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Breastfeeding may protect against persistent stuttering

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A study of 47 children who began stuttering at an early age found that those who were breastfed in infancy were more likely to recover from stuttering and return to fluent speech.

The analysis, reported in the *Journal of Communication Disorders*, found a dose-dependent association between breastfeeding and a child's likelihood of recovering from stuttering, with children who were breastfed longer more likely to recover. Boys, who are disproportionately affected by stuttering, appeared to benefit the most. Boys in the study who breastfed for more than a year had approximately one-sixth the odds of developing persistent stuttering than boys who never breastfed, the team found.

The researchers, University of Illinois speech and hearing science professor emerita Nicoline Ambrose and doctoral student Jamie Mahurin-Smith (now at Illinois State University), found no evidence that income or maternal education had any influence on stuttering in their sample. The researchers questioned the mothers about their children's willingness and ability to breastfeed, and also found no evidence of an underlying neurological problem that could have inhibited the children's ability to breastfeed and to speak fluently later in life.

"We've known for years that both genetic and environmental factors contributed to stuttering, but our understanding of the specific environmental variables in play has been murky," Mahurin-Smith said. "These findings could improve our understanding of stuttering

persistence and recovery."

Several earlier studies had found "a consistent association between breastfeeding and improved language development," the researchers report. A 1997 study found that babies breastfed for more than nine months had a significantly lower risk of language impairment than those breastfed for shorter periods of time. A later study found that infants who breastfed were more likely to produce "variegated babbling at earlier ages," a key marker of healthy language development. Other studies have found associations between the duration of breastfeeding and verbal IQ or a child's likelihood of being diagnosed with an autism spectrum disorder.

Ambrose and Mahurin-Smith suggest that essential fatty acids found in breast milk but often lacking in infant formulas may help explain why longer duration of breastfeeding is associated with better brain and language development.

"Long-chain fatty acids found in human milk, specifically docosahexaenoic acid and arachidonic acid, play an important role in the development of neural tissue," Mahurin-Smith said. "Fluent speech requires an extraordinarily complex sequence of events to unfold rapidly, and our hypothesis was that early differences in neurodevelopment could cause difficulties with speech fluency later in life."

The infant brain triples in size in its first year of life, and "more than half of the solid weight of that newly built tissue will be lipid," the researchers wrote. DHA is the fatty acid most prevalent in the mammalian brain. Infants lacking adequate DHA in the diet can synthesize it from other fatty acids, but "research shows that the rate at which DHA is incorporated into brain tissue outstrips the rate at which it can be synthesized."

Multiple studies suggest that the lack of adequate DHA in development can impair brain structure and function, Ambrose said. Fatty acids also are known to influence gene expression, she said, binding to transcription factors that can regulate the activity of many genes.

"It may be that fatty acid intake affects the expression of genes responsible for stuttering," Ambrose said.

"Our study adds to the evidence suggesting that human milk can exert a significant influence on neurodevelopment," Mahurin-Smith said. "Although it's not a magic bullet, it can make an important difference for children, even years after weaning."

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