



Pain-Induced Laughter: An Evolutionary Explanation & Proposed Mechanism



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(1) ABSTRACT

The present study explores a proposed mechanism for how the association between laughter and pain may have evolved. In highlighting this mechanism, we link research on the evolution of laughter with endogenous pain reduction to propose a model that argues that laughter became a conditioned response to pain.

(2) INTRODUCTION

- Laughter is a method of psychological or physical discomfort reduction (albeit, less intuitive than typical methods such as screaming, gritting one's teeth, or distracting oneself).
- Recent research highlights the healing nature of laughter through reductions in stress, pain, and discomfort.
- This narrative review aims to determine how laughter might have come to serve this function, and explore practical applications of such a mechanism.

(3) EVOLUTION OF LAUGHTER

- Play improves social bonds (Held & Spinnaker, 2011), often induces pain, and releases endorphins (Schwarz & Kindermann, 1992).
- Relaxed open-mouth (ROM) display (a monkey play invitation) and heavy breathing are evidence in early play of a primitive form of laughter.
- This relationship between laughter and early play demonstrates that laughter might have co-evolved with play to have similar benefits (Gervais & Wilson, 2005).
- Laughter may reduce pain via play-associated endorphin release.

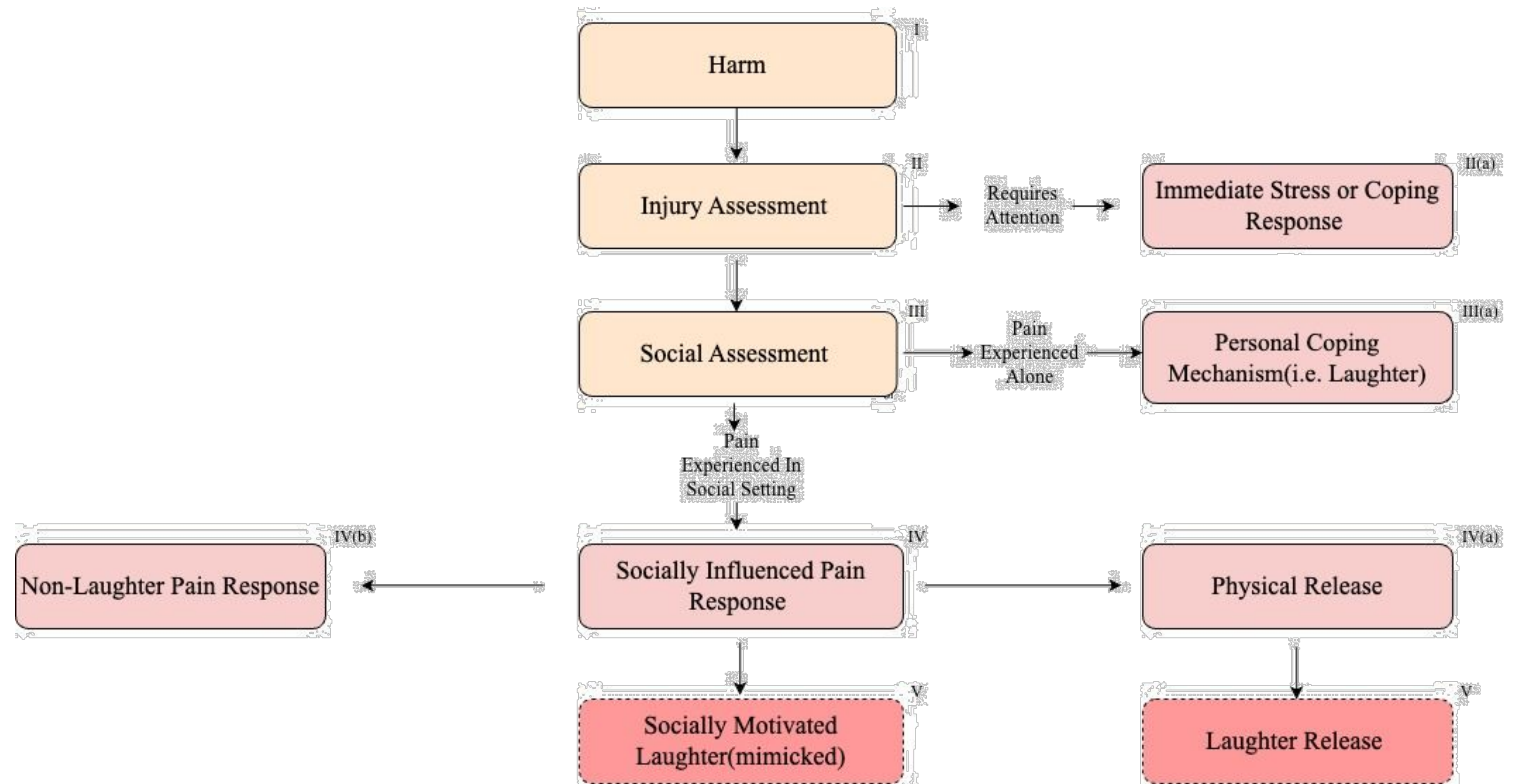
(4) USE OF LAUGHTER

- Vocal control including ROM display led to the ability to imitate laughter for social benefit.
- Imitated laughter can be socially advantageous by facilitating social interaction and enhancing likeability and affiliation (Chartrand & van Baaren, 2009).
- Imitated laughter can be used when at risk for social discomfort or to put others at ease in tense interactions.
- Imitated laughter reaps the same pain-reducing benefits as natural laughter.

(6) DISCUSSION

- Laughter facilitates communication between ourselves and our social environments, but it is also a coping mechanism due to its pain-reduction properties.
- Future research could explore laughter as a social strategy related to psychological discomfort such as embarrassment, or the efficacy of laughter in reducing different types of physical pain.
- Eventually, this self-induced mechanism may be expanded to include why we laugh at others' pain.

(5) PROPOSED MECHANISM



- I. Harm includes any situation that is deemed uncomfortable, physical or emotional.
- II. In injury assessment, an individual evaluates their current health and risk of danger or further injury.
 - A. If the situation requires immediate action, then that person's immediate stress response will occur (Cannon, 1915).
- III. In social assessment, an individual processes the presence of witnesses and their implications.
 - A. If the pain were to be experienced alone, then that individual's natural personal coping mechanism would occur. This may include laughter.
- IV. If a socially influenced pain response occurs, then natural responses may be altered or suppressed.
 - A. After social influence, a natural physical expression or release of pain may still occur. This could include laughter (V).
 - B. A non-laughter socially motivated alternative coping mechanism may also occur.
- V. Laughter may occur after pain due to social influence and possibly the desire to ease tension.