

Poor diet, household chaos may impair young children's cognitive skills

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Poor nutrition coupled with living in a chaotic household environment may negatively affect young children's executive functioning, the higher order cognitive skills that govern memory, attention and emotional control, researchers at the University of Illinois Urbana-Champaign have found.

Children 18 months to 2 years old who ate greater quantities of [sugary snacks](#) and processed foods were more likely to have problems with core components of executive functioning such as inhibition, working memory, and planning and organizing abilities, according to surveys completed by their caregivers.

The nearly 300 families who participated in the research were part of an ongoing birth cohort study in which researchers began collecting data on the [children's](#) dietary habits, weight trajectories, social-emotional skills and [family relationships](#) when they were about 6 weeks old.

Although similar research examining links between nutrition and executive function was conducted with [older children](#) and teens previously, the current study was novel in that it focused on

children at ages when they were developing these vital skills and when [dietary habits](#) and home environments could play pivotal roles.

"Children begin rapidly developing [executive functions](#) around the ages 2-5, and we wanted to look at that initial period when parents were making critical food-related decisions and the impact these had on children's cognitive abilities," said first author Samantha Iwinski, a graduate student who has worked with the project for several years.

Published in the journal *Nutrients*, the study was based on extensive data collected from the children's caregivers, including a dietary intake questionnaire that assessed how often each child consumed various fresh and processed foods. Caregivers also completed a behavioral inventory that measured various dimensions of executive function such as whether the child became easily overwhelmed or had recurrent problems with playing or talking too loudly.

Additionally, each caregiver answered questions about household chaos, such as whether the child's home environment was typically quiet and run with established routines or was prone to noise, overcrowding and disorganization.

Prior research with adolescents and teens linked household chaos with behavioral problems and poor performance on tasks related to core dimensions of executive function such as the ability to focus and control one's emotions.

Accordingly, the U. of I. researchers' analyses suggested that [poor nutrition](#)—including regular consumption of various snacks and [processed foods](#)—was associated with diminished cognitive performance and behavior among the children in the study.

"We saw that higher intake of these foods was related to lower levels of certain indices, including

[emotional control](#), inhibition and planning and organizing," Iwinski said. "Even at this young age, dietary intake may affect children's executive function at multiple levels."

The U. of I. team hypothesized that calmer households with predictable routines might buffer the effects of a poor diet on children's executive function.

Rather than moderating the relationship between executive function and dietary intake as the team had hypothesized, [household chaos](#) had an independent correlation with children's [cognitive skills](#).

The findings highlight the importance of both good nutrition and healthy household environments in promoting children's best cognitive development, said co-author Kelly Freeman Bost, a professor of child development and of psychology.

To mitigate potential negative effects on children's cognitive skills, Iwinski suggested that prevention programs focus on activities and supports that help parents establish healthy routines and limit their children's consumption of snacks and less healthy foods.

"Children may not understand the signals around them when environments are noisy or disorganized, and a lack of routine and consistency may influence their attention and emotional regulation," Iwinski said. "These children may not be able to interpret cues and respond appropriately in certain social and emotional situations."

To better understand the correlations found in the current study and examine how they persist or evolve as children age, Iwinski and her co-authors are planning a follow-up study with the same families and their children, who are now 5-6 years old.

However, because the sample lacked racial, ethnic and economic diversity, the findings may not be generalizable to other populations. More studies are needed with diverse populations and longitudinal and experimental project designs before causal claims can be made, the researchers

said.

Bost and Iwinski co-wrote the paper with U. of I. faculty members Sharon M. Donovan, the professor and Melissa M. Noel Endowed Chair of Nutrition and Health; and Barbara H. Fiese, the co-director of the STRONG Kids2 project and a professor emerita of human development and family studies.

More information: Samantha Iwinski et al, The Impact of Household Chaos and Dietary Intake on Executive Function in Young Children, *Nutrients* (2021). [DOI: 10.3390/nu13124442](https://doi.org/10.3390/nu13124442)

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