Are your ears playing tricks on you with the "yanny" and "laurel" clip?

By National Geographic, adapted by Newsela staff

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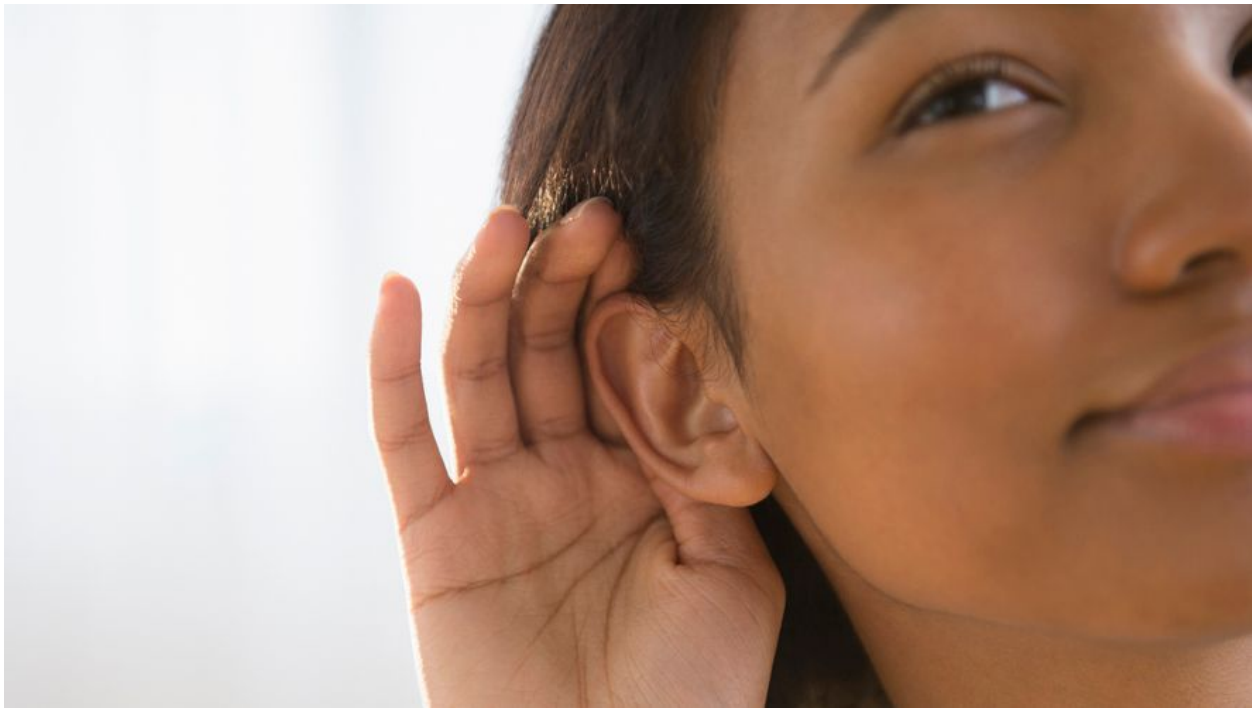

An audio clip has the world divided about what they are really hearing. Photo by: JGI/Jamie Grill/Getty Images

A four-second audio clip has started a major online debate. Some people listen and hear the word "laurel." Others hear "yanny."

By now, you may have heard the viral audio clip that, depending on the listener, sounds like one word or the other. In some cases, it sounds like both. So what weird trick of the human body is going on? What is making people hear two different words from the same audio file?

Experts say it comes down to the frequencies we hear and, perhaps more importantly, the frequencies we expect to hear. Sounds are vibrations that move through the air. The frequency is the

speed of the vibration, which determines the pitch of the sound. A high-frequency sound wave has a high pitch. Low-frequency sound has a low pitch.

Brad Story from the University of Arizona's Speech Acoustics and Physiology Lab went through the audio clip carefully. "I'm pretty sure the original recording was 'laurel,'" he says. "The reason it can be confused is that there is a family of frequencies produced by the shape of our throat and mouth."

People usually pay attention to three different frequencies when we hear words. The lowest of them determines whether we hear l or r, the consonants in "laurel." The middle frequency is what makes some people hear "yanny" because the pattern of the sound waves is similar.

Words Have Similar Sound Patterns

To test this, Story recorded his own voice pronouncing both words. He found similarities in the sound patterns for "yanny" and "laurel." Because the original audio clip isn't especially clear, it leaves room to be swayed — and that's where the mental tricks come in.

People who pick up more on lower frequencies will probably hear "laurel." People who hear "yanny" are paying more attention to the higher frequency.

"The way you hear sound is influenced by your life in sound — what you know about sound," says Nina Kraus from Northwestern University's Brain Volts lab in Evanston, Illinois. As an example, she shared two audio clips. When listening to the first one, you hear white noise. When listening to the second, you hear a clear phrase.

However, if you go back and listen to the first clip again, you'll hear that phrase.

"Part of the answer is the difference between listening and hearing," says Douglas Beck. He is a scientist at Oticon Inc., a company that makes hearing aids. Beck is also senior editor of academic sciences at the audiology magazine Hearing Review. "Most people think of hearing as occurring in the ear, but hearing and listening actually **occur** in the brain."

Many Factors Influence Listening

"Hearing is simply perceiving sound," he adds. "That is, you can hear while you're asleep," so it doesn't **require** a person to be **active**. Beck says that listening is **assigning** meaning to sound. A number of **factors** influence the many ways people listen to the same audio clip, he says. They include memory, expectations, language skills, hearing, musical skills and training, attention and more, he says.

This background effect in the brain leads to a top-down approach to listening, Story says. Your brain fills in any missing pieces with what you expect to hear, he says. Because the viral version of the audio clip isn't crisp, it leaves uncertainty, and your brain fills in the rest.

"They were primed to hear 'laurel' or 'yanny,'" says Story. "They may have made their decision for what they're listening for" before the clip was even played. To truly test how someone perceives the clip, he notes, you would have to play it without any clues and simply ask, "What do you hear?"

As the clip spreads across social media, however, it may be getting harder to find truly unbiased listeners. Many have seen or heard something to sway them.