

How your BMI might affect your brain function

October 18 2016, by Alexis Blue



Credit: University of Arizona

There are plenty of reasons it's important to maintain a healthy weight, and now you can add one more to the list: It may be good for your brain.

Researchers from the University of Arizona have found that having a higher body mass index, or BMI, can negatively impact cognitive functioning in older adults.

How? They say inflammation is to blame.

"The higher your BMI, the more your inflammation goes up," said Kyle Bourassa, lead author of the study, which is published in the journal *Brain, Behavior and Immunity*. "Prior research has found that inflammation—particularly in the brain—can negatively impact brain function and cognition."

Previous studies also have linked higher BMI—an index of body fat based on height and weight—to lower [cognitive functioning](#). But how and why the two are connected was far less clear.

"We saw this effect, but it's a black box. What goes in between?" said Bourassa, a UA psychology doctoral student. "Establishing what biologically plausible mechanisms explain this association is important to be able to intervene later."

Bourassa and his co-author, UA psychology professor David Sbarra, analyzed data from the English Longitudinal Study of Aging, which includes over 12 years' worth of information on the health, well-being and social and economic circumstances of the English population age 50 and older.

Using two separate samples from the study—one of about 9,000 people and one of about 12,500—researchers looked at aging adults over a six-year period. They had information on study participants' BMI, inflammation and cognition, and they found the same outcome in both samples.

"The higher participants' body mass at the first time point in the study," Bourassa said, "the greater the change in their CRP levels over the next four years. CRP stands for C-reactive protein, which is a marker in the blood of systemic inflammation in your body. Change in CRP over four

years then predicted change in cognition six years after the start of the study. The body mass of these people predicted their cognitive decline through their levels of systemic inflammation."

The findings support existing literature linking inflammation to cognitive decline and take it a step further by illuminating the important role of body mass in the equation.

Sbarra added a word of caution in trying to understand the findings.

"The findings provide a clear and integrative account of how BMI is associated with [cognitive decline](#) through [systemic inflammation](#), but we need to remember that these are only correlational findings," he said.

"Of course, correlation does not equal causation. The findings suggest a mechanistic pathway, but we cannot confirm causality until we reduce body mass experimentally, then examine the downstream effects on inflammation and cognition."

"Experimental studies finding whether reducing inflammation also improves cognition would be the gold standard to establish that this is a causal effect," Bourassa added.

Cognitive decline is a normal part of aging, even in healthy adults, and can have a significant impact on quality of life. The current research may provide valuable insights for possible interventions and new research directions in that area.

"If you have high inflammation, in the future we may suggest using anti-inflammatories not just to bring down your inflammation but to hopefully also help with your cognition," Bourassa said.

Of course, maintaining a [healthy weight](#) is also good for overall health, he added.

"Having a lower [body mass](#) is just good for you, period. It's good for your health and good for your brain," Bourassa said.

More information: Kyle Bourassa et al, Body mass and cognitive decline are indirectly associated via inflammation among aging adults, *Brain, Behavior, and Immunity* (2016). [DOI: 10.1016/j.bbi.2016.09.023](https://doi.org/10.1016/j.bbi.2016.09.023)

Provided by University of Arizona

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