

Fetal alcohol exposure associated with a decrease in cognitive performance

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It has been known for many years that drinking alcohol while pregnant can cause serious and irreversible damage to the fetus. However, new research exploring memory deficits in children diagnosed with fetal alcohol spectrum disorder (FASD) or fetal alcohol syndrome (FAS) may be able to aid in the creation of new therapies and treatments.

The results will be published in the January 2011 issue of *Alcoholism: Clinical & Experimental Research* and are currently available at Early View.

Joseph Jacobson, one of the study's authors and Professor in the Department of Psychiatry and Behavioral Neurosciences at the Wayne State University School of Medicine, said that the mechanisms associated with the deficits in children with FASD and FAS are still not well understood. Therefore, the researchers decided to focus on the mental difficulties that the children experience to help determine the specific mechanisms that cause them.

"FASD is associated with learning problems in children, including having difficulties in response inhibition and memory," says Jacobson. "Additional understanding of the nature of these problems has the potential to help develop more effective remediation programs for children with fetal alcohol-related learning problems."

The deficits associated with FASD and FAS are varied said Jacobson, and the myriad of possible causes underlying these problems are still not

widely understood. What is known, he added, is that, "prenatal alcohol exposure affects many different aspects of brain development, including brain size, neuronal development, and development of white matter tracts."

Data for this research was collected from 217 Inuit children that were placed in either the alcohol-exposed group, where mothers reported binge drinking while pregnant, or the control. The data was recorded using electroencephalography (EEG) to observe the changing voltage of the brain's electrical activity during the memory and coordination trials.

This allowed the researchers to explore the differences in the brain's electrical activity, called event-related potentials, which change in specific ways depending on what task was presented, between the alcohol-exposed and control groups.

The researchers discovered that the alcohol-exposed group, while similar to the control in accuracy and reaction time, showed a statistically significant decrease in understanding the meaning of a stimulus, attention dedication to a specific task, and memory processing.

"The study demonstrates that there are alterations in this group of children on their processing of information related to these functions," said Claire Coles, a Professor of the Department of Psychiatry and Behavioral Science and Pediatrics at the Emory University School of Medicine. "Hopefully, such information can be used to develop more effective teaching methods for children affected by prenatal exposure."

Jacobson agrees that this research is only the first step in helping the children affected by fetal alcohol disorders.

"These findings help specify in greater detail the deficits associated with fetal [alcohol](#) exposure, which can then be informative in the

development of remediation programs for [children](#) with FASD."

Provided by Alcoholism: Clinical & Experimental Research

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