



Why Do We Laugh?

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Laughter is universal across all human cultures and yet is one of the most poorly understood of our emotions. We laugh in response to a bizarre array of stimuli – some of which are common to all societies, whilst others are culture-specific. In all cases, though, the act of laughter is a very visible and spontaneous display of emotion that has a more profound impact on social interaction than you might think.

What purpose does laughter serve?

Aristotle saw laughter as a defining feature of humanity—something that sets us apart from other animals. Whilst it is true that ‘humour’ in its fullest sense appears to be human-specific, some other species nonetheless show physiological responses that resemble human laughter, suggesting that at least the physical mechanism to generate laughter is not unique to humans.

Today, psychologists recognise a small number of discrete circumstances that trigger laughter in most people.

Incongruity theory proposes that laughter arises when there is a mismatch between our expectations and reality. As the brain reconciles the discrepancy and realises it is non-threatening, laughter is triggered as a visible signal of relaxation. For example, jokes often rely on a punchline that can be interpreted in two ways (Such as the award-winning one-liner “*I used to date a zookeeper, until I discovered she was a cheetah*”). Once the cognitive shift is resolved, laughter follows.

Laughter also appears to be important for **social bonding**, particularly in circumstances of relief. Freud believed that laughter served as a kind of ‘pressure valve’, releasing stress or social anxiety – the classical nervous laughter of the exam waiting room. This also explains why many things that we find funny are, at face value, actually stressful. For instance, the laughter of a fairground haunted house, or in response to the trips and bumps of a slapstick comedy routine. In this context, laughter is a visible signal to others that the apparent ‘threat’ is actually harmless, leading to enhanced social bonding with others who have experienced the same threat. In ancestral environments, laughter likely served as a nonverbal signal of playfulness and safety, helping individuals form alliances and reduce aggression. The evolutionary psychologist Robin Dunbar has argued that laughter triggers endorphin release, producing feelings of warmth and trust within groups—much like grooming does among primates.

You laugh, I laugh

One of the most powerful effects of laughter is to induce the same state in others. We have all experienced the urge to laugh when others start to do so, even if we sometimes don't know the original reason for the laughter. This 'copycat' laughter is thought to be driven by a group of nerve cells known as 'mirror neurons', whose function is to fire both when we are performing an act ourselves (raising an arm, for instance) and when we see others doing the same action. It is mirror neurons that induce babies to stick their tongue out if they see a parent doing it, and similarly mirror neurons are implicated in the (sometimes irrepressible!) desire to laugh when we see or hear others laughing. This instinct is so powerful that we don't simply mirror other humans laughing, but anything that appears to resemble human laughter – something that the makers of animated cartoons exploit to great effect (think of the hysterical laughter of the Minions, or Muttley the dog, for instance).

Where does a laugh start?

Laughter is both a conscious experience and an involuntary reflex, meaning that it involves multiple levels of brain processing. The prefrontal cortex, located at the front of the brain, is central to interpreting humour. It helps detect incongruity and assess context—deciding whether something is funny or appropriate to laugh at. Once a stimulus is recognised as humorous, emotional processing takes place in the limbic system, particularly the amygdala, hippocampus, and hypothalamus. These regions generate the emotional colouring of laughter—its joyful or relieved quality—and connect it to memory and social meaning.

Once the brain has 'decided' to laugh, the physical act of laughing—vocalising, breathing irregularly, and contracting facial muscles—is coordinated by motor areas in the brainstem, especially the periaqueductal gray and pons. These areas integrate voluntary control (as when we politely chuckle) and involuntary control (as in spontaneous fits of laughter). The cerebellum also contributes by coordinating the timing and rhythm of laughter.

This complexity means that laughter can also go wrong: patients with brain lesions in the frontal lobes may laugh inappropriately, while those with damage to subcortical regions may lose the ability to laugh naturally even though they still understand humour.

Tickling – the dark side of laughter

Tickling provides one of the most ancient and intriguing triggers of laughter. Unlike laughter at humour, ticklish laughter is almost entirely involuntary and appears early in development. It is also the only type of 'laughter' that is clearly present in other animals – great apes, such as chimpanzees, tickle each other, and even rats respond to tickling with ultrasonic 'giggles'. The reason for ticklishness remains unclear. Light touch stimulates nerve endings—especially in sensitive areas like the ribs, armpits, and soles of the feet—activating both the somatosensory cortex (which processes touch) and the anterior cingulate cortex, associated with emotional processing. The combination of mild discomfort, unpredictability, and social play triggers laughter as a reflexive response. But it is particularly enigmatic that people laugh even if they find tickling unpleasant, suggesting that this physical input somehow 'short circuits' normal cognitive processing to drive the physiological response of laughter directly.

Laughter is the best medicine

Beyond its social and emotional significance, laughter produces a range of measurable physiological benefits for the body. It engages multiple systems—respiratory, cardiovascular, endocrine, and immune—and has been linked to both short-term and long-term health improvements. Laughter involves rhythmic contractions of the diaphragm and intercostal muscles, leading to deep inhalations and exhalations. This temporarily increases oxygen intake and stimulates circulation. Studies have shown that hearty laughter can cause a mild increase in heart rate and blood pressure, followed by a relaxation phase—similar to the effects of moderate exercise. As a result, recent small-scale studies have indicated significant health improvements in patients with cardiovascular disease who were ‘prescribed’ twice weekly comedy shows.

Laughter also reduces levels of stress hormones such as cortisol and adrenaline, while increasing the release of endorphins such as endogenous opioids. These biochemical changes not only elevate mood but may also enhance immune function. Volunteers exposed to comedy clips showed significant improvement in the activity of natural killer cells (a white blood cell type that functions to destroy virally-infected or cancerous cells). Conversely, patients with rheumatoid arthritis (an inflammatory condition) showed a significant drop in inflammatory cytokine levels after watching programmes that caused them to laugh.

Perhaps most interesting of all, though, is the impact of laughter on cognition. Volunteers who viewed video clips designed to make them laugh showed subsequent improvements in a range of mentally-challenging tasks, such as serial subtraction or image pattern recognition, whereas no such improvement was seen in volunteers who watched ‘heart-warming’ stories instead.

Overall, with such a wide range of physiological benefits, it’s clear that the idea of laughter as therapy is no joking matter...

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