

Genetics risk, prenatal smoking may predict behavioral problems

April 23 2014

Researchers have found evidence of an interaction between prenatal smoking and genetic risk factors that increase aggressive behavior in children, especially in girls.

"The interesting issue is that not all children exposed to prenatal smoking will have [behavioral problems](#). Some might, but others will not," said Brian Boutwell, Assistant Professor at Sam Houston State University, College of Criminal Justice and senior author on the study. "One possible explanation for this is that the effect of prenatal smoke exposure depends on the presence of 'triggering influence;' in this case, we investigated whether [genetic risk factors](#) might act as just such a trigger."

The study, "Prenatal Smoking and Genetic Risk: Examining the Childhood Origins of Externalizing Behavioral Problems," was led by Melissa Petkovsek, a doctoral student at Sam Houston State, and was based on a nationally representative sample of 1,600 twins, including identical and fraternal pairs, collected during early childhood. The study found that children exposed to prenatal smoking, and who also had an increased genetic propensity for antisocial behavior, exhibited the most pronounced conduct problems during childhood. Interestingly, this gene-environment interaction was most pronounced in females.

The study demonstrates that prenatal environmental experiences may influence future behavioral problems in children, especially in combination with the presence of [genetic risk](#) factors. Ultimately, the

study presented four key findings:

- Genetic risk factors increase behavioral problems in children
- Prenatal maternal smoking, when taken in isolation, did not appear to directly result in behavioral problems
- The influence of genetic [risk factors](#) on behavior problems were most pronounced for children exposed to prenatal smoking
- The interaction between genetic factors and [prenatal smoking](#) was isolated to females

The current research underscores the link between [genetic factors](#) and antisocial behaviors. Boutwell said that while most research focuses on environmental factors, such as the family and neighborhoods, it is important to explore alternative environments, such as prenatal experiences, to gain a better understanding of the origins of problem behaviors.

"Social scientists have spent decades looking at what happens with parents and the family to try and determine why some children develop behavioral problems and others don't," said Boutwell. "While we are not saying that family environments are completely unimportant, environmental experiences encompass far more than just parenting. It is possible, in fact, that other environmental experiences may matter just as much, and perhaps more in some cases, for development than simply what happens inside the home between parents and children."

More information: The study was published in *Social Science and Medicine* and is available at [www.sciencedirect.com/science/...
pii/S027795361400197](http://www.sciencedirect.com/science/pii/S027795361400197).

Provided by Sam Houston State University

Citation: Genetics risk, prenatal smoking may predict behavioral problems (2014, April 23)
retrieved 5 May 2024 from
<https://medicalxpress.com/news/2014-04-genetics-prenatal-behavioral-problems.html>

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