



Commentaries

Yawning, or Not Having Enough To Do

A COLLEAGUE TOLD ME THAT HE HAD JUST SEEN

a patient who had been bothered by yawning for the past two years and wanted to do something about it. It apparently was not due to any identifiable disorder or medication. It turns out, unbeknownst to my friend, that I had co-authored a case report on yawning in Parkinson's disease (PD). My report described a man who had suffered from PD for many years and suffered from severe clinical fluctuations, the so-called "on-off" problem. He told me that about two minutes or so before his medications "kicked in" and put him into an "on" phase he would yawn. He otherwise didn't yawn, and he denied sleepiness. I witnessed this once. He was stuck in a wheelchair, unable to stand and walk; he was stiff, slow, and pretty well frozen in place. He then began to yawn and two minutes later he was dyskinetic but mobile, able to stand up and walk by himself. This had not been described in the literature before, and, although I hadn't a clue as to what this "meant" in the greater scheme of neurotransmitter physiology, I was sure it meant something.

I later learned that yawning was a very common reaction to one of the standard medications used in Europe for many years to treat PD, apomorphine, but that medication had not yet been tested in the US. When I wrote my article (and I must point out that that little case report attracted more interest than any of the useful observations or studies that I had published) the only thing I knew about yawning was that it was contagious and that it occurred not only when humans are sleepy or bored, but also when they are nervous.

When my friend contacted me recently about his yawner, I did a Pubmed search and was floored to find out how many people had written articles about yawning. There was even an interesting exchange between two groups of experts on the evolution of the yawn. There were clever studies showing that yawning was contagious in birds, as well as primates, and that the yawning was not simply

diurnal. Sexual behavior of male rodents from a strain with increased yawning was reported. And there were even articles relating yawning to diseases, drugs and hypothetical physiological mechanisms.

Is yawning so interesting or are there a lot of researchers who are underemployed? There are a few interesting things about yawning. The first is that it is contagious. The second is that yawning is widespread in the animal kingdom and is contagious in some of them. The third is that yawning has been identified in utero. It seems that babies are not susceptible to contagious yawning, at least not from their mothers, which is, I think, a cruel trick on mothers. But most interesting of all, at least to a neurologist, is that some patients with a hemiparesis from a stroke, will raise an otherwise paralyzed arm during a yawn, as an involuntary reflex.

I suspect that yawning has attracted attention simply because it is so universal and yet carries no identifiable benefit. In fact, one can argue that yawning probably causes more trouble than it solves, at least in humans. Certainly the parent of a small, yawning child realizes that the child needs a nap. But just as certainly the teacher of a yawning child realizes that the child's boredom quotient has outweighed the interest level. Yawns are generally not well received by the person who may be causing the condition. On the other hand, as a neurologist who gives fairly frequent talks, I use the incidence of yawning and myoclonic jerks as an inverse measure of how good a talk I've given. No yawns, myoclonic jerks or sleep attacks indicates a good lecture.

I think of the study of yawning in non-human species as being a continuation of "natural philosophy" of the 18th century, perhaps, in some cases using 21st century tools. When one tries to deduce the behavioral consequences or behavioral causes of yawning behavior in non-primate animals, one has trod onto a playground more philosophical than scientific, even if one uses scientific experimental techniques. After all, as the authors argue, it is not at all clear that

what looks like a yawn in some species is, in fact, the same thing as a human yawn. One paper defines a yawn as "an extended gaping of the mouth followed by a more rapid closure." I don't think any of us perceives a crocodile with its mouth open, as yawning. And just as far afield, it is unclear if a bird displaying yawning-type movements, is in fact yawning, and similarly for a fetal human. And what does one make of fish, like Siamese fighting fish, which open their mouths and seem to yawn, although they don't have lungs to take in air that primates do when yawning?

I suspect that all normal humans yawn, although I don't know if that's a fact. Perhaps there are people who never yawn, no matter how tired or bored. Would that have any meaning? What if absence of yawning was associated with some other unusual behavior? To be sure the association was more than chance, we'd need to evaluate a few patients with similar behavior. But then, even if we found a few people with the same sets of unusual behaviors, until we found a genetic or physiological link, any deductions would be speculative, not scientific.

Attempting to draw evolutionary advantages to behaviors may be entertaining and challenging but are unlikely to be good science because we can never control all variables, and the basic driving force of evolution is the random event. Most results of random events are negative, but not all. Occasional events are advantageous. Many are likely to be neutral, and if linked to something advantageous, live on and prosper.

Yawning is more interesting than the palmo-mental reflex or the corneo-mandibular reflex, but what is the point of a debate on the "meaning" of a yawn? While I like a good argument, does anyone really care?

— JOSEPH H. FRIEDMAN, MD

Disclosure of Financial Interests

Lectures: Teva, Ingelheim Boehringer; General Electric

Consulting: United Biosource; Buba-loo, Halsted, Reitman LLC; EMD Serono; Genzyme; Teva; Acadia; Addex Pharm; Schwarz Pharma

Research: MJFox; NIH: Cephalon; EMD Serono; Teva; Acadia

Royalties: Demos Press

CORRESPONDENCE

e-mail: joseph_friedman@brown.edu