

**OPINION**

# Timing between pregnancies may alter autism risk

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Epidemiological studies point to any number of pregnancy-related risk factors for autism, including **maternal infection**, **antidepressant use**, **low birth weight** and even being born too soon after a sibling.

The latest study to look at birth interval, published 1 August in the *Journal of the American Academy of Child and Adolescent Psychiatry*, suggests that children born **too long after a sibling** are also at increased risk of the disorder.

The researchers compared 2,208 children with autism who have at least one older sibling with 5,163 controls born at similar locations and times. The participants are part of the **Finnish Prenatal Study of Autism and Autism Spectrum Disorders**, which includes people born between 1987 and 2005 in Finland.

The study found that children conceived less than 12 months after a sibling are 50 percent more likely to have autism than those conceived between 24 and 59 months after their siblings. The findings are in line with those of a 2011 study, which linked closely spaced pregnancies to an **increased risk of autism** among second-born children in California.

The new study also found a 28 percent increase in autism risk among children conceived between 60 and 119 months (about five to ten years) after their siblings. The risk rises 44 percent for children conceived more than 120 months, or ten years, after their siblings.

This is the first time researchers have linked a longer birth interval to autism risk. The California study, which looked at nearly 6,000 children with autism, did not find an increase in autism risk among children born 60 months or more after a sibling.

## **Prenatal factors:**

In the new study, short birth intervals tend to be associated with childhood autism, a subtype of the disorder in which symptoms arise before age 3. Conversely, long birth intervals track with **Asperger syndrome**, a form of high-functioning autism.

The results hold up regardless of the child's intellectual ability, birth weight, family history of autism or psychiatric disorders, or number of siblings. They also stand when the researchers account for preterm births, maternal and paternal age, maternal income level, and history of miscarriage or abortion.

To rule out a role for genetic and environmental risk factors shared among siblings, the researchers looked at a separate sample of 2,862 sibling pairs in which one child has autism.

They found that second-born children are 39 percent more likely than firstborns to have autism when the pregnancy interval ranges from five to ten years, and 364 percent more likely when it's longer than ten years. This suggests that factors specific to the pregnancy interval increase the risk of autism.

In this sample, the risk of autism among second-born children conceived less than 12 months after a sibling is not increased enough to be statistically significant.

The reason for the link between autism and birth interval is still unclear. The researchers speculate that unplanned pregnancies may be a factor in both short and long birth intervals.

For example, women who are not expecting to become pregnant may be less likely to take prenatal vitamins such as folic acid, a **vitamin linked to reduced autism risk**. They may also be more

likely to be taking medications such as valproate, an **epilepsy drug linked to increased autism risk**.

Maternal inflammation may also contribute to the increased risk, the researchers say. Children born too soon after an older sibling may be exposed to inflammation in the womb carried over from the previous pregnancy. And children born too long after a sibling may be subject to inflammation **associated with weight gain** during long intervals between pregnancies.

The findings offer little comfort to mothers, who have historically been blamed for **developmental problems in their children**. However, it's important to note that this study cannot pinpoint the cause of the increased autism risk associated with long or short birth intervals. It only provides interesting avenues for further study.