

Researchers link autism and rain

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(PhysOrg.com) -- When Cornell economists noticed that autism diagnosis rates were higher in some states, they questioned whether local weather could be playing a role.

Indeed, they report in the journal *Archives of Pediatrics and Adolescent Medicine* (Vol. 162, No. 11), autism rates are higher in those counties with higher rainfall in Washington, Oregon and California than in drier parts of the states.

The researchers do not claim that higher rainfall directly leads to autism, but that the results "strongly suggest there is an environmental trigger correlated with precipitation," said Michael Waldman, the paper's lead author and a professor of economics and management at Cornell's Johnson School. The authors propose that bad weather drives children indoors where they are exposed to other possible triggers that could combine with a "genetic vulnerability" leading to autism. Other researchers have suggested that TV watching, vitamin D deficiency from lack of sunlight and exposure to household chemicals before the age of 3 could serve as triggers.

Another theory, the authors posit, is that autism-triggering chemicals in the upper atmosphere fall to earth with rainfall. Yet another theory mentioned by the authors in their paper is that increased rainfall promotes weed and insect population growth, prompting the use of pesticides, which some studies suggest may trigger autism.

This latest study involved examining rates of autism among children

born between 1987 and 1999 and of the amount of precipitation received by Washington, Oregon and California counties between 1987 and 2001. The researchers found that in 2005, rates of autism among school-age children were higher in counties in all three states that had more precipitation between 1987 and 2001. The data showed even higher autism rates in children who lived in California and Oregon counties with high precipitation before the age of 3, years when autism is commonly diagnosed. The association between autism and precipitation also proved true when similar analyses were done within counties.

Autism diagnosis rates, according to the Centers for Disease Control and Prevention, have risen in the last 30 years to roughly one in 150 children from one in 2,500, an increase of epidemic proportions that has left many researchers wondering about causes. The paper's authors hope their study will lead to further research that investigates these possible triggers.

At the same time, the study feeds into ongoing debates among researchers about genetic causes of autism and whether environmental triggers may be involved.

"We're not saying genetics are not important," said study co-author and Cornell economist Sean Nicholson. "But we are saying there appears to be statistical evidence that autism diagnosis rates are higher in areas with higher precipitation rates and for periods of time where precipitation is high."

Barry Kosofsky, a professor of pediatrics and chief of the Division of Pediatric Neurology at the Children's Hospital of New York-Presbyterian/Weill Cornell Medical Center, said the findings were "totally provocative" because they offer new research directions for uncovering causes of autism. Kosofsky is not connected with the study.

"Epidemiology doesn't identify causes, but it does identify associations," said Kosofsky. He added that the association between rainfall and autism "raises some very interesting possibilities about what might be driving the current epidemic."

Though no one knows the causes of autism, researchers believe that sets of genes that are predisposed to autism may interact with the environment to trigger the disease, Kosofsky said. "If we can identify what some of the environmental factors are, then we are at a better point for trying to identify potential genes and their interaction with those factors," he added.

The paper's co-authors included Nodir Adilov, an assistant professor of economics at Purdue University, Fort Wayne; and John Williams, a child psychiatrist at the Children's Hospital of Philadelphia.

Provided by Cornell University

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