

Food addiction: How processed food makes you eat more

August 26 2013, by Belinda Lennerz



We don't just eat for fuel. Credit: Doug DuCap/Flickr

Most people have the strong desire for a normal weight but in many developed countries such as Australia, only a minority are able to achieve it. [Research we recently published](#) provides an insight into why.

In theory, [weight reduction](#) is as simple as cutting down on the number of [calories](#) consumed. But most people continue to overeat, driven by

constant temptation.

While many argue that [maintaining a healthy weight](#) is an individual responsibility, the widespread availability of tasty but highly-processed food provides a [temptation](#) to overeat that many simply cannot resist.

Addicted to food?

This inability to resist gave us the idea of testing whether certain types of food can lead to "addiction".

While some experts argue we can't be addicted to food because eating is essential for life, people eat for many reasons unrelated to their daily [energy requirements](#). Many eat out of stress, for instance, or [frustration](#) or for pleasure.

We wanted to know whether these eating behaviours are perpetuated by highly-processed, [tasty food](#), especially those with a high glycaemic index. High glycaemic index foods include refined starches and concentrated sugar and cause a rapid rise and fall in blood sugar after consumption.

Typically, blood sugar falls below fasting level within a few hours of a high glycaemic index meal, causing [hunger](#) and leading to overeating.

Conversely, foods with a low glycaemic index, such as whole fruit, vegetables, legumes and minimally-processed grain, produce relatively little blood sugar [fluctuation](#), and longer satiation.

Our research

We aimed to understand how highly-processed carbohydrates can cause

such a strong surge to overeat. Is it just a matter of [blood sugar levels](#)? Or does the supreme tastiness of highly-processed foods play a role?

In order to answer these questions, we created two milkshakes, one with a high, and one with a low glycaemic index. The milkshakes were otherwise identical, with similar calories, macronutrients and taste.

We gave the milkshakes to 12 healthy, overweight men on different days and in random order. Four hours after the high glycaemic index shake, participants were hungrier than those who had consumed the low glycaemic index shake.

We also did functional MRI imaging on all 12 participants. The images revealed intense activation of the nucleus accumbens, a critical brain area in the dopaminergic, mesolimbic system that mediates pleasure eating, reward and craving.

Similar activation patterns have been found in people after consumption of addictive substances, such as heroin and cocaine.

What it all means

Our findings provide qualified support for the possibility of food addiction.

While food is necessary for life, we eat for reasons beyond our daily energy needs. When overeating becomes a pattern that is hard to break, we say someone is "addicted" to food.

[Previous studies](#) looking at food addiction have compared brain activation in response to palatable foods and linked addictive [behaviours](#) to the pleasure and reward that people experience after eating them.

But those studies typically compare grossly different foods, such as cheesecake versus vegetables, and raise the possibility of confounding. This means the addictive pattern may be caused by any number of food properties, such as appearance or taste, a subject's preference for certain foods, or the number of calories consumed.

Our study controlled for confounding dietary factors and suggests that the glycaemic index can independently affect hunger and overeating. More research is needed to examine the relevance of the idea of food addiction and the treatment of eating disorders and obesity.

But the fact that a food property may affect addiction centres in the brain, independent of calories or pleasure, provides the basis to rethink current dietary recommendations.

Obesity is one of the hardest conditions to treat as dietary restrictions often cannot be maintained in the long term. Any help a person can get in maintaining a healthy energy balance is valuable. This line of research may inform novel and individualised approaches to a healthy weight.

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