DOCUMENT SUMMARY

This research article investigates the common assumption that swearing is a maladaptive response to pain. The study finds the opposite is true: swearing significantly increases pain tolerance and decreases perceived pain, likely by inducing a fight-or-flight response. This is critically relevant to Enlitens' mission as it provides direct evidence against pathologizing unconventional coping mechanisms and supports the principle that behaviors often deemed "maladaptive" can have a valid, functional, and neurobiological basis.

FILENAME

Stephens_2009_Swearing_as_pain_response_relevance_to_pathologizing_coping_mechanisms

METADATA

- **Primary Category**: RESEARCH
- **Document Type**: research_article
- **Relevance**: Supporting
- **Key Topics**: pain_response, coping_mechanisms, emotional_regulation, catastrophizing, neurobiology, sex_differences, trauma_response
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CRITICAL QUOTES FOR ENLITENS

- "Anecdotally (we found no supporting evidence in the literature), some pain theorists view swearing as a sign of 'pain-related catastrophising', which may be defined as a maladaptive response in which negative and unhelpful thoughts and ideas are brought to bear when pain is experienced [6]."
- "We wondered why swearing, a supposedly maladaptive response to pain, is such a common pain response."
- "we carried out an experiment to test the as yet unvalidated hypothesis that swearing, being a maladap- tive response to pain, would decrease pain tolerance and increase pain perception compared with not swearing."
- "Swearing increased pain tolerance, increased heart rate and decreased perceived pain compared with not swearing."
- "This experiment tested the hypothesis that swearing, an assumed maladaptive pain response, would decrease pain tolerance and increase pain perception compared with not swearing. In fact, the opposite occurred - people withstood a moderately to strongly painful stimulus for significantly longer if they repeated a swear word rather than a nonswear word."

- "We interpret these data as indicating that swearing. rather than being a maladaptive pain response actually produces a hypoalgesic (pain lessening) effect."
- "Fear of pain predicted perceived pain in the nonswearing condition, consistent with previous research [20]. However, fear of pain did not predict perceived pain in the swearing condition. This interesting finding suggests that a part of the hypoalgesic effect of swearing may be because of the amelioration of that part of increased pain perception that is brought about by fear of pain, although further research would be required to investigate this further."
- "In considering its neurobiological underpinnings Pinker [4] suggests that swearing aloud may tap into deep and ancient parts of the emotional brain', particularly the limbic system and the basal ganglia of the right hemisphere."
- "Rhudy and Meagher [21,22] suggest that hypoalgesia occurs only if the negative emotion experienced in the context of a painful stimulus is sufficiently strongly felt to cause fear rather than anxiety."
- "The heart rate acceleration after swearing observed in this study is consistent with activation of the fight or flight response."
- "Swearing in these contexts may serve to raise levels of aggression, downplaying feebleness in favour of a more pain-tolerant machismo, most likely mediated by classic fight or flight mechanisms [24]."
- "This study has shown that, under certain conditions, swearing produces a hypoalgesic effect."

KEY STATISTICS & EVIDENCE

- **Overall Effect of Swearing**: Swearing increased pain tolerance, increased heart rate, and decreased perceived pain compared with not swearing.
- **Cold-Pressor Latency (Pain Tolerance)**:
    - There was a main effect of swearing, with longer latencies (higher tolerance) in the swearing condition ($F(1.65)=89.749$, $P<0.001$).
    - There was a main effect of sex, with longer latencies in males than females ($F(1.65)=11.789$, $P=0.001$).
    - Swearing Condition (males): 190.63 seconds.
    - Nonswearing Condition (males): 146.71 seconds.
    - Swearing Condition (females): 120.29 seconds.
    - Nonswearing Condition (females): 83.28 seconds.
- **Perceived Pain**:
    - There was a main effect of swearing, with lower perceived pain in the swearing condition ($F(1.65)=98.569$, $P<0.001$).
    - A significant swearing by sex interaction was found ($F(1.65)=9.159$, $P=0.004$).
    - Both sexes experienced a reduction in perceived pain while swearing, but females did so to a greater extent.
- **Heart Rate**:
    - There was a main effect of swearing, with heart rate increasing in the swearing condition ($F(1.65)=150.774$, $P<0.001$).

    - A significant swearing by sex interaction was found ($F(1.65)=15.019$, $P<0.001$).
    - Swearing increased heart rate in both sexes, but more so for females compared with males.
- **Interaction with Catastrophising**:
    - The three-way interaction of swearing, sex, and catastrophising significantly predicted cold-pressor latency ($F(1.63)=7.754$, $P=0.007$).
    - Catastrophising predicted decreased pain tolerance (latency) in swearing males but not in nonswearing males or in females.
- **Interaction with Fear of Pain**:
    - The fear of pain by swearing interaction predicted perceived pain ($F(1.64)=5.621$, $P=0.021$).
    - Fear of pain predicted perceived pain in the nonswearing condition but not in the swearing condition.

