The mindbus technique for resisting chocolate

If someone gave you a bag of 14 chocolates to carry around for five days, would you be able to resist eating them and any other chocolate? That was the challenge faced by 135 undergrads in a new study that compared the effectiveness of two different 'mindfulness' resistance techniques.

Kim Jenkins and Katy Tapper taught 45 of their participants 'cognitive defusion', the essence being that 'you are not your thoughts'. The students were told to imagine that they are the driver of a mindbus and any difficult thoughts about chocolate are to be seen as awkward passengers. The students chose a specific method for dealing with these difficult thoughts/passengers and practised it for five minutes – either describing them, letting them know who is in charge, making them talk with a different accent, or singing what they are saying.

Another group of students were taught an acceptance technique known as 'urge surfing'. They were instructed to ride the wave of their chocolate cravings, rather than to sink them or give in to them. A final group of students acted as controls and were taught a relaxation technique. As well as trying to resist the bag of chocolates, the students in all conditions were asked to avoid eating any other chocolate as far as possible, and to keep a diary of any chocolate they did eat over the five days.

In the *British Journal of Health Psychology*

The key finding is that the mindbus group ate fewer chocolates from their bag as compared with students in the control group. By contrast, the urge surfing group ate just as many of their chocolates as the controls. Diary records showed the differences between groups in their other chocolate consumption were not statistically significant, although there was a trend for the mindbus group to eat less (13g vs. 52g in the urge surfing group and 44g in the control condition). Another way of describing the results is to say that 27 per cent of the mindbus group ate some chocolate over the five-day period, compared with 45 per cent of the urge surfers and 45 per cent of controls.

A habits questionnaire suggested the mindbus technique was more effective because it reduced the students' mindless, automatic consumption of chocolate more than the other interventions. Jenkins and Tapper said their results show the mindbus 'cognitive defusion' technique is a 'promising brief intervention strategy' for boosting self-control over an extended time period.

The serious chocaholics among you may not be so convinced. Although the students were recruited on the basis that they wanted to reduce their chocolate consumption, they appeared to show saintly levels of abstinence. On average, even the control group participants ate just 0.69 chocolates from their bag over the five-day period (compared with an average of 0.02 chocolates in the mindbus condition; 0.27 in the urge surfing condition).

The controls' other chocolate consumption amounted to the equivalent of little more than four individual chocolates over five days. You've got to wonder – how serious were these participants about chocolate and just how tasty were the chocolates in that bag?*

Another thing – the researchers included a measure of 'behavioural rebound'. After the students returned to the lab on day five, they were presented with a bowl of chocolates and invited to eat as many as they liked. The groups didn't differ in the amount of chocolates they consumed, which the researchers interpreted as a good sign – after all, the mindbus group hadn't compensated for their restricted intake during the week. But hang on, they also showed no evidence of greater resistance to the chocolate. Sounds to me like the passengers had taken over the bus.

* Co-author Katy Tapper got in touch on Twitter to tell us: 'The chocolates were very tempting Cadbury's Celebrations!'

Engaging lecturers can breed overconfidence

In the May issue of *Psychonomic Bulletin and Review*

Eloquent and engaging scientific communicators in the mould of physicist Brian Cox make learning seem fun and easy. So much so that a new study says they risk breeding overconfidence. When a presenter is seen to handle complicated information effortlessly, students sense wrongly that they too have acquired a firm grasp of the material.

Shana Carpenter and her colleagues showed 42 undergraduate students a one-minute video of a science lecture about calico cats. Half of them saw a version in which the female lecturer was confident, eloquent, made eye-contact and gestured with her hands. The other students saw a version in which the same lecturer communicated the same facts, but did so in a fumbling style, frequently checking her notes, making little eye contact and few gestures.

After watching the video, the students rated how well they thought they'd do on a test of its content 10 minutes later. The students who'd seen the smooth lecturer thought they would do much better than did the students who saw the awkward lecturer, consistent with the idea that a fluent speaker breeds confidence. In fact, the two groups of students fared equally well in the test. In the case of the students in the fluent lecturer condition, this wasn't as good as they'd

predicted. Their greater confidence was misplaced.

