

RESEARCH FILE

Alcohol researches relate a genetic factor to anxiety in women

Researchers have identified a genetic factor that appears to influence anxiety in women. Combining DNA analysis, recordings of brain activity, and psychological tests, investigators at the National Institute on Alcohol Abuse and Alcoholism (NIAAA) found that Caucasian and American Indian women with the same gene variant had similarly high scores on tests that measure anxiety. These women also had similar electroencephalograms (EEG)—recordings of brain electrical activity as unique as an individual’s fingerprint—that showed characteristics of anxious temperament, further strengthening the association of this shared genetic factor with anxiety. The study appears in the current issue of the journal *Psychiatric Genetics*.

“These results shed more light on the genetic origins of anxiety, which can sometimes be a warning sign for developing alcoholism,” says NIAAA Director T.K. Li, MD. “Such multidimensional studies that integrate neurogenetics, behavioral science, and the study of the brain are vital to increasing our fundamental knowledge of the genes related to complex psychiatric disorders.”

Research physician Mary-Anne Enoch, MD, and colleagues in the Laboratory of Neurogenetics in NIAAA’s Division of Intramural Clinical and Biological Research in Bethesda, Maryland, conducted the study. The team investigated a gene that encodes catechol-*O*-methyltransferase, or COMT, a major enzyme responsible for the metabolism of certain

neurotransmitters—the nervous system’s chemical messengers—including norepinephrine, which effects anxiety. People can inherit various possible forms, or polymorphisms, of the COMT gene, which in turn can affect the metabolism of their neurotransmitters. Dr. Enoch’s team hypothesized that a particular genetic polymorphism identified as COMT Val158Met might be associated with anxiety as measured by a personality dimension test and EEG records.

“We set out to investigate the relationship of COMT gene variants with general anxiety, the normal range of anxiety experienced by people in the community every day, not the more severe clinical disorders,” says Dr. Enoch. “We chose to conduct this study in two communities very different from each other.” The study participants included 92 women and 57 men, most of who identified themselves as Caucasian, living in suburban Bethesda, Maryland, and a group of Plains American Indians in rural Oklahoma that comprised 149 women and 103 men.

The researchers had the study volunteers respond to psychological questionnaires that use harm avoidance measurements as a measure of the dimensions of anxiety. As another measure of anxiety, they also recorded the volunteer’s EEG readings, which are known to display highly inherited characteristic patterns. In addition to these tests, the study team analyzed DNA from blood samples to determine the variants of the COMT gene among the study group participants.

As expected, the women from both groups scored higher than the men on the harm avoidance measurements, indicating

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