

# Secondhand Smoke Linked To Behavior Problems in Children

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A woman's exposure to secondhand smoke during pregnancy may affect her child's risk of behavior problems, a new study has found.

The study showed that children whose mothers were exposed to secondhand smoke for at least 30 minutes daily were more than twice as likely to have [attention and aggression problems](#) at age 5 as the children whose mothers reported no secondhand smoke exposure.

This is one of the first studies to link a mother's exposure to secondhand smoke during pregnancy to child behavior problems.

Researchers – led by Jianghong Liu, associate professor of nursing at the University of Pennsylvania School of Nursing – evaluated more than 600 mother-child pairs in Jintan, China. The researchers asked mothers to recall how frequently they had been exposed to [secondhand smoke during pregnancy](#), and also measured behavior problems in the children at ages 5 or 6 using a common behavior scale.

"This study is pretty novel in that it's a population of women where active smoking rates are very low, yet passive exposure is high – which allows the researchers to really hone in on the effects of environmental tobacco smoke during the prenatal period," said Heather Volk, an epidemiologist at the University of Southern California who was not involved in the study.

Thirty-seven percent of the mothers in the study reported exposure to secondhand smoke during pregnancy. The results showed that 25 percent of the children whose mothers were exposed to secondhand smoke showed attention and aggression problems, whereas only 16 percent of the children whose mothers were not exposed showed [behavior problems](#).

Smoking by women is highly stigmatized in China, so the researchers did not ask the study women whether they had smoked during pregnancy, though the researchers acknowledged that it is possible that several mothers may have smoked. A previous study estimated that less than 2 percent of Chinese women smoke.

More than three-quarters of the fathers in the study who stopped smoking at home while their wives were pregnant resumed smoking once the baby was born.

The study didn't account for the effects of exposure to secondhand smoke after the baby was born, but other research has shown that smoking near a baby has harmful effects on the [child's health](#), Liu said.

"The postnatal window is critical for cognitive development," said Kim Yolton, a professor of pediatrics at Cincinnati Children's Hospital Medical Center.

Previous studies have found that kids born to mothers who smoked during pregnancy may be at increased risk of behavior problems – such as attention deficit [hyperactivity disorder](#), aggression and criminal behavior – during adolescence and adulthood

Although the researchers accounted for other variables that could affect children's behavior problems – such as parents' histories of psychological problems, maternal age at childbirth, a child's gender and the levels of lead in the blood – they can't say for certain whether any other factors influenced the results of the study.

For instance, the researchers did not collect information on whether the children were born prematurely or at a low birth weight – both of which may be caused by smoking exposure and have been linked to child neurodevelopment.

Additionally, the researchers noted that a recent Canadian study found that tobacco products from China contained about three times the amount of heavy metals linked to behavior problems – such as lead, cadmium and arsenic – than the levels seen in Canadian tobacco products.

"Tobacco and nicotine are truly bad toxicants with lifelong consequences," Yolton said. "Pregnant women need to protect that fetus from any level of smoking exposure."

The study was published in the January issue of the journal *NeuroToxicology*.

Pass it on: Exposure to secondhand smoke during pregnancy may have long-term consequences on a child's behavior.

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