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“Yawning may have the dubious distinction of being the least understood, common human behaviour,” said Professor Provine, a pioneer of yawning research in 1986. When it comes to yawning, there’s a gaping hole in our understanding.

Is it to draw oxygen into the brain?

If this was the case, then we would expect to see people yawn more when their oxygen levels are low, such as during exercise. But we don’t. When the marathon runner crosses the finish line, he certainly doesn’t yawn; instead, he breathes faster to increase blood oxygen levels.

What’s more, patients with heart or lung diseases often suffer from reduced oxygen levels, yet generally do not display increased yawning.

Professor Povine monitored yawning levels amongst subjects exposed to high oxygen levels (it’s less ethical to expose people to low oxygen levels). Yawning levels weren’t reduced.

Is it to cool down the brain?

Rather like opening a window on a hot day, it’s feasible that a yawn could ventilate the brain.

Placing a cold pack on the forehead reduces yawning; a warm pack has the opposite effect. Scientists argue, however, that this is not because the packs are cooling or heating the brain: it’s more likely that the cold pack has a profound arousing effect, whilst a nice warm pack increases sleepiness and yawning.

Nasal breathing is actually recognised as a more efficient way of brain cooling than yawning.

Is it to wake you up?

There's no doubt that we yawn when we are tired. In Snow White and the Seven Dwarfs, Sleepy precedes his naps with a yawn so wide that a housefly buzzes into it. Automatic yawning detection programs [6] are being developed for cars to detect driver fatigue, since yawning is a way of communicating tiredness.

But yawning does not combat tiredness: when brain activity was recorded using an EEG [7], yawning did not accelerate the brainwaves, which would represent arousal.

That yawning does not wake you up was shown to me graphically as I cared for a man in a coma. As the weeks progressed, he began to yawn more when he couldn't have been tired. Sadly, the yawning was a sign of increased pressure in the brainstem and he didn't wake up.

Is it a silent language?

In addition to communicating tiredness, humans convey boredom with a yawn.

We've all seen that yawning is contagious: is this because we are sending silent messages to each other, empathising with each other's tedium? Perhaps so, because people with autism and children under the age of five [8] do not display contagious yawning, and they also struggle with non-verbal communication.

We do, however, yawn when we are alone, so it cannot only work as a communication tool.

Interestingly, the hippopotamus uses his enormous yawn to communicate aggression to male hippos and affection to female hippos!

Amazingly scans have shown that, from as early as 11 weeks, foetuses yawn.

Is it because you are ill?

I have a friend with epilepsy: she yawns just before a seizure. Yawning can also precede migraine and vomiting during motion sickness.

Yawning can be a sign that you haven't slept well, perhaps because your breathing was hindered by enlarged tonsils or adenoids [9].

Since a number of brain chemicals control yawning, pressure in the brain caused by a stroke, head injury or tumour can increase yawning; drugs [10] that alter brain chemicals, such as those for Parkinson's or depression, can trigger yawning.

Flummoxed by the foetus

Amazingly scans have shown that, from as early as 11 weeks, foetuses yawn. It's not to increase oxygen intake (foetuses rely on the placenta [11] to supply oxygen), nor would a yawn ventilate the foetal brain (since the foetus swims in amniotic fluid), and it's hardly likely to be a form of communication (unless you're a twin). It's not a simple sign of illness: healthy foetuses yawn (though excessive yawning has been shown in anaemic foetuses [12]).

Foetal yawning fills the lungs with fluid, expanding them to protect them from collapse once the baby is born and switches to breathing air; it also matures the developing brain [13] – but why then, does it persist for the rest of life?

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