METHODOLOGY DESCRIPTIONS

- **Design**: A repeated measures design was used where pain outcomes were assessed in participants who were asked to repeat a swear word versus a neutral word. Condition order was randomized.
- **Participants**: 67 undergraduate students (38 males, 29 females). The Keele University School of Psychology Research Ethics Committee approved the study.
- **Word Selection**: Participants were asked for 'five words you might use after hitting yourself on the thumb with a hammer' and used the first swear word on the list. For a control, they were asked for 'five words to describe a table' and used the word whose position corresponded with the swear word.
- **Pain Induction (Cold-Pressor Task)**: The 'cold pressor' paradigm was employed. This laboratory procedure requires participants to submerge one hand in ice-cold water ($5\circ C$) until discomfort necessitates removal. Submersion latency is recorded as an index of pain tolerance. A 5-minute time limit was imposed.
- **Measurements**:
    - **Pain Tolerance**: Measured as the submersion latency in the cold-pressor task.
    - **Pain Perception**: Assessed using the Perceived Pain Scale (PPS) immediately after each cold-pressor submersion.
    - **Heart Rate**: Measured using a Polar FS1 monitor to assess autonomic arousal. It was recorded at rest and at the end of each cold-pressor submersion.
    - **Covariates**: The study measured and controlled for pain catastrophising, fear of pain, and trait anxiety. The Pain Catastrophising Questionnaire, the Fear of Pain Questionnaire Version 3, and the Spielberger State-Trait Anxiety Index were administered at the start of the session.

THEORETICAL FRAMEWORKS

- **Hypoalgesia via Fight-or-Flight Response**: The paper theorizes that the pain-lessening (hypoalgesic) effect of swearing occurs because it induces a fight-or-flight

response. The observed increase in heart rate during the swearing condition is consistent with the activation of this response.
- **Neurobiology of Swearing and Emotion**: The discussion cites Pinker's suggestion that "swearing aloud may tap into deep and ancient parts of the emotional brain', particularly the limbic system and the basal ganglia of the right hemisphere." This connects the act of swearing to core emotional processing centers.
- **Fear vs. Anxiety in Pain Perception**: The paper draws on the work of Rhudy and Meagher, who propose that hypoalgesia (pain reduction) occurs when a negative emotion is strong enough to cause fear (an immediate alarm reaction to present threat), which activates a fight-or-flight response. This is contrasted with anxiety (a future-oriented emotion), which leads to hypervigilance. The authors suggest swearing may induce an immediate alarm reaction similar to fear.
- **Aggression as a Mediator**: The paper speculates that aggression may be the specific emotion elicited by swearing that produces the hypoalgesic effect. "Swearing in these contexts may serve to raise levels of aggression, downplaying feebleness in favour of a more pain-tolerant machismo, most likely mediated by classic fight or flight mechanisms [24]."

POPULATION-SPECIFIC FINDINGS

- **Overall Sex Differences**:
    - Males showed longer pain tolerance (cold-pressor latency) than females in both swearing and nonswearing conditions.
    - While both sexes experienced reduced perceived pain when swearing, females showed a greater reduction.
    - While both sexes showed an increased heart rate when swearing, females showed a greater increase.
- **Sex Differences in Catastrophising**:
    - Females reported significantly higher scores on the Catastrophising Score and Fear of Pain score than males.
    - The hypoalgesic effect of swearing was present in females regardless of their tendency to catastrophise.
    - In males, the hypoalgesic effect of swearing "dissipated as the tendency to catastrophise increased."
    - The study confirmed previous findings that male participants generally showed lower levels of catastrophising than females.
- **Sex Differences in Fear of Pain**:
    - Fear of pain predicted decreased pain tolerance (latency) in males but not in females.

PRACTICAL APPLICATIONS

- **Challenging Pathologization**: This study provides direct evidence to challenge the view of swearing as merely a "maladaptive" or "catastrophising" response to pain. It demonstrates a clear, measurable, and positive function (pain reduction).
- **Understanding Coping Mechanisms**: The findings suggest that swearing is a functional coping mechanism that nullifies the link between fear of pain and the

perception of pain. It activates the body's natural pain-inhibitory systems via the fight-or-flight response.

- **Conclusion**: "This study has shown that, under certain conditions, swearing produces a hypoalgesic effect. Swearing may have induced a fight or flight response and we speculate on a role for aggression in this. In addition swearing nullified the link between fear of pain and pain perception."