

NEWS

Fever eases behavioral problems in some children with autism

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18 SEPTEMBER 2017



About 17 percent of children with autism are calmer and more communicative than usual when they have a fever, according to a new analysis¹. Children with severe autism features are most likely to show these gains.

Understanding how fever affects autism features could help researchers uncover causes of the condition or treatments for the children who tend to improve.

The study is the first to characterize the children who show behavioral improvements during fever — an effect that has long been reported anecdotally but remains unexplained. The new work builds on a much smaller 2007 study, which reported that 83 percent of children with autism are less hyperactive and irritable, or otherwise behave better, when they have a fever².

Many parents in the new study — though not the majority — also reported that their children’s behavior improves during fevers, says senior researcher **Catherine Lord**, director of the Center for Autism and the Developing Brain at New York-Presbyterian Hospital in White Plains, New York. The work appeared 31 August in *Autism Research*.

Lord and her colleagues studied 2,152 children with autism in the **Simons Simplex Collection** (SSC). The SSC is a database of information from families that have one child with autism and unaffected parents and siblings. (The SSC is funded by the Simons Foundation, *Spectrum’s* parent organization.)

As part of their participation in the SSC, parents described their children’s medical history via questionnaires and interviews. One question asks parents whether their child’s behavior seems to improve during a bout of fever. Parents of 362 of the 2,152 children answered ‘yes.’

“I think [the researchers] establish very nicely that the phenomenon exists, at least as parents report it,” says **Andrew Zimmerman**, clinical professor of pediatrics and neurology at UMass Memorial Medical Center in Worcester, Massachusetts. Zimmerman led the 2007 study but was not involved in the new work.

Febrile finding:

Specifically, parents reported that fever improves their children’s ability to learn, communicate and interact with others. It also lessens the children’s **repetitive behaviors** and tantrums.

Lord and her team used data from the SSC to look more closely at these children’s genes and behavior.

They found that having a genetic variant associated with autism does not influence the chances that a child will improve with fever. The children who do improve have significantly lower nonverbal cognitive skills and language abilities, and more repetitive behaviors, than do those who don’t change with fever.

The study’s 17 percent estimate falls short of Zimmerman’s finding of 83 percent.

In that study, Zimmerman's team asked parents of 30 children with autism to complete a standard behavior checklist at the onset of one bout of fever in their child. The parents completed the same checklist when the fever abated, and again one week later.

Because these parents knew what the researchers were looking for, some of them may have reported an improvement that wasn't there, Zimmerman says. On the other hand, parents may only notice the improvement if they're looking for it, he says. "That's why I think the 17 percent is probably a baseline."

Lord agrees that the 2007 estimate may be inflated. She notes that her team's approach — asking parents to recall their child's behavior during fever — may have yielded an underestimate. "We could have bias in the other direction," she says.

Heated debate:

Why fever alters behavior in some children with autism is unclear. Lord and Zimmerman say there is anecdotal evidence that people with other neurological conditions, such as attention deficit hyperactivity disorder or Alzheimer's disease, may also show behavioral improvements during fever.

Some of the behavioral changes during a fever could stem from lethargy — the calm demeanor induced by illness might result in fewer outbursts, for example. More research is needed to rule out that idea, researchers say.

It is also unclear whether the children who improve during fever are more impaired than those who don't seem to change, says **Audrey Thurm**, a clinical psychologist at the National Institute of Mental Health in Bethesda, Maryland, who was not involved in the work. It could be that parents of children with severe autism features are more likely to notice behavioral changes than are those of children with milder features, she says.

Scientists still need to explore whether certain types of illnesses are more likely to bring about behavioral improvements, and whether the children who improve get sick more or less frequently than those who do not, Thurm says.

Beginning this month, Lord's team plans to ask the parents of about 160 children to monitor several aspects of their child's health, such as fevers, colds and gastrointestinal issues, throughout the winter season. This would help minimize the bias of focusing on just fever, Lord says. The researchers also plan to include typical children to determine whether the improvement with fever is specific to children with autism.

REFERENCES:

1. Grzadzinski R. *et al. Autism Res.* Epub ahead of print (2017) [PubMed](#)
2. Curran L.K. *et al. Pediatrics* **120**, e1386-1392 (2007) [PubMed](#)