

How chewing gum can boost your brain power

By CARA LEE

MOST of us don't think twice about it, but chewing — mastication — has implications for our health.

The way we chew, for instance, can alter our digestion, teeth and even our face shape. And new research suggests how often we chew could even affect our brain power.

Here we reveal what scientists and medics now know about this instinctive act...

THE TRUTH ABOUT CHEWING

WE'VE all heard the dictum about chewing each mouthful 20 times before swallowing, but actually how many times we should chew depends on what we're eating, says gastroenterologist Dr Nick Read, chief medical adviser for charity The IBS Network.

'The Victorians thought you needed to chew food 14 times but we generally wait until it feels right and then swallow — it's intuitive.'

He says that because our diet has become softer, thanks to all that processed food, we now don't need to chew for so long.

However, raw fruit and vegetables, and meat, demand more chewing. 'If you don't, lumps of food will pass through your digestive system and not be completely absorbed,' says Dr Read.

On average, we chew 800 to 1,400 times a day.

STOMACH SIGNALS

CHEWING breaks food down into small pieces, which increases the surface area for the digestive enzymes to react with and so helps swallowing and digestion.

Chewing also sends messages to the brain through the trigeminal nerve in the face.

The brain then sends signals down the vagus nerve (the long nerve connecting to the abdomen) to tell the stomach to start acid secretion in preparation for the food arriving.

Chewing also generates saliva from the salivary glands, which mixes with the food, ensuring it's the right consistency to be digested and travel through the digestive system.

Saliva is also essential for cleaning our mouths when we're eating.

GASSY GOBBLERS

WHEN we eat slowly, our bodies are more relaxed, allowing the parasympathetic nervous system, which stimulates digestion, to do its job properly.

However, if you're eating on the hoof and rushing about, you also stimulate the sympathetic nervous system, which is associated with 'fight or flight' responses.

'The sympathetic side puts the whole body on alert and diverts energy to the heart, brain and muscles, while the parasympathetic nervous system's functions, such as digestion, are halted,' says Dr Read.

In practical terms, the sympathetic system inhibits the secretion of stomach acid, and slows down gastric emptying so food stays in the stomach longer, making us feel over-full and sick. This can also cause painful

The not so good news? It can harm your memory and change the shape of your face

spasms in the intestine. Eating quickly and not chewing enough also makes us swallow more air, which may cause bloating, belching and discomfort.

SWAP SIDES

DO YOU always chew on the same side? Over time, this could make it harder to eat and cause pain, so try to vary it.

'Most people have a favourite side to chew,' says Professor Andrew Eder of University College London's Eastman Dental Institute and the London Tooth Wear Centre.

'If you have a coarse diet, you may see more tooth wear on one side and find the surface of the teeth there becomes flatter and less functional.'

Chewing on one side can also lead to discomfort in the muscles and jaw joint on that side.

Normal chewing also wears the teeth over time. It is estimated that we lose ten to 20 microns of enamel a year through everyday wear and tear.

SLEEP CHEWING

AROUND one in ten of us suffers from bruxism (grinding the teeth, clenching the jaw and thrusting the tongue as if we were chewing food), usually during sleep.

'This serious sleep disorder normally happens as a response to heightened stress and anxiety

levels, caffeine, smoking, alcohol and lifestyle factors such as poor diet and lack of exercise,' says Dr Guy Meadows, director of The Sleep School in London.

Bruxism can wear down tooth enamel and break teeth, as well as causing symptoms including migraine, earache, gum disorders and sleep problems such as daytime fatigue.

Treatments include relaxation techniques and wearing a mouthguard.

GUM CAN CHANGE YOUR FACE ...

WHEN we chew, we use the masseter muscles in either side of the jaw. People who chew gum throughout the day can find the over-activity makes their masseter muscles 'grow'.

'This can make the patient's face look very square,' says Luke Casciarini, consultant oral and maxillofacial surgeon from North West London Hospitals and West Middlesex University Hospital.

'You can inject Botox, which blocks stimulation to the muscle so it returns to a normal size, or the problem can be reversed by stopping chewing gum.'

