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Obesity linked to fewer 'pleasure' receptors

By Nanci Hellmich, USA TODAY

Some people might overeat and become obese because a piece of their genetic makeup is askew.

A study by researchers at the University of Buffalo finds that people who eat to excess may have a genetic variation that impedes reception of a pleasure-reward chemical in the brain.

The research adds to the growing body of evidence that a low number of receptors for dopamine, a pleasure-reward neurotransmitter, could be one of the reasons some people eat more than others.

This is the same variation of the gene that makes some people more prone to alcoholism, drug abuse, compulsive gambling and other behaviors, says Jennifer Temple, a research assistant professor of health sciences at the university. Her study appears in October's *Behavioral Neuroscience*.

She and her colleagues studied the DNA of 29 people who were obese (about 30 or more pounds over a healthy weight) and 45 people who were either somewhat overweight or at a healthy weight.

About half of the participants, both obese and non-obese, had a form of the gene linked to the presence of fewer dopamine receptors.

There is evidence that impaired dopamine reception makes people feel they have to eat more to feel satisfied, Temple says.

The participants were brought into the research laboratory and offered one of their favorite foods, such as chocolate bars or salty chips, as a reward for completing computer tasks of varying degrees of difficulty. They were given more food for working harder.

The obese people who had the gene variation that hinders dopamine receptors worked at least twice as hard for food as anyone else and consumed as many as 800 calories of snack food in one 15-minute sitting, Temple says.

They worked much harder for food than obese people who didn't have the gene variation. They also worked much harder than normal-weight people who had the variation.

Temple explained that the gene appears to make people seek "excess" rewards, but in normal-weight people, that reward may not be food.

People with this genotype who are not highly motivated to eat may engage in other behaviors that also could release dopamine, she says, such as physical activity, alcohol and drug use or gambling. And this is just one of many genes involved in food regulation and body weight, she says.

The researchers plan to continue their studies of the relationship between dopamine receptors, genes and the motivation to eat.