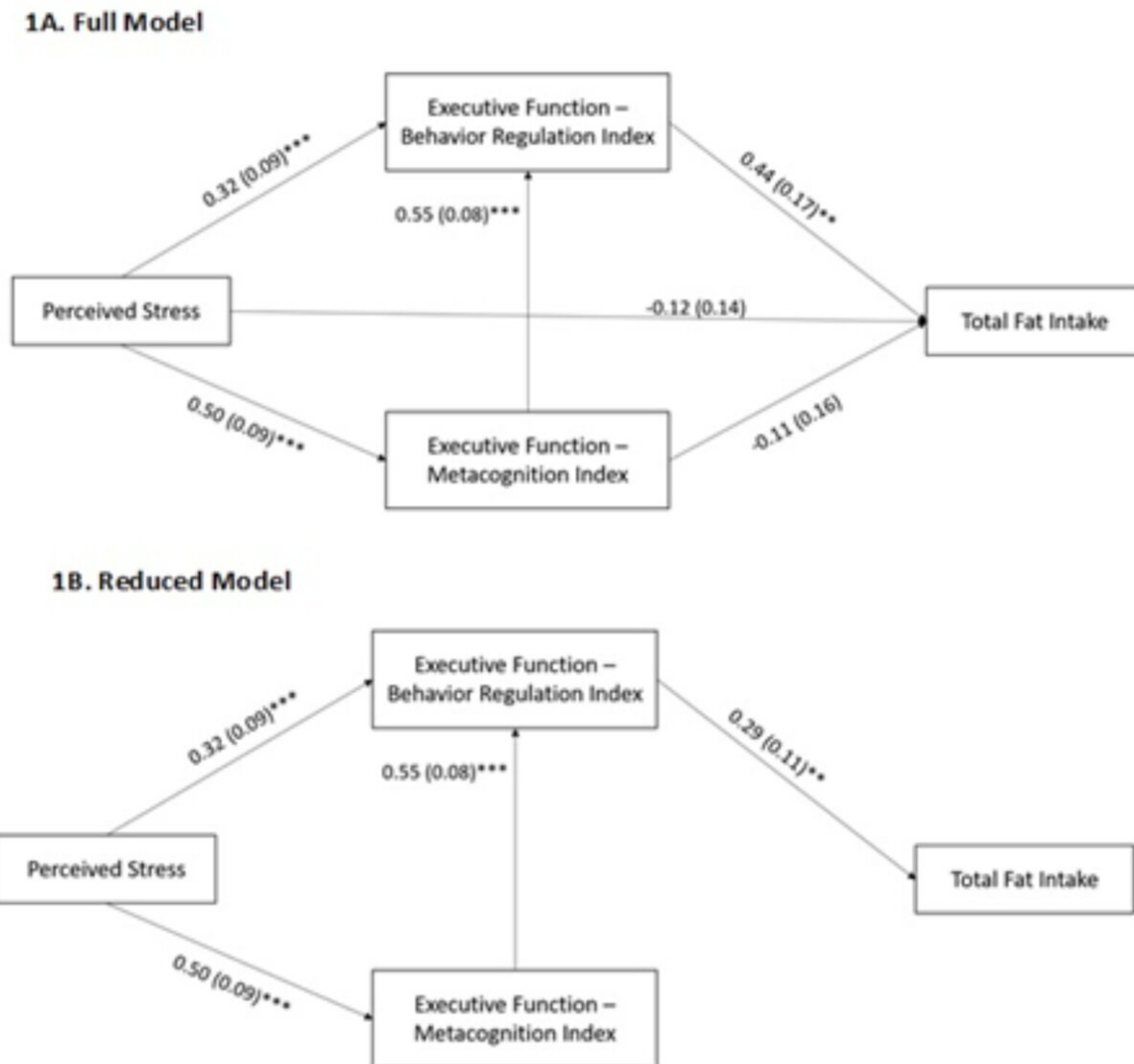


# How better planning, behavior regulation may lead to eating less fat

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Mediation Analysis of Perceived Stress to Executive Functions to Total Fat Intake. Credit: *Journal of Pediatrics, Perinatology and Child Health* (2022). DOI:

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New research suggests coaching overweight or obese pregnant women to improve their ability to plan and make progress toward goals may be key to helping them lower the amount of fat in their diet.

