

Junk Food Diet in Teens Can Lead to Poor Memory

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STORY AT-A-GLANCE

- › A study conducted by researchers from the University of Southern California found that consuming junk food during adolescence can lead to long-term memory impairment in adulthood
- › The neurotransmitter acetylcholine plays a role, as it is crucial to memory, as well as other brain functions like attention and learning
- › Consuming junk food can also increase your child's risk of depression, obesity, and inflammatory conditions like eczema, rhinitis and severe asthma
- › Adults should set an example for children and encourage them to shift to healthier food choices, but this can be difficult, since junk food has been designed to be addictive

Many parents are aware of the negative effects of alcohol and drugs on their children's brains and take the necessary steps to protect them from these dangerous substances. However, there's another stealth element that could be putting them at high risk of future memory issues – and it's likely in your kitchen pantry right now.

A study¹ conducted by researchers from the University of Southern California found that consuming a junk food diet during adolescence can lead to long-term memory impairment in adulthood. Even more alarming is that the effects could be irreversible.

Animal Study Shows Junk Food Can Lead to Poor Memory

The featured animal study,² published in the journal *Brain, Behavior, and Immunity*, sought to determine the effects of feeding a junk food diet on adolescents' brains. While conducting the study, the researchers considered previous findings that a poor diet can lead to Alzheimer's disease.³

They found that the neurotransmitter acetylcholine plays a role, as it is crucial to memory, as well as other brain functions like attention and learning. People who have been diagnosed with Alzheimer's disease tend to have lower levels of this neurotransmitter in their brain.⁴

The researchers then wondered if adolescents who consumed the same type of processed food diet – loaded with unhealthy fats and refined sugar – could also experience similar effects, especially as their brains are still going through significant development.

To test their hypothesis, they fed one group of rats a "junk food cafeteria-style diet" consisting of potato chips, chocolate-covered peanut butter cups, and soda, and gave a control group a standard diet.⁵ They then observed the animals' acetylcholine levels and analyzed their brain responses by having them undergo tasks to test their memory.

One test involved allowing the subjects to explore new objects in different scenarios. After a few minutes, they repeated the test but added a new object to the scene. The researchers observed that the rats who ate the junk food diet were unable to recall which objects they had seen before, as well as their location. The control group, however, was more familiar with their surroundings.

In a StudyFinds article, Anna Hayes, a postdoctoral research fellow who is a member of the research team, explained:⁶

"Acetylcholine signaling is a mechanism to help them encode and remember those events, analogous to 'episodic memory' in humans that allows us to remember events from our past. That signal appears to not be happening in the animals that grew up eating the fatty, sugary diet."

A Junk Food Diet ‘Rewires’ Your Brain and Makes You ‘Stupid’

This isn't the first study that showed the negative effects of a junk food diet on your brain. A 2012 study published in the *Journal of Psychology*⁷ found that just six weeks of bingeing on sweets and sweetened beverages could slow brain function, memory and learning – to put it simply, it makes you "stupid."⁸

In a UCLA article,⁹ Fernando Gomez-Pinilla, a professor of neurosurgery at the David Geffen School of Medicine and one of the study authors, said, "Our findings illustrate that what you eat affects how you think. Eating a high-fructose diet over the long term alters your brain's ability to learn and remember information."

A 2023 study published in *Cell Metabolism* also revealed that junk foods like chips can cause the brain to "rewire" itself, and subconsciously learn to opt for foods that are loaded with fat and sugar.¹⁰

Considering that adolescence is a very sensitive time for a child's developing brain, these findings should be a cause for concern. Scott Kanoski, a professor of biological sciences at the University of Southern California (USC) Dornsife College of Letters, Arts, and Sciences and co-author of the feature study, comments:¹¹

"What we see not just in this paper, but in some of our other recent work, is that if these rats grew up on this junk food diet, then they have these memory impairments that don't go away.

I don't know how to say this without sounding like Cassandra and doom and gloom, but unfortunately, some things that may be more easily reversible during adulthood are less reversible when they are occurring during childhood."

Teens Who Frequently Eat Junk Food Are at a High Risk of Depression

In the U.S., an estimated 5 million teens aged 12 to 17 – or 20% of the overall age group – have experienced at least one episode of depression,¹² with symptoms of a loss of

interest in daily activities and struggling with sleep, energy and appetite. Depression among teens has increased by 30% in the last 10 years, and while many aspects are being considered, one potential factor could be eating a junk food or fast food diet.¹³

According to a study¹⁴ from researchers at the University of Alabama at Birmingham, two dietary elements could be contributing to depression in adolescents: having high levels of sodium and low levels of potassium.

High sodium levels are associated with salty snacks and fast food items like fries and burgers, while having low potassium levels means there aren't enough potassium-rich foods in the diet, including fruits and vegetables. These can influence neurotransmitters and neural function.

"Given the substantial brain development that occurs during adolescence, individuals in this developmental period may be particularly vulnerable to the effects of diet on the neural mechanisms underlying emotion regulation and depression," the researchers said.¹⁵

Junk Food Manufacturers Use Persuasive Marketing Tactics to Hook Your Kids

Healthy eating habits begin at home, and as adults, we must set an example for children and encourage them to shift to healthier food choices. However, this can be difficult, since junk food has been designed to be addictive.

Manufacturers use carefully orchestrated flavors, textures and aromas to make them as appealing as possible – a stark contrast to whole foods whose taste and consistency are made by nature and designed to satiate hunger and address your nutritional cravings.