A second study was similar – 70 students watched either a fluent or fumbling lecturer, but this time the students had a chance afterwards to spend as long as they wanted reviewing the script. On average, both groups of students devoted the same amount of time (perhaps out of habit). But only among the students who'd watched the fumbling lecturer was there a link between time spent on the script and subsequent performance on the test. This suggests only they used the time with the script to fill in blanks in their knowledge.

'Learning from someone else – whether it is a teacher, a peer, a tutor, or a parent – may create a kind of "social metacognition",' the researchers said, 'in which judgments are made based on the fluency with which someone else seems to be processing information. The question students should ask themselves is not whether it seemed clear when someone else explained it. The question is, "can I explain it clearly?"'

An obvious limitation of the study is the brevity of the science lecture and the fact it was on video. It remains to be seen whether this result would replicate in a more realistic situation after a longer lecture.

Also, in real life, there may be costs to a fumbling lecture style that weren't picked up in this study, such as students mind wandering and skipping class.

Scanning a brain that believes it is dead

In *Cortex*

What is going on in the brain of someone who has the deluded belief that they are brain dead? A team of researchers led by neuropsychologist Vanessa Charland-Varville at CHU Sart-Tilman Hospital and the University of Liege has attempted to find out by scanning the brain of a depressed patient who held this very belief.

The researchers used a positron emission tomography (PET) scanner, which is the first time this scanning technology has been used on a patient with this kind of delusion – known as Cotard's syndrome after the French neurologist Jules Cotard. The 48-year-old patient had developed Cotard's after attempting to take his own life by electrocution. Eight months later he arrived at his general practitioner complaining that his brain was dead, and that he therefore no longer needed to eat or sleep. He acknowledged that he still had a mind, but (in the words of the researchers) he said he was 'condemned to a kind of half-life, with a dead brain in a living body'.

The researchers used the PET scanner to monitor levels of metabolic activity across the patient's brain as he rested. Compared with 39 healthy, age-matched controls, he showed substantially reduced activity across a swathe of frontal and temporal brain regions incorporating many key parts of what's known as the 'default mode network'. This is a hub of brain regions that shows increased activity when people's brains are at rest, disengaged from the outside world. It's been proposed that activity in this network is crucial for our sense of self.

'Our data suggest that the profound disturbance of thought and experience, revealed by Cotard's delusion, reflects a profound disturbance in the brain regions responsible for "core consciousness" and our abiding sense of self,' the researchers concluded.

Unfortunately the study has a number of serious limitations beyond the fact that it is of course a single-case study. It's unclear whether the patient's distinctive brain activity was due to Cotard's, depression or his intense drug regimen to treat the depression, although the researchers counter that such an extreme reduction in brain metabolism is not normally seen in patients with depression or on those drugs.

Another issue is with the lack of detail on the scanning procedure. It's not clear for how long the patient and controls were scanned, nor what they were instructed to do in the scanner. For example, did they have their eyes open or closed? What did they think about?

But perhaps most problematic is the issue of how to interpret the findings. Does the patient have Cotard's delusion because of his abnormal brain activity, or does he have that unusual pattern of brain activity because of his deluded beliefs? Relevant here, but not mentioned by the researchers, are studies showing that trained meditators also show reduced activity in the default mode network. This provides a graphic illustration of the limits to a purely biological approach to mental disorder. It seems diminished activity in the default mode network can be associated both with feelings of being brain dead or feelings of tranquil oneness with the world, it depends on who is doing the feeling.

The material in this section is taken from the Society's **Research Digest** blog at **www.researchdigest.org.uk/blog**, and is written by its editor **Dr Christian Jarrett**. Visit the blog for full coverage including references and links, additional current reports, an archive, comment and more.

Subscribe by RSS or e-mail at
www.researchdigest.org.uk/blog

Become a fan at
www.facebook.com/researchdigest

Follow the Digest editor at
www.twitter.com/researchdigest