

Wrong laugh leaves chimps speechless

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TICKLISH chimps have revealed one important reason why our closest evolutionary relatives can't speak. After studying their laughter, an American psychologist has concluded that chimps are physiologically incapable of speech.

Naturalists know that laughter is not the preserve of humans. "Darwin mentioned that chimps produced a laughter-like vocalization when tickled," says Robert Provine of the University of Maryland Baltimore County. But until Provine teamed up with Kim Bard, who looks after young chimps at the Yerkes Regional Primate Center in Atlanta, no one had studied the behaviour in any detail.

"If you tickle a chimp, it produces what's called the play face," says Provine. This open-mouthed expression is accompanied by a panting vocalisation. "It sounds like a handsaw cutting wood."

Provine compared this laughter with the human version. When people laugh, the typical "ha, ha, ha" sound is made by punctuating a single exhalation. During this vocalisation, the muscles of the diaphragm relax steadily. Tickled chimps produce only one pant per inhalation or exhalation. As they laugh, their abdomens pulse rapidly.

Like human laughter, speech also requires the ability to shape each exhaled breath. "In speech, you're essentially chopping an exhalation," says Provine, who argues that his experiments show that chimps lack the fine control over the diaphragm and other muscles involved in breathing that is necessary for speech. "We were able to evolve language because we were able to break through those restrictions," he says.

Provine believes that the tight coupling between breathing and vocalisation in chimps is the main reason why no one has been able to teach the animals to speak. In the 1940s, for instance, Catherine and Keith Hayes of the Yerkes Laboratory of Primate Biology in Orange Park, Florida, spent years trying to teach a chimp called Gua to speak English. They succeeded only in persuading Gua to learn a few barely recognisable, simple words. Attempts to teach chimps sign language, however, have met with much more success, indicating that their lack of a spoken language is not primarily due to any major shortcomings in their mental ability to process language.

"The biggest limitation does seem to be the neurological control of the flow of air," agrees Sue Savage-Rumbaugh of Georgia State University in Atlanta, who experiments with sign language in the closely related bonobo or pygmy chimp. But she adds that onobos produce a wider range of vocalisations than the common chimps studied by Provine. These sounds could represent a rudimentary spoken language, Savage-Rumbaugh suggests.

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