A good laugh with others really does ease the pain, says study

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Having a good laugh with friends really does help us to deal with pain, suggests a new study.

The international research team, led by Oxford University, found that when we laugh properly, as opposed to producing a polite titter, the physical exertion leaves us exhausted and thereby triggers the release of protective endorphins.

These endorphins, one of the complex neuropeptide chemicals produced in the brain, manage pain and promote feelings of well being.

According to the team’s research paper, published online in Proceedings of the Royal Society B, watching just 15 minutes of comedy with others increased the pain threshold by an average of about ten per cent.

The fact that only this type of laughter releases endorphins has probably evolved as a way of promoting socialising amongst humans, says the paper.

It points out that many studies have already shown that laughter is 30 times more likely to occur if you are with others than when alone.

The endorphin rush appears to be limited to a good belly laugh, shared with others.

The research paper makes an important distinction between relaxed, unforced laughter that creases the eyes, and polite laughter which does not reach the eyes.

It concludes that when we laugh properly we produce a series of exhalations without drawing breath, an involuntary physical mechanism that is limited to humans and appears to trigger the release of endorphins.

Laughter is important to other great apes too but they breathe in as well as out when they laugh, unlike humans.

The paper is based on more than ten years of research in which different experiments were staged to discover what determined our level of pain tolerance.

Subjects were asked to watch TV clips or live staged shows, and their pain thresholds were measured before and after doing this using a number of different pain manipulations (ice-cold sleeves, pressure from a blood pressure cuff, and a painful, strenuous quad work-out).

The participants watched 15 minute clips from comedies like Mr Bean and Friends, and these were contrasted with clips on how to play golf or factual programmes, both designed to elicit a neutral response.

In other experiments, they watched nature programmes designed to produce a positive, ‘feel-good’ quality; however, like the golf instruction clips, these did nothing to increase the pain threshold, suggesting that it is the endorphin-activating effects of laughter itself that is important, not just the feel-good factor.

Another experiment compared the pain thresholds of participants who had watched stand-up comedy at the Edinburgh Fringe Festival with those who sat through staged dramas.

This experiment confirmed that the pain tolerance effect of shared laughter is not just something confined to the laboratory, but occurs in real life too.

Lead author Professor Robin Dunbar, Head of the Institute of Social and Cultural Anthropology at the University of Oxford, said: ‘Very little research has been done into why we laugh and what role it plays in society.

Using microphones, we were able to record each of the participants and found that in a comedy show, they laughed for about a third of the time, and their pain tolerance rose as a consequence.

We think that it is the bonding effects of the endorphin rush that explain why laughter plays such an important role in our social lives.’

In both primates and humans, laughter has been found to play an important role, yet has received very little attention in academic literature.

This latest paper supports other work by Professor Dunbar that suggests the importance of group activity in producing endorphins.

A previous study by Professor Dunbar and Dr Emma Cohen found that members of a rowing team increased their pain tolerance by training as a group rather than as individuals.

Other communal activities like music making, dancing and religious rituals have also been shown to create euphoric states which, according to some studies, can also be associated with the release of endorphins.

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**Notes for editors**

* The paper ’Social laughter is correlated with an elevated pain threshold’ by Robin Dunbar et al will be published in the online version of Proceedings of the Royal Society B on 14 September 2011.
* The research collaboration involved Robin Dunbar, Rebecca Baron, Anna Frangou and Eiluned Pearce from the University of Oxford; Mark van Vugt and Edwin van Leeuwen from the VU University Amsterdam;  Julie Stow, Giselle Partridge and Vincent Barra from the University of Liverpool; and Ian MacDonald from Binghamton University, US.
* The research is funded by the British Academy Centenary Research Project, ‘Lucy to Language: the Archaeology of the Social Brain’.Lucy to Language: The project aims to explore how the early hominid brain evolved from its essentially apelike beginnings among the earliest australopithecines (ca 3-5 million years ago) to the modern human potential of the ‘Upper Palaeolithic Revolution’ (ca 50,000 years ago) and its final expression in the dramatic social and economic changes of the last 10,000 years. See: Lucy to Language: The Archaeology of the Social Brain’.  
    
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