Maternal diet quality affects prenatal development and long-term child health outcomes, but the [stress](#) that typically increases during pregnancy—often heightened by concern for fetal health and anxiety over impending parenthood—may derail efforts to focus on healthful eating, previous research has shown.

In this new study, researchers at The Ohio State University set out to identify the pathway between stress and total fat consumption, with a broader goal to evaluate an intervention designed to improve the diets of pregnant women who are overweight or obese.

Through a series of questionnaires and [statistical analysis](#), the team found that two thinking-related skills—planning, and execution of those plans—were weakened in women whose stress was high, and those skill gaps were associated with higher total fat intake.

These two skills are known as executive functions, a set of multiple thinking processes that enable people to plan, monitor behavior and execute their goals.

"People with a higher level of stress tend to have a higher intake of fat, too. If stress is high, we're so stressed out that we're not thinking about anything—and we don't care what we eat," said lead author Mei-Wei Chang, associate professor of nursing at Ohio State.

"That's why we focused on executive functions as a mediator between stress and diet. And with this [baseline data](#), we have reasons to believe that designing an intervention around executive functions could improve dietary outcomes," she said. "I would anticipate the results could be similar for nonpregnant women, because it's all about how people behave."

The study was published recently in the *Journal of Pediatrics, Perinatology and Child Health*.

The 70 women enrolled in the study had a pre-pregnancy body mass index of between 25 (scores between 25 and 29.9 are categorized as overweight) and 45 (scores of 30 and higher are categorized as obese).

The participants completed questionnaires assessing both overall perceived stress and pregnancy-related stress, as well as executive functions—specifically focusing on metacognition, or the ability to plan, and behavior regulation, the ability to execute those plans. They also completed two 24-hour dietary recalls of their calorie intake and consumption of total fat, added sugar, and fruits and vegetables.

"We were really interested in the mediation role of executive functions. The mediator is what makes everything happen," Chang said. "We wanted to know: If we focus an intervention on executive functions, would that carry through to behavior change in dietary intake?"

"Weight loss interventions often involve a prescribed diet or meal plan, and you are told to follow it. But that doesn't lead to [behavior change](#) in the long term."

Statistical modeling showed that higher perceived stress was associated with a worsened ability to plan and monitor behavior, and that pathway was linked to higher total fat intake. Similarly, higher levels of

pregnancy-related stress were associated with a lower ability to plan, which in turn was associated with worsened ability to monitor behaviors related to carrying out the plan—and these factors were linked to higher fat consumption.

These pathways suggested that an intervention designed to lower stress would function as a starting point to improve the diet, and enhancing skills through coaching—emphasizing the ability to plan, including being flexible with planning, and behavior monitoring, particularly when making food choices—would be key to changing eating patterns.

"You need to improve [executive functions](#), and you also need to lower stress," Chang said. She and colleagues are now analyzing data on the effectiveness of an intervention for the study participants that emphasized stress management and boosting executive function to promote healthy eating.

Executive functions are regulated by a specific region of the brain, and strengths or weaknesses in these skill areas are thought to be affected by a variety of physiological factors. Previous research has found that executive function deficits are more likely to occur in women who are overweight or obese than in women whose weight is categorized as normal.

"Executive function is not well-studied, and it is not related to intelligence. But people with low executive function are unable to make detailed plans and stick to them, and that's how they get into trouble," Chang said. "Metacognition and behavior regulation must go hand in hand—that way you have a much better chance to control your behaviors, and then you will eat better."

**More information:** Mei-Wei Chang et al, Mediation by Executive Functions in the Associations Between Perceived Stress, Prenatal

Distress, Emotional Control, and Dietary Intake in Overweight or Obese Pregnant Women, *Journal of Pediatrics, Perinatology and Child Health* (2022). [DOI: 10.26502/jppch.74050131](https://doi.org/10.26502/jppch.74050131)

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