

By: [Gina Whitei](#), Science Editor

## [The Brain of Your Child on Cocaine, Alcohol and Tobacco](#)

### *The effects are additive*

It's clear that exposing an unborn child to drugs, alcohol and tobacco affects its brain development. This is supported by too many researches. In these cases, mothers don't limit themselves to one substance, and other factors like poverty can affect brain development as well. A new research published in the journal "Pediatrics", and carried out by a team led by Children's Hospital Boston neurologist Dr. Michael Rivkin, shows that in-utero exposure to cocaine, alcohol, marijuana or tobacco, alone or combined, could impact brain structure with effects persisting into early adolescence. Over 1 million babies born each year in the U.S. have been exposed to drugs while in the womb. The team used volumetric MRI imaging to investigate the brains of 35 young adolescents (the average age was of 12) known to have been exposed in the womb to cocaine, marijuana, alcohol or tobacco (the proof for this came from maternal history, testing of the maternal urine or of urine and meconium (stool) of the infants at birth). "We found that reductions in cortical gray matter and total brain volumes were associated with prenatal exposure to cocaine, alcohol or cigarettes. Importantly, although volume reductions were associated with each of these three prenatal exposures, they were not associated with any one of these substances alone after controlling for other exposures," said Rivkin. The effects appeared to be additive: the larger the number of consumed chemicals, the greater the brain volume reduction. "The study is the first to document joint long-term neuroanatomic effects on the brain of prenatal cocaine, cigarette and alcohol exposures," said Rivkin. Most previous researches focusing on the brain effects of prenatal alcohol exposure mainly limited to children with fetal alcohol syndrome, a condition excluded by this research. The team initially aimed to investigate cocaine exposure, but the researchers were shocked by the effects of prenatal exposure to tobacco on brain development. "Approximately 20% of women who smoke continue to smoke during pregnancy. From the vantage point of preventive health care, it is important to determine the consequences on brain structure of prenatal exposure to cigarettes, alone and in combination with other substances," said Rivkin. The team points that the relatively low number of children in the research poll impeded the finding of statistically significant effects of chemicals taken alone after taking into consideration the exposure to other agents, but the overall results are strong.