

Press Release

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SAFE Glen Cove Coalition: Two Brain Regions Linked with Nicotine Addiction and Withdrawal

Despite smoking's well-known devastating effects on health, quitting is difficult for most people who smoke, primarily because of nicotine's highly addictive properties. A recent study showed that two separate brain processes are linked to nicotine addiction severity and nicotine withdrawal, respectively, which may account for some of the difficulties in stopping smoking. The findings may help researchers devise new ways to help more people quit smoking.

According to the National Institute on Drug Abuse (NIDA) a recent study has found two key findings. First, compared with nonsmokers, people who smoke showed less activity in the brain's striatum (reward system) in response to positive feedback. This effect was more pronounced with greater addiction severity and was not alleviated by nicotine treatment. Second, nicotine treatment reduced the brain's habenula's (sleep cycles and mood) activity in response to both positive and negative feedback among overnight abstinent smokers, but not among nonsmokers. Also, greater habenular activity was associated with higher craving among the people who smoke.

The findings demonstrate that different aspects of nicotine use, such as addiction severity and nicotine withdrawal, are linked with different brain processes. Specifically, brain processes associated with how strongly addicted a person reported being to smoking were related to alterations in the striatum's reward system. On the other hand, how much a smoker was craving a cigarette was related to activity alterations in the habenula. Current treatments such as nicotine replacement therapy only appear to affect the brain activity linked to nicotine withdrawal and craving but do not affect striatal activity. Accordingly, interventions simultaneously targeting both addiction-related and withdrawal-related aspects of nicotine use may improve cessation outcomes that at present are poor.

The National Institute on Drug Abuse (NIDA) is a United States federal-government research institute whose mission is to "lead the Nation in bringing the power of science to bear on drug abuse and addiction". For more information please visit www.drugabuse.gov.

To learn more about the SAFE Glen Cove Coalition please follow us on www.facebook.com/safeglencovecoalition or visit SAFE's website to learn more about Nicotine please visit at www.safeglencove.org.