

## Study reveals specific gene in adolescent men with delinquent peers

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Birds of a feather flock together, according to the old adage, and adolescent males who possess a certain type of variation in a specific gene are more likely to flock to delinquent peers, according to a landmark study led by Florida State University criminologist Kevin M. Beaver.

"This research is groundbreaking because it shows that the propensity in some adolescents to affiliate with delinquent peers is tied up in the genome," said Beaver, an assistant professor in the FSU College of Criminology and Criminal Justice.

Criminological research has long linked antisocial, drug-using and criminal behavior to delinquent peers -- in fact, belonging to such a peer group is one of the strongest correlates to both youthful and adult crime. But the study led by Beaver is the first to establish a statistically significant association between an affinity for antisocial peer groups and a particular variation (called the 10-repeat allele) of the dopamine transporter gene (DAT1).

However, the study's analysis of family, peer and DNA data from 1,816 boys in middle and high school found that the association between DAT1 and delinquent peer affiliation applied primarily for those who had both the 10-repeat allele and a high-risk family environment (one marked by a disengaged mother and an absence of maternal affection).

In contrast, adolescent males with the very same gene variation who

lived in low-risk families (those with high levels of maternal engagement and warmth) showed no statistically relevant affinity for antisocial friends.

"Our research has confirmed the importance of not only the genome but also the environment," Beaver said. "With a sample comprised of 1,816 individuals, more than usual for a genetic study, we were able to document a clear link between DAT1 and delinquent peers for adolescents raised in high-risk families while finding little or no such link in those from low-risk families. As a result, we now have genuine empirical evidence that the social and family environment in an adolescent's life can either exacerbate or blunt genetic effects."

Beaver and research colleagues John Paul Wright, an associate professor and senior research fellow at the University of Cincinnati, and Matt DeLisi, an associate professor of sociology at Iowa State University, have described their novel findings in the paper "Delinquent Peer Group Formation: Evidence of a Gene X Environment Correlation," which appears in the September 2008 issue of the *Journal of Genetic Psychology*.

The biosocial data analyzed by Beaver and his two co-authors derived from "Add Health," an ongoing project focused on adolescent health that is administered by the University of North Carolina-Chapel Hill and funded largely by the National Institute of Child Health and Human Development. Since the program began in 1994, a total of nearly 2,800 nationally representative male and female adolescents have been genotyped and interviewed.

"We can only hypothesize why we saw the effect of DAT1 only in male adolescents from high-risk families," said Beaver, who will continue his research into the close relationship between genotype and environmental factors -- a phenomenon known in the field of behavioral genetics as the

"gene X environment correlation."

"Perhaps the 10-repeat allele is triggered by constant stress or the general lack of support, whereas in low-risk households, the variation might remain inactive," he said. "Or it's possible that the 10-repeat allele increases an adolescent boy's attraction to delinquent peers regardless of family type, but parents from low-risk families are simply better able to monitor and control such genetic tendencies."

Among female adolescents who carry the 10-repeat allele, Beaver and his colleagues found no statistically significant affinity for antisocial peers, regardless of whether the girls lived in a high-risk or low-risk family environment.

Source: Florida State University

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