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Diet Sodas and our Brain

Diet sodas may not be helping you lose weight—in fact, these and other artificially sweetened foods may sabotage your diet by confusing and **rewiring your brain’s reward centers**. This study from the journal *Physiology & Behavior* is yet another example of how **lifestyle choices can alter your brain**—negatively or positively.

Scanning diet soda drinkers' brains

The University of San Diego study followed 24 young adults: half the group drank at least one serving of diet soda every day, while the other half avoided the artificially sweetened drinks. These adults were then hooked up to **brain scanning equipment** while scientists fed them water alternately flavored by natural and artificial sweeteners—then the researchers sat back and watched what unfolded in the brain.

The results, according to University of California San Diego researchers Green and Murphy, were pronounced: “[Diet soda drinkers] who consumed a greater number of diet sodas had **reduced caudate head activation**. These findings may provide some insight into the **link between diet soda consumption and obesity**.”

Artificial sweeteners confuse reward

A little bit of background: the caudate head is a part of the brain involved in **signaling reward and controlling food intake**—and its decreased activity in the brains of diet soda drinkers has substantial implications.

Researchers posit that consumption of diet soda had confused the reward loops normally processed by the caudate head: because sweetness was no longer a reliable indicator of incoming calories, **the brain had trained itself to respond** less in the face of sweet flavors. Unreliable sweet tastes threw off normal predictions about calories and energy in the changed brains of diet soda drinkers—making it more likely that these people would consume additional calories later in the day.

Small choices can affect your brain

This newest study is pretty preliminary; it’s difficult to say how drastically diet sodas can affect bigger questions of lifestyle and health based on such short-term brain activation patterns. Still, this recent investigation provides an interesting reflection on how choices and actions made in everyday life can powerfully influence the way your brain is wired—in other words, the concept of **neuroplasticity**.

We can’t always foresee the unintended negative responses our brain makes—who would have thought diet coke might do quite the opposite of what its name suggests