

'Warrior Gene' Responsible for Gang Membership, Weapon Use

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This is assistant professor Kevin M. Beaver of the Florida State University College of Criminology and Criminal Justice. Credit: Michele Edmunds/FSU Photo Lab

(PhysOrg.com) -- Boys who carry a particular variation of the gene Monoamine oxidase A (MAOA), sometimes called the “warrior gene,” are more likely not only to join gangs but also to be among the most violent members and to use weapons, according to a new study from The Florida State University that is the first to confirm an MAOA link specifically to gangs and guns.

Findings apply only to males. Girls with the same variant of the MAOA gene seem resistant to its potentially violent effects on gang membership and weapon use.

Led by noted biosocial criminologist Kevin M. Beaver at FSU's College of [Criminology](#) and Criminal Justice, the study sheds new light on the interplay of genetics and environment that produces some of society's most serious violent offenders.

“While [gangs](#) typically have been regarded as a sociological phenomenon, our investigation shows that variants of a specific MAOA gene, known as a ‘low-activity 3-repeat allele,’ play a significant role,” said Beaver, an award-winning researcher who has co-authored more than 50 published papers on the biosocial underpinnings of [criminal behavior](#).

“Previous research has linked low-activity MAOA variants to a wide range of antisocial, even violent, behavior, but our study confirms that these variants can predict gang membership,” he said. “Moreover, we found that variants of this gene could distinguish gang members who were markedly more likely to behave violently and use weapons from members who were less likely to do either.”

The MAOA gene affects levels of neurotransmitters such as dopamine and [serotonin](#) that are related to mood and behavior, and those variants that are related to violence are hereditary. Some previous studies have found the “warrior gene” to be more prevalent in cultures that are typified by warfare and aggression.

“What’s interesting about the MAOA gene is its location on the X-chromosome,” Beaver said. “As a result, males, who have one X-chromosome and one Y-chromosome, possess only one copy of this gene, while females, who have two X-chromosomes, carry two. Thus, if a male has an allele (variant) for the MAOA gene that is linked to violence, there isn’t another copy to counteract it. Females, in contrast, have two copies, so even if they have one risk allele, they have another that could compensate for it. That’s why most MAOA research has

focused on males, and probably why the MAOA effect has, for the most part, only been detected in males.”

The new study examined DNA data and lifestyle information drawn from more than 2,500 respondents to the National Longitudinal Study of Adolescent Health. Beaver and colleagues from Florida State, Iowa State and Saint Louis universities detailed their findings in a

paper to be published in a forthcoming edition of the journal *Comprehensive Psychiatry*. Currently, the paper (“Monoamine oxidase A genotype is associated with gang membership and weapon use”) is accessible online at www.comppsyjournal.com via the “Articles in Press” link.

In addition to the MAOA study, Beaver’s body of biosocial criminology research includes published research that links genetics to adolescent victimization and formation of delinquent peer groups and the use of steroids to “roid rage” -- all among the first such works in the field. He won the American Society of Criminology’s 2009 Ruth Shonle Cavan Young Scholar Award in recognition of his outstanding scholarly contributions during the short time since he earned a Ph.D. in criminal justice at the University of Cincinnati in 2006. Beaver is the coauthor/editor of “Biosocial Criminology: A Primer” (Kendall/Hunt, 2009) and six other books.

Provided by Florida State University ([news](#) : [web](#))

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