting closer. They have found, as they explain in their paper in *Molecular Psychiatry*, that people with lower levels of the norepinephrine transporter in their brain, tend to take losing money less hard than do other people, which could of course, lead to gambling problems.

This happens the team says, because less norepinephrine transporter means less [absorption](#) of extracellular norepinephrine, which means more of it remains in the brain. This, the researchers say, dulls the pain of loss.

To find all this out, the research team enlisted 19 male volunteers who were first given some gambling tasks. Once they were done with that, each volunteer was then given a [PET scan](#) which allows researchers to see what is going on with [brain](#) transporters. After analyzing all of the scans, the researchers found that those volunteers with lower levels of the norepinephrine transporter also had higher levels of norepinephrine in their brains, which the researchers say, would make them less likely to feel the pain of monetary loss. In contrast, they found that others in the

test group had higher levels of the transporter and thus lower levels of norepinephrine, which would of course mean they would more strongly feel the pain associated with financial loss, known more commonly as “loss aversion.”

The point, the research team emphasizes, is that norepinephrine levels vary from person to person. Some feel a profound sense of loss in losing just a little bit of money, while others may feel little but annoyance at suddenly not being able to pay the rent. Thus, they suggest, while it might seem like every decision every person makes is all of their own free will, it might be that not all decision making comes from the same place.

More research will have to be done of course, but this new study may help lead the way to pharmaceuticals that could conceivably lower the amount of transporters and thus increase the amount of norepinephrine in the brains of gambling addicts, and thus help them curb their risky behavior.

More information: Norepinephrine in the brain is associated with aversion to financial loss, *Molecular Psychiatry*, (21 February 2012) [doi:10.1038/mp.2012.7](https://doi.org/10.1038/mp.2012.7)

Abstract

Understanding the molecular mechanism of extreme or impaired decision-making observed in neuropsychiatric disorders, such as pathological gambling and attention-deficit hyperactivity disorder (ADHD), could contribute to better assessment and the development of novel pharmacological therapies for those disorders. Typically, most people show a disproportionate distaste for possible losses compared with equal-sized gains.

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