

NEWS

# Autistic children's sleep problems linked to behavioral regulation issues

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Sleep problems in young children with autism are associated with **behavioral regulation difficulties** later in childhood, according to a new longitudinal study.

The finding points to the importance of helping families address sleep problems in their young autistic children, says lead investigator **Mayada Elsabbagh**, associate professor of neurology and neurosurgery at McGill University in Montreal, Canada.

Beyond the well-established importance of high-quality sleep to general health, providing support and therapy to improve sleep quality in autistic children also may help them develop better behavioral regulation as they grow older, she adds.

"The exciting thing about this study ... is perhaps it suggests some areas of intervention," says **Annette Estes**, professor of speech and hearing sciences at the University of Washington in Seattle, who was not involved with the study. Estes has previously proposed that sleep disruptions in early childhood **could impede healthy brain development** and thus contribute to autism.

The study is one of the first to look directly at a long-suspected link between sleep quality in autistic children and executive function, a set of mental skills that includes the ability to monitor one's own behavior to achieve goals. "This provides further confirmation for the idea that those neural systems are linked," Elsabbagh says.

In non-autistic children, sleep troubles usually resolve in the first few years of life. And in these children, **poor sleep is linked to poor executive function**.

This connection and other findings have led to the hypothesis that sleep issues among autistic children, who are more likely to experience persistent trouble sleeping, may contribute to their executive function, too.

## Sleep struggles:

For the new research, Elsabbagh's team analyzed data from 217 autistic children participating in **Pathways in ASD**, a longitudinal study that started in 2005. They evaluated the participants' sleep issues using the **Children's Sleep Habits Questionnaire**, a survey parents completed when their children were 2 to 4 years old and again roughly three years later. The researchers also assessed the children's executive functioning four times from about age 7 to 12 by using questionnaires filled out by parents and teachers.

More severe sleep difficulties in early childhood were associated with less behavioral regulation, the team found. Other types of executive function, such as children's ability to reflect on and manage their own thoughts, showed no association with sleep difficulties.

The age at which children experience sleep difficulties may make a difference. For example, children who took a long time to fall asleep at ages 2 to 4 showed no behavioral regulation difficulties about four years later. However, children who took a long time to fall asleep around the age of 6 or 7 showed behavioral regulation difficulties about a year later.

The reason for the age-related results is unclear, the researchers say.

Frequent night awakenings from age 2 to 4 were not associated with later behavioral regulation issues, perhaps because such awakenings are common in all children, the team found.

The work was published in May in *Sleep*.

## Clouded matter:

The study does not confirm a causal relationship between sleep and behavioral regulation difficulties, Estes says. But it is suggestive that the sleep problems precede the manifestation of behavioral regulation issues in the children, she adds.

More granular measurements of sleep problems could clarify the connection with behavioral regulation, Estes says. Some children may struggle to fall asleep, whereas others may wake up in the night or early in the morning. The frequency of such problems varies, too. A further complication is that children vary in their ideal bedtime and amount of sleep, Estes says.

Children who sleep through the night may also have unusual sleep patterns that can only be detected by objective measures such as monitoring their brainwaves, says **Amanda Richdale**, of

the Olga Tennison Autism Research Centre at La Trobe University in Melbourne, Australia, who was not involved in the study.

Future studies could intervene to help children with sleep problems early in life and track whether this mitigates executive function deficits, Elsabbagh says. Multiple factors beyond sleep quality likely contribute to executive function, she adds.

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