

NEWS

Autism severity in children tracks with mothers' serotonin levels

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Women whose children are severely autistic have lower serotonin levels than do those whose children have mild or moderate autism traits, a new study suggests¹.

Serotonin is a signaling molecule in the nervous system. Nearly one in three people with autism has **elevated levels of serotonin** in his blood. But it is unclear how serotonin levels relate to an individual's autism traits.

The new study is the first to link maternal serotonin to autism traits in people: It hints that developmental problems worsen as maternal serotonin declines.

"Absolutely it's a surprising finding," says lead investigator **Jeremy Veenstra-VanderWeele**, professor of psychiatry at Columbia University. "You don't usually think about biomarkers in moms, although in autism, I think increasingly we should be thinking about that."

The new work should prompt researchers to launch additional studies on maternal serotonin and autism, others say.

"It would be really interesting to follow the [serotonin] levels in the mother throughout the pregnancy to see if at a specific time there may be some variation in the [serotonin] level, which could be correlated with autism — or not," says **Francine Côté**, a researcher at the French National Center for Scientific Research, who was not involved in the work.

Kinship connection:

Veenstra-VanderWeele and his colleagues analyzed data from 181 children and adults with autism aged 3 to 27 years, as well as 119 mothers and 99 fathers of these individuals.

They confirmed autism diagnoses using standard diagnostic tests and used other scales to measure the autistic participants' adaptive behavior and cognitive skills. A statistical model clustered the scores into three classes of severity: mild, moderate and high. The team also measured serotonin levels in the blood of the people with autism and their parents.

Women whose children score in the severe range have lower levels of serotonin than do those whose children have either mild or moderate features, on average. The study did not find an association between the autistic participants' severity and their fathers' serotonin levels or even their own serotonin levels.

"I think it's interesting," says **Patricia Gaspar**, professor of neurobiology at Institut du Fer à Moulin in Paris, France, who was not involved in the study. "Clearly in mice and rats there's an effect if the mother has low [blood] serotonin."

However, the researchers did not look at serotonin levels among mothers of typical children — a major limitation of the study. They also did not measure serotonin levels in the mothers until years after they gave birth, but serotonin levels tend to be stable over time².

“We imagine that measuring these levels in mothers after their kids have been diagnosed may indicate something about their serotonin level or their serotonin system during the relevant developmental time period,” Veenstra-VanderWeele says. The study appeared 24 September in the *Journal of the American Academy of Child and Adolescent Psychiatry*.

REFERENCES:

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[Abstract](#)
2. Jernej B. *et al. Psychiatry Res.* **94**, 153-162 (2000) [PubMed](#)