Usually this only happens from chewing gum rather than food, but not everyone who chews gum a lot will be affected.

The masseter muscles can also become overdeveloped on one

side of the face if people chew on one side (usually because they're missing teeth on the other side). This can cause pain down the side of the head, jaw and neck and, over time, inflammation in the jaw joints. It can be resolved through dental work, adds Mr Casciarini.

...OR AFFECT YOUR MEMORY

WHILE the evidence is mixed, it's thought chewing gum may stop you forming some kinds of memory, says Professor Andrew Smith from Cardiff University, a specialist in health-related behaviour.

'Many aspects of memory rely on using sub-vocal rehearsal (when you repeat words to yourself in your head) and it's difficult to do that while chewing because it's a competing activity — but this area needs more research.'

Gum may also have a negative effect on the gut. Chewing gum stimulates acid secretion in the stomach but then doesn't deliver food to it, leaving excess acid.

'It could cause gastritis — inflammation of the stomach lining, ulcers, blistering, indigestion and soreness,' says Dr Read.

'And most gum contains sorbitol, which is a poorly absorbed sugar and can go through the intestine without being absorbed and ferment in the colon. This can lead to excess gas and bloating.'



Picture: ALAMY

...OR WAKE UP YOUR BRAIN

THAT'S the suggestion from a study by the National Institute of Radiological Sciences in Japan, just published in the journal *Brain and Cognition*.

When participants were put through a number of tests, those who were chewing gum had 10 per cent faster reaction times compared to those who weren't.

Using functional MRI scans, the researchers found that chewing affected eight parts of the brain — most of which are involved in executive function (actions) or motor-related functions, explains Dr Duncan Banks, a director of the British Neuroscience Association. 'Those areas seem to light up more when people chew gum.'

There is robust evidence that chewing gum increases alertness, helps us to sustain attention and improves reaction times, says Professor Smith.

'Chewing stimulates the trigeminal nerve, which stimulates part of the brain responsible for alertness. And we know that chewing increases heart rate, which in turn increases blood flow to the brain.'

'People who chew gum report increased productivity at work, which fits in with what studies show in the lab,' adds Professor Smith, whose work in the past has been partly funded by chewing gum manufacturers.

In a study at Cardiff University, chewing gum was found to improve performance when people were struggling to pay attention while completing monotonous tasks. But it made no difference when they were operating at normal levels.

PERSONALITY TEST

PEOPLE with 'type A' personalities — typically fast moving, impatient and ambitious people — tend to eat quickly, while 'type B' characters — who are generally more laid back, considered and approach things at a slower pace — will relish their mealtimes, says Cary Cooper, professor of organisational psychology and health at Lancaster University.

Our family eating habits can also influence how we consume food, with people brought up eating meals around the family table together more likely to take their time with meals and chew slowly.

It's also likely to be linked to how parents trained you to eat and the feedback they gave you, such as whether they scolded you for eating too fast.

STRESS CHEWERS

IF YOU'RE a chronic chewer of pens, nails, hair or gum, you're sending out a message that you're stressed, says Professor Cooper.

This is not about the occasional user of gum — indeed, 'chewing gum could be effective in a short-term stressful situation, such as while people are sitting exams'.

But the hardcore chewer of gum — or non-edible objects — may find it reassuring because it acts as a substitute for food in our mouths.

'We are raised feeding off our mother's breast, which is later replaced with food,' says Professor Cooper. 'For some people, if they are stressed or feeling low, they find food reassuring — and that could also apply to gum and objects like pen lids.'

VITAMIN MATHS

The foods that add up to your daily recommended intake



150g chicken liver pate (9mg of iron)

+



50g cashew nuts (3mg)

+



90g peas (1.4mg)

+



75g beetroot (0.6mg)

=

RDA of 14mg iron

IRON is an essential component of haemoglobin, the pigment that helps transport oxygen around the body. A deficiency of iron affects the amount of oxygen delivered to the cells, resulting

in fatigue, poor concentration and reduced immunity. Other sources include lean red meat, nuts, canned fish and leafy greens.

ANGELA DOWDEN