

Exploring the link between childhood obesity and cognition

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Difficulties learning, remembering, and concentrating. An inability to resist environmental temptations to eat. A lifetime of progressive deterioration in the brain. These may be the prices paid by children who regularly consume a diet high in saturated fat and sugar.

Research by Prof. Terry Davidson, director of AU's Center for Behavioral Neuroscience, and others studying obesity and cognition, are steadily making this case. Davidson will chair a symposium of scientists on Oct. 13-14, the first gathering of its kind that is focused on obesity and cognition in children and adolescents.

A key question facing researchers: Do diet or obesity-induced cognitive deficits that occur early in life predict more serious impairments later on? "Almost no one with Alzheimer's disease or other dementias gets diagnosed until after serious damage to the brain has occurred," Davidson said. "By identifying signs of pathology and cognitive dysfunction much earlier in life, we hope to then prevent more serious [cognitive dysfunction](#)."

Growing Field

More than 30 percent of children who live in the United States are overweight or obese and at increased risk for Type 2 diabetes, hypertension, and bone and joint problems. But physical diseases are not the only threats. Findings from many laboratories, including Davidson's, link obesity and

dietary factors to late-life dementias, such as Alzheimer's.

At the two-day symposium, leading researchers from around the world will present new findings about how these factors also produce learning and memory deficits in children and adolescents. Together, they will explore how their findings converge, and how they can help one another better understand the problem of the brain and obesity. Afterward, the speakers will write papers, to be published in a special issue of the journal *Appetite* in 2015.

It's an exciting time in the field because, in recent years, interest in the 'obese brain' has grown, said Davidson. In 1993, Davidson's research team published their first paper linking food consumption and [body weight](#) regulation to the hippocampus, the brain area for learning and memory, and the target of pathologies associated with late-life dementias. Subsequently, many new findings about the adverse effects of diets that promote obesity on hippocampal function came to light. According to Google Scholar, researchers have cited research by Davidson's laboratory on the topic more than 1,300 times in the past five years alone.

Healthy Schools

A unique feature of the symposium will be how scientific findings can translate to policy action. For example, day two focuses on interventions, such as creating healthier school environments and working with children to improve their diets and control body weight. Dean Sarah Irvine Belson and Professor Stacey Snelling of AU's School of Education, Teaching, & Health will present their research evaluating D.C.'s Healthy Schools Act, a law enacted four years ago to reduce obesity among students attending D.C. schools.

A recent finding indicated a correlation between the number of physical

education minutes students received and their scores on the D.C. Comprehensive Assessment System in reading and mathematics. As physical education minutes increased, scores also improved on the test for third, fourth and fifth graders. In addition, Irvine Belson, Snelling, Davidson, and Professor Lauren McGrath (also of SETH) are embarking on a new study that will apply concepts and findings from basic research on the brain and behavior to improve understanding of the relationship between diet, obesity, and cognitive function in [children](#) ages 7 to 11. They will collaborate with the National Institutes of Health.

"Everyone knows what to do to lose weight. Eat less, eat better, get exercise. But not everyone can do it," Davidson said. "If we could simply follow that advice, we wouldn't have an [obesity](#) problem. One of the reasons we seem unable to may be that what we eat changes our brains in ways that make it more difficult to refrain from overeating. We need to know more about how and why these brain changes occur."

Provided by American University

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