Reaction of Our Senses

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Anatomy and Physiology

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Our senses play an important role in our everyday life. In this treatise I hope to explain the mechanisms, the parts of the body affected, what problems are caused and ways of preventing experiences such as, why do onions make us cry? Why do "brain-freeze" or "ice cream headaches" occur? Why do we yawn? And why do we have a response to something extremely cold or hot when we have contact with a certain object that have those elements?

The Investigation into Why Onions Make Us Cry

Many of us love to eat onions. We buy them from our grocery stores, grow them in our gardens, and we process them as a garnish for meals. Not many people look forward to preparing onions. This task can be painful.

Just like any living matter, onions also produce a means of self-defense. A chemical enzyme called alliinase is stored within the vacuole cell of the plant, with one large open area designated for fluids and in this case, toxin. When damage occurs to these cells, it releases the enzyme. The alliinase, with the amino acid produced within the onion mix causing a sulfenic acid which is oxygen reactive and mix with another chemical within the lacrimal glands called propanethial S-oxide or lachrymatory factor. When the chemical reaction occurs from chopping an onion, not only do we smell the onion, they make us cry. This is reaction occurs bringing the LF into contact with our cornea, triggering a response to the brain through nerve endings. This response works as a cycle because the brain then sends a signal back to the eye and lacrimal gland, instructing them to protect the eyes using tears and blinking together to expel the irritant.

One of the most common and proven ways to prevent crying while cutting up onions is with air movement. Using a fan to push the air containing irritant away from you while making the cuts will protect you from the pain of the chemical reaction that brings tears to our eyes.

Analysis of the Brain Freeze/Ice Cream Headache Phenomenon

Stop and take a break from that ice cream. That pain your feeling in your head from eating that delicious ice cream too fast, is your brain telling you to slow

down. The process starts by eating or drinking something cold because your brain wants the mouth cavity to be warm. At the arterial cerebral artery where the brain tissue begins, is where the effect of the brain-freeze or sphenopalatine ganglioneuralgia begins. When your mouth cannot process the rapid change in temperature, and as the cold descends into the back of the throat, it gives the initial signal through the junction of the anterior carotid artery, where the brain receives blood. The arteries dilate and contract and tell the brain the temperature is too cold, so the brain reacts to stop the process.

These "ice cream headaches" come on rapidly without warning, so how can you stop it from happening? Scientist recommend a few options, other than eat smaller amounts of the cold treats slower. An alternative that is just as effective is having a warm drink and holding it your mouth to stabilize the temperature, allowing the arteries to return to their natural state. Others find that pressing your tongue to the roof of your mouth can expedite the pain-relieving process, but found it is not effective with everyone.

Facts about Yawning

It's all about keeping your brain at a cozy temperature. Our brain dislikes change. It likes to maintain temperature. Much like your landlord telling you not to touch the thermostat in your apartment, or your dad who has it set perfectly to maintain an affordable heating cost. Your brain has way of protecting that temperature. Generally, a yawn is to cool down the brain. Have you ever had the instance where you yawn and tell yourself you shouldn't be yawning because you're not tired? Well, you are half right. Maybe you aren't tired but yes, you should be yawning. That is your brain telling you it needs to open the window to cool down.

When you think about when you yawn, it is usually when you are tired, or bored right? Sort of, your brain is just slowing down causing a decline in temperature, triggering you to yawn to maintain the desired temperature. What about when you yawn because you saw someone else do it? Have you ever noticed most people do not yawn when watching another person yawn on television or someone much further away? It all comes down to temperature and in some cases, a spark, igniting a sequence of patterns to wake your body up. If you are sitting at a conference table and someone yawn in the room, chances are you are going to also yawn. Your brain is sharing the same environment as that person.

Yawning can have bad timing. Let's say that you are in an interview with a potential employer. You don't want to get caught yawning in the middle of your interview, so what can you do? Cool down. This can be established in even the warmest climates by finding a cooler space or drinking a cool refreshment before going in and if that doesn't work, deep breathing through your nose can help, as fresh air through your nasal passages are usually cooler than through your mouth.

Your Body Touched Something Too Hot or Too Cold and You Reacted

Your body's natural response to imminent danger. Let's say you have just stepped onto a hot coal while you are at camp. Here is what is happening. The reflex reaction part of the nervous system is unconscious. The reflex arc, or pathway, includes both afferent and efferent nerves. When a reflector and effector are linked within a neuron from the spinal cord. This causes an involuntary action of a stimulus within the muscle when it encounters something that is too cold or too hot. The brain is not utilized in this process, which is why the response is so quick, but it is soon activated to tell the rest of the body what just happened through

interconnecting neural pathways. The brain may trigger the skin to react, the blood to work it's magic and pain receptors to activate.

There are times when it is impossible to avoid such occurrences but minimizing them can be accomplished through barrier and other means. Gloves for heat or cold. Use of a device to reach an objective. Wearing appropriate footwear. Staying alert. Like riding a bicycle, once your body learns the pattern and how to respond or avoid the situation, it is something that will forever be part of your life.

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