

Laughter perception networks in brain different for mocking, joyful or ticklish laughter

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A laugh may signal mockery, humor, joy or simply be a response to tickling, but each kind of laughter conveys a wealth of auditory and social information. These different kinds of laughter also spark different connections within the "laughter perception network" in the human brain depending on their context, according to research published May 8 in the open access journal *PLOS ONE* by Dirk Wildgruber and colleagues from the University of Tuebingen, Germany.

Laughter in animals is a form of social bonding based on a primordial reflex to tickling, but human laughter has come a long way from these playful roots. Though many people laugh when they're tickled, 'social laughter' in humans can be used to communicate happiness, taunts or other conscious messages to peers. Here, researchers studied participants' neural responses as they listened to three kinds of laughter: joy, taunt and tickling.

"Laughing at someone and laughing with someone leads to different social consequences," says Wildgruber. "Specific cerebral connectivity patterns during perception of these different types of laughter presumably reflect modulation of attentional mechanisms and processing resources.

The researchers found that brain regions sensitive to processing more complex social information were activated when people heard joyous or

taunting laughter, but not when they heard the 'tickling laughter'. However, 'tickling laughter' is more complex than the other types at the acoustic level, and consequently activated [brain regions](#) sensitive to this higher degree of acoustic complexity. These dynamic changes activated and connected different regions depending on the kind of laughter participants heard. Patterns of brain connectivity can impact cognitive function in health and disease. Though some previous research has examined how speech can influence these patterns, this study is among the first few to examine non-verbal vocal cues like laughter.

More information: Wildgruber D, Szameitat DP, Ethofer T, Bruck C, Alter K, et al. (2013) Different Types of Laughter Modulate Connectivity within Distinct Parts of the Laughter Perception Network. *PLoS ONE* 8(5): e63441. [doi:10.1371/journal.pone.0063441](https://doi.org/10.1371/journal.pone.0063441)

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