

Impulse control area in brain affected in teens with genetic vulnerability for alcoholism

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A new study suggests that genetic factors influence size variations in a certain region of the brain, which could in turn be partly responsible for increased susceptibility to alcohol dependence.

It appears that the size of the right orbitofrontal cortex (OFC), an area of the brain that is involved in regulating emotional processing and impulsive behavior, is smaller in teenagers and young adults who have several relatives that are alcohol dependent, according to a study led by Dr. Shirley Hill, Ph.D., professor of psychiatry, University of Pittsburgh School of Medicine.

In the research, which was published this week in the early online version of *Biological Psychiatry*, Dr. Hill and her team imaged the brains of 107 teens and young adults using magnetic resonance imaging. They also examined variation in certain genes of the participants and administered a well-validated questionnaire to measure the youngsters' tendency to be impulsive.

The participants included 63 individuals who were selected for the study because they had multiple alcohol-dependent family members, suggesting a genetic predisposition, and 44 who had no close relatives dependent on drugs or alcohol. Those with several alcohol-dependent relatives were more likely to have reduced volume of the OFC.

When the investigators looked at two genes, 5-HTT and BDNF, they found certain variants that led to a reduction in white matter volume in the OFC, and that in turn was associated with greater impulsivity.

"We are beginning to understand how genetic factors can lead to structural brain changes that may make people more vulnerable to alcoholism," Dr. Hill said. "These results also support our earlier findings of reduced volume of other brain regions in high-risk kids."

These differences can be observed even before the high-risk offspring start drinking excessively, she added, "leading us to conclude that they are predisposing factors in the cause of this disease, rather than a consequence of it."

Source: University of Pittsburgh

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