Yawning: Behavior and Physiology

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Yawning is a reflex of long deep inspiration with mouth wide open and followed by slow expiration. Yawns are often accompanied by urge to stretch one’s muscles. Stretching of the hands is often accompanied or followed by yawning. Act of yawning and stretching simultaneously is called Pandiculation.

Yawning as a form of human and animal behavior has defied all attempts to explain it. However it is likely to be functionally basic in serving very real organic need. In man yawning occurs at all ages and in both sexes. Act of yawning lasts about 6 seconds. Following are the conditions under which yawning occurs: Immediately before sleep, awakening from un-refreshed sleep, weariness, lack of stimulation, boredom or any monotonous task. Medical conditions like multiple brain stem ischemic strokes, frontal lobe tumors etc. may cause excessive yawning. *Psilocybin mushrooms* users often describe a marked stimulation of yawning while intoxicated.

All these conditions have in common lowered state of *critical consciousness*—meaning state of normal, active awareness of being related to environment. Any significant decline may lead to yawning. Reduced critical consciousness is often associated with an increased CO2 saturation of blood. Yawning by its massive inspiration of oxygen and exhalation of CO2 serves to restore depleted oxygen content of blood. The wide opening of mouth is associated at the same time by stretching of ear drums and movements of the mandible. The tongue and the throat are some of the most overused muscles of the body, used for speech, breathing and swallowing. These muscles are stretched and refreshed. Branches of internal and external carotids and the veins emptying into jugulars are compressed. Carotid bodies also probably get compressed and contribute to alteration of circulation. Tearing from the lachrymal glands is often associated with yawning. This could be due to pressure on the lachrymal glands or of nervous origin or both. Possibly one of the functions of lacrimation in yawning is to keep the eyes well lubricated during changes in pressure to which it is exposed. The flow of tears through naso-lachrymal duct is enough to lead to nose blowing. Higher levels of stress hormones particularly cortisol, have been found in the saliva of human subjects following yawning. This has provided support for the Thompson’s Cortisol hypothesis which proposes elevations of cortisol during yawning episodes.

Yawning has long been observed to be contagious. The social and biological function of ‘contagious’ yawning would be to heighten the consciousness of one’s fellow by inducing yawning in them. A study by the University of London found that the “contagousness” of yawning by humans can pass on to dogs. Yawning warns one of the reductions in critical consciousness and, as in sleepiness or weariness, suggests that one ought to sleep or rest; particularly while driving.

Yawning is often perceived as implying boredom, and yawning conspicuously in another’s presence has historically been considered impolite; loud yawn in a courtroom has even lead to penalty for contempt of the court!

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