

UCSD psychologists tackle ticklish subject

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Although the giddy laughter produced by "Tickle-Me-Elmo" can be traced to electronic gadgetry in the doll itself, little is known about why humans smile, laugh and otherwise squirm when tickled.

Now, however, a team of psychologists at the University of California, San Diego has begun to tackle this...well, ticklish subject in a scholarly way.

The results are touching on the true nature of a sensation that has mystified philosophers and students of human behavior for centuries, from Socrates and Galileo to Bacon and Darwin.

"Even though tickling seems light-hearted, almost silly, people have wondered about it for a long time," said Christine Harris, a UCSD psychology graduate student who co-authored two recent studies on the subject with Nicholas Christenfeld, assistant professor of psychology. "People want to know why we laugh and smile even though most report they don't like it."

The studies suggest that tickling is a reflex action, somewhat akin to the jerking response experienced when your knee is hit by a rubber mallet in just the right spot. With tickling, instead, you burst into smiles or laughter and sometimes squirm or pull your body away to get away from the source of the tickling.

Further, even though the response from tickling is outwardly gleeful, the inward feeling is not mirthful, unlike when you have just heard a good joke. Instead, the feeling may be more closely aligned with other emotions such as social anxiety or nervous laughter.

"An analogy would be crying," said Harris. "There's crying at a funeral and crying from cutting onions. Although there's a common physiological reaction between the two types of tears, you don't think of them as at all similar. The only thing shared is the facial expression."

The fact that laughter and smiling derived from humor and tickling have very little in common is supported by a study by the UCSD psychologists, published this month in the journal *Cognition and Emotion*, involving 72 undergraduate students (48 female and 24 male, ages 18-41).

The study group was divided into thirds, each exposed to different experimental conditions. The first group was asked to view a 14-minute videotape of stand-up comedy from "The Best of Saturday Night Live," after which each would be tickled by a research assistant; the second group was tickled first, and then shown the same comic routine; a third, a control group, was shown a nature video, followed by tickling. Measures of tickle included time spent smiling, laughing, wiggling, or asking for the activity to be terminated. Tickling took place over several parts of the body, from the bottom of the foot to parts of the torso to the wrists and palms.

The goal was to see what, if any, relationship existed between tickling and mirth. Specifically, the researchers wanted to explore whether tickling would create a "warm-up effect," where a subject's response to humor increases as he or she hears more jokes or sees more cartoons. This warm-up effect presumably is the reason that the best comedian in a comedy club gets to perform last. The researchers reasoned that if tickling and humor shared the same common underlying emotion (presumably mirth), then one might expect that watching a funny film should increase laughter and smiling to subsequent tickling, and vice versa.

However, the study found that neither effect occurred, supporting the view that tickling and humor do not share the same underlying emotion. In fact, the subjects generally reported that they did not find the experience at all positive, even though they smiled and laughed during the exercise. One of the subjects referred to being tickled as "torture," although she laughed.

Results of the UCSD studies also are dispelling some long-held beliefs about tickling. For example, it's been generally thought that only family or close friends could elicit the laughter and smiles normally associated with tickling. For example, Charles Darwin thought a child would squeal with fear rather than with laughter, if he or she were tickled by a stranger. Francis Bacon, in contrast said, that when tickled "men even in a grieved state of mind, yet cannot forbear laughing."

With the help of a device set up to mimic a "tickle machine," the UCSD researchers demonstrated that tickling is not a social activity. The machine was designed to look and sound like a robotic hand, with each of the five digits seemingly capable of independent movement. The hand was attached to a long flexible hose which, in turn, was connected to what appeared to be a power source of the machine--a metal box about the size of an IBM PC computer. Inside this box was a breathing machine used for therapy for asthmatics which, when turned on, produced a vibrating sound that could be identified as a genuine robotic arm. Both the hand and hose were suspended in front of the subject's foot by a hard plastic loop that was attached to the leg of an adjacent table. The loop would enable the hand and hose to move freely while keeping them in vicinity of the subject's foot. A video camera recorded subjects' facial expressions, body movements, and sounds during the testing session.

Subjects were asked to sit in the chair in front of the tickle machine. The experimenter explained that the subject would be tickled twice, once by the experimenter and once by the machine. The subject was asked to wear earplugs and a blindfold, allegedly so the subject would pay close attention to the tickle without distraction. However, the subject could still hear instructions and noise from the tickle machine.

What the subjects did not know was that the tickle machine was merely a ruse and that actual tickling was conducted by a research assistant who was hiding under a large table covered by a floor-length table cloth. To perform the tickling, the research assistant merely lifted the table cloth a few inches and reached out to the subject's foot. This allowed the researchers to simulate the actual physical stimulation.

Thirty-four undergraduate students (20 female and 14 male) participated in the study, ages ranged from 18-28. The results clearly showed that the subjects smiled, laughed, and wiggled even when they thought they were being tickled by a tickle machine, rather than the research assistant.

"Most people believe that at least some element of the social situation is required for people to laugh and smile, and have suggested that's why you can't tickle yourself," said Harris.

"We wanted to see whether people, who thought they were alone and were being tickled by a machine, would still laugh. They did. So basically, there was no effect of the social situation."

Harris noted that the results are in line with Francis Bacon's views of tickle, but do not support Darwin's speculations.

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