

The cheesy secret behind successful decision-making

By [Jeremy Laurance](#)
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It may look like an ordinary cheese sandwich - but it could contain the vital ingredient that helps you successfully negotiate that pay rise.

Scientists have found that people with high levels of the brain chemical serotonin are more likely to succeed in delicate negotiations affecting their own interests. Serotonin is manufactured in the body from the amino acid, tryptophan, which is present in several foods - and cheese is a particularly good source.

Eating a cheese sandwich before entering the boss's office could therefore give your brain that vital edge.

Psychologists at the University of Cambridge who manipulated the diets of volunteers to alter their serotonin levels found that when the levels of the brain chemical were low the volunteers were more likely to allow emotion to rule their heads and make decisions that harmed their long-term interests.

But when the levels of serotonin were high they behaved in a more rational, level-headed fashion, putting their own material advancement ahead of the short-term satisfaction of telling their boss exactly what they thought of them.

It is one of the first studies to demonstrate the role of serotonin in regulating emotion and aggression in social decision making. The findings help explain why some people tend to over-react to a perceived unfairness, becoming angry and combative, when they haven't eaten.

People with short fuses have traditionally blamed a shortage of calories - "low blood sugar" - for their bad temper. But the Cambridge psychologists say fluctuations in serotonin levels have more subtle effects.

To test the theory, the researchers manipulated serotonin levels in 20 volunteers aged from 20 to 35.

The volunteers were asked to fast overnight before being given a protein-rich drink in the morning, followed some four hours later (once it was digested), with a request to participate in a financial negotiation called the Ultimatum Game. All the volunteers participated twice - once receiving a shake with tryptophan removed and once receiving a normal, tryptophan-rich shake.

The game, which has been used for decades in studies of economic behaviour, involves one player proposing to split a sum of money, say £10, with a partner. If the partner accepts, both players receive their agreed shares but if the partner rejects the offer, neither player is paid.

Normally players tend to reject about half of all offers of less than £2.50 (25 per cent of the total stake), even though this means they receive nothing, because their anger at the perceived unfairness outweighs their interest in the cash.

But among players with low serotonin who had received the tryptophan-free shake, the rejection rate rose to 80 per cent.

Molly Crockett, of the Behavioural and Clinical Neuroscience Institute, who led the study published in *Science Express*, said: "The Ultimatum Game is a favourite of economists to show that human decision making is not rational. If it were rational we would accept every offer, even those that are really unfair, but that is not what happens."

She concluded: "Our results suggest serotonin plays a critical role in social decision making by keeping aggressive social responses in check. Changes in diet and stress cause our serotonin levels to fluctuate naturally, so it is important to understand how this might affect our everyday decision

making."

How to get serotonin in your diet

Serotonin is manufactured in the body from the amino acid tryptophan, which is present in most protein-based foods. High levels of tryptophan are found in cheese, meat, soya beans, sesame seeds, chocolate, oats, bananas, dried dates, milk and salmon.

Turkey is reputed to contain high quantities of the amino acid, which is said to account for the air of contentment that reigns immediately after Christmas dinner. But analysis shows that turkey contains only marginally more than chicken, pork or beef - and somewhat less than cheese.

Tryptophan is sold in healthfood stores as a dietary supplement that is claimed to act as "nature's tranquilliser", boosting serotonin levels and making us happier, calmer and less stressed. Its sleep-inducing properties are, however, more likely to be linked with the quantity of food eaten than the amount of tryptophan it contains - as the near-universal urge to snooze after a large meal confirms.

- *Jeremy Laurance*