

'Laughter Guy' dissects features of counterfeit chortling

May 2 2014, by Meg Sullivan



(Medical Xpress)—Ever wonder how often you fool your boss or in-laws by pretending to laugh at their dumb jokes?

The answer is probably just over one-third of the time, according to new research by a UCLA communication expert who has conducted research on fake laughs.

When your fake laughs fall short of convincing, tiny subtleties of your breathing are probably giving you away, suggests Greg Bryant, an associate professor of communication studies at UCLA.

"Quite a few fake laughs sound pretty good, but listeners seem to pay attention to certain acoustic features that are really hard to fake," he said.

The first scholarly exploration of the acoustic differences between fake and genuine laughter and our ability to distinguish them, Bryant's findings appear in the current issue of the journal *Evolution and Human Behavior*, now online.

As a musician and recording engineer, Bryant had a longstanding interest in music and sound even before becoming an academic. He still plays music, but also uses his skills to study the acoustic properties of baby talk across cultures, vocal changes during women's ovulatory cycle and other areas of human communication.

Although Bryant's new paper is the first in an anticipated series of studies of laughter, it builds on research he has conducted in the past on the vocal signals of sarcasm.

"I'm turning into the 'Laughter Guy,'" he said.

For the study, Bryant recorded the spontaneous conversations of college roommates. From these recordings, he collected 18 spontaneous laughs, which he considered to be genuine. He then enlisted a different group of co-eds to laugh on command. From this exercise, he recorded 18 fake laughs of the same length as the real ones.

With Athena Aktipis, a research scientist at UC San Francisco, he then played the recordings to three groups of UCLA undergraduates. In the first round, the participants were asked to determine whether the laughs were real or fake, and the students could usually tell the difference. But they were fooled by 37 percent of the fake laughs.

In the second round, the researchers sped up the recordings and played them to a different group of college students. Speeding up the laughter significantly increased the likelihood that both kinds of laughs were judged as genuine, the researchers found. When sped up, the fake laughs fooled the study subjects half the time.

In the final round, Bryant and Aktipis dramatically slowed down the recordings and played them to yet another group of participants. Instead of asking whether the laughs were real or fake, the researchers asked the students to figure out whether the sounds were made by humans or nonhuman animals. As it turns out, the students couldn't tell whether genuine laughs were human or not, but they could tell that the fake laughs were made by people.

Bryant believes that the research illustrates that the two types of laughs—real and fake—are made by two separate vocalization systems.

Many animals laugh, but only humans know how to fake it

"Genuine laughs are produced by an emotional vocal system that humans share with all primates, whereas fake laughs are produced by a speech system that is unique to humans," he said. "Altering the speeds of the two types of laughs helps highlight the distinct properties of both vocal systems."

It's no accident that real laughs are associated with the vocal system shared with other animals, he said. Many animals laugh, including chimps, gorillas and orangutans.

"Across the animal kingdom, laughter signals, 'We're in a play mode,'" Bryant explained. "In fact, laughter is thought to have evolved from labored breathing during physical play. In this way, genuine laughter reveals our animal nature."

Bryant analyzed the acoustic features of the two kinds of laughs. Both consist of two parts: the vowel sounds in "Ha, ha, ha" and the breathy sounds of air between those vowel sounds. Combined, the two parts constitute what researchers describe as a "call."

He found that with real laughs, the proportion of breathy parts in the call was consistently greater than with fake ones. Bryant attributes that to the particularities of the emotional vocal system. The emotional vocal system has more efficient control over the opening and closing of the windpipe, thus allowing people to emit air rapidly during genuine laughs. In fact, during genuine laughs, the windpipe can open and shut at a rate that approaches the apparatus's maximum potential, researchers have found.

In contrast, the speech system, which is responsible for fake laughs, controls the dynamics of the vocal tract differently and can't open and close the windpipe as quickly. By speeding up a recordings of fake laughs, Bryant and Aktipis were able to make the speech system sound like it was opening and closing the windpipe at a much faster rate than it typically can. Under that condition, fake laughs sound much more like laughs produced by the emotional vocal system.

Humans, Bryant says, have evolved a particular sensitivity to fake laughs because the stakes of making a mistake can be very high. Researchers have found that genuine laughter releases the soothing hormone oxytocin, which promotes a feeling of affiliation and cooperation. False laughter that succeeds in passing as the real thing can therefore be used to take advantage of another person.

"You have to be vigilant, because you want to discern whether people are trying to manipulate you against your best interests or whether they have authentic cooperative intentions," Bryant said.

But evolution works in the opposite direction as well, he warns, spurring humans to produce pretty convincing faux guffaws as rapidly as it trains them to identify phonies.

"This arms race has developed," Bryant said. "Fakers try to make a good fake laugh and people need to be vigilant about that."

Provided by University of California, Los Angeles

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