What's more, junk food is aggressively marketed to children, with manufacturers using various persuasive techniques to pique your child's interest. When researchers conducted a systematic review of eight online databases, they found the most reported

marketing techniques used to promote these foods to children on television. These included:¹⁶

- Premium offers
- Promotional characters
- Nutrition and health-related claims
- The theme of taste
- The emotional appeal of fun

A review of studies¹⁷ published by the Australian website Obesity Evidence Hub further illustrates the pervasive nature of junk food marketing. According to the studies they referenced:

- Young children watch at least 11 junk food ads for every 2.5 hours of TV per day¹⁸
- Adolescents encounter 99.5 junk food promotions from online platforms weekly¹⁹
- Majority of food and drink ads found near schools and school routes are of unhealthy products²⁰
- There's a higher proportion of junk food ads in lower socioeconomic areas²¹

Unfortunately, these manipulative marketing tactics are effective. A 2016 study published in the Obesity Reviews journal found that intake of junk foods increases after exposure to junk food ads. According to the researchers:²²

"The evidence indicates that unhealthy food and beverage marketing increases dietary intake (moderate quality evidence) and preference (moderate to low quality evidence) for energy-dense, low-nutrition food and beverage. Unhealthy food and beverage marketing increased dietary intake and influenced dietary preference in children during or shortly after exposure to advertisements."

More Health Risks Associated With a Junk Food Diet

At any age, consuming a junk food diet can put your health at risk, but as the studies mentioned above demonstrate, children are particularly vulnerable due to their developing brain and body.

Childhood obesity is one of the most common effects of a junk food diet. From 2017 to 2020, 19.7% of children and teens 2- to 19-year-olds in the U.S. were considered obese – that’s approximately 14.7 million U.S. adolescents and children.²³ This is alarming, as childhood obesity can increase the risk of metabolic and cardiovascular diseases.²⁴

Another study also found that eating fast food three or more times per week can increase your child’s risk of inflammatory conditions like eczema, rhinitis and severe asthma.²⁵ Consuming junk food has also been associated with poor performance at school – children who eat more fast food progress slower academically, with lower test score gains in children who ate the most fast food compared to those who ate none.²⁶

Ultraprocessed ‘Lunchables’ Are Now Being Served in School Cafeterias

Speaking of schools – did you know that U.S. school canteens are now serving Kraft’s Lunchables? Two versions of these ultraprocessed "meals" – Turkey and Cheddar and Extra Cheesy Pizza – were introduced to schools at the beginning of the 2023-2024 school year.²⁷ Students can either purchase them or get them via the National School Lunch Program (NSLP).²⁸

With nearly 30 million children in public and private schools and childcare institutions getting their lunch from NSLP²⁹ daily, this rollout can spell disaster for children’s health. Ultraprocessed foods are among the worst things you can eat, and children in particular may have their future health sabotaged by consuming them. According to a Washington Post article:³⁰

"Kraft Heinz said the company spent nearly two years reformulating its store-bought Turkey and Cheddar Cracker Stacker Lunchables to meet USDA Food

and Nutrition Service standards – lowering the amount of saturated fat, increasing the protein, and adding whole grains to its crackers.

But the school version contains roughly 25 percent more sodium than the store version, according to Kraft Heinz's nutritional data.

'It is too easy for food manufacturers to reformulate sugar, salt and fat to meet standards for those nutrients and still produce a junk food,' said Marion Nestle, a retired professor of nutrition, food studies and public health at New York University."

In April 2024, the advocacy group Consumer Reports rolled out a petition urging the USDA to remove Lunchables from the NSLP. According to an NPR article,³¹ this action came after they conducted an independent analysis of ultraprocessed meal kits and found high amounts of sodium and elevated levels of heavy metals such as lead, cadmium and phthalates.

"Even in small amounts, lead and cadmium can cause developmental problems in children, with risks increasing from regular exposure over time. And eating too much sodium can lead to high blood pressure: about 14 percent of children and teens have prehypertension or hypertension.

Please take the necessary steps to ensure these processed food kits aren't eligible for the lunch program, and offer our children healthier choices," their petition reads.³²

Talk to Your Teens About the Dangers of Junk Food

As I mentioned, good eating habits start at home. Encouraging an open discussion about healthy food choices is a key factor in preventing your children from being manipulated by sly food manufacturers whose primary goal is to make money – they couldn't care less about the health of your family.

If you have younger children, try to get them involved in meal planning, shopping for healthy foods and cooking. You can even plant a vegetable garden together. Ultimately, when kids are young, you're the best role model for a healthy diet, so choose to eat real foods, and your kids will follow suit.

Older children and teenagers may be more of a challenge. However, telling them that they are being manipulated is often effective. No one likes to be deceived, even in adolescence. Enlightening them about the profit-driven motives behind junk food ads may be enough to help trigger a newfound desire for healthier eating.

Research conducted by the University of Chicago Booth School of Business found that when eighth graders were given materials that explained the manipulative practices and deceptive product labels used by food manufacturing companies, they ended up eating less junk food and choosing water instead of soda. They also ended up choosing healthier foods for the remainder of that school year.

"These findings suggest that reframing unhealthy dietary choices as incompatible with important values could be a low-cost, scalable solution to producing lasting, internalized change in adolescents' dietary attitudes and choices," the researchers explained.³³

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