

Study confirms association between tobacco smoke and behavioral problems in children

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The scientists observed that the impact of tobacco smoke was especially detrimental during gestation. The results of the study have been published in the current online issue of the renowned journal *Environmental Health Perspectives*.

"We were able to show that children who are exposed to [tobacco smoke](#) prenatally and during the first years of life have a higher risk of developing abnormal behavioral symptoms when they are of school age," said Dr. Joachim Heinrich of the Institute of Epidemiology at Helmholtz Zentrum München. "Moreover, it makes a difference whether the child was exposed to tobacco smoke first after birth or was already confronted with it during prenatal development."

According to the study, children who were only exposed to tobacco smoke prenatally have a 1.9 times higher risk of developing abnormal behavioral symptoms in comparison to children without any exposure (change this if it is the wrong comparison). The risk for children first exposed to tobacco smoke after birth is 1.3 times higher. Furthermore, children who were exposed to tobacco smoke both while in the womb and while growing up doubled the risk of developing abnormal behavioral symptoms. Such symptoms include [hyperactivity](#), attention deficits or problems in their relationships with peers. The results of the study were independent of affects from the [social environment](#) in which the children were growing up.

In the framework of the GINI-plus study, data of a large birth cohort

comprising 5991 children and their parents was analyzed. Extensive studies will follow up on this study. "The value of our study is based not only on our prospective, investigative approach, but also on the comprehensiveness of our survey as to possible pollution levels for the unborn, infants and children at different times," Joachim Heinrich explained. "This makes it possible to determine the effects of prenatal and postnatal tobacco smoke exposure and to differentiate between them."

To ensure the validity of their results from the questionnaires, the scientists carried out carefully controlled tests to exclude possible bias due to social factors. Simon Rückinger, lead author of the study, stated: "The relationship we found between tobacco exposure during fetal development and early childhood and behavioral problems at school age was not biased by other factors of the social environment."

The findings make clear that tobacco smoke exposure has a significant impact on the behavioral development of children. The negative influence is greater on the unborn child during the pregnancy of the mother than it is after this sensitive developmental phase.

More information: Rückinger S, Rzehak P, Chen C-M, Sausenthaler S, Koletzko S, Bauer C-P, Hoffmann U, Kramer U, Berdel D, von Berg A, Bayer O, Wichmann H.-E., von Kries R, Heinrich J: Prenatal and Postnatal Tobacco Exposure and Behavioural Problems in 10 Year Old [Children](#): Results from the GINI-plus Prospective Birth Cohort Study, [Environmental Health Perspectives](#), [Online 07 October 2009]. [doi:10.1289/ehp.0901209](https://doi.org/10.1289/ehp.0901209)

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