Do psychological traits associated with eating disorders influence pain sensitivity?
Kara L. Kerr, B.A., Shreela Palit, B.S., Ellen L. Terry, M.A., & Jamie L. Rhudy, Ph.D.
Department of Psychology, The University of Tulsa, 800 South Tucker Drive, Tulsa, OK 74104

Introduction

Studies have shown that both anorexia nervosa and bulimia nervosa are associated with decreased pain sensitivity. However, past studies have limited comparisons to group differences between clinical and healthy samples, and the mechanism(s) behind these pain sensitivity differences have yet to be established. Therefore, it is not yet known if only certain eating disorder traits contribute to decreased pain sensitivity. Prior studies have also relied exclusively on subjective reactions in response to thermal and pressure pain stimuli. Because eating disorders are associated with both psychological and biological abnormalities, assessing both subjective and physiological pain outcomes can help to elucidate the factors contributing to the relationship between eating disorders and pain processing. The present study examined the relationship between different eating disorder traits and measures of pain processing, including the nociceptive flexion reflex (NFR).

Objective

To determine the relationships between pain sensitivity and psychological traits associated with eating disorders.

Participants

Healthy participants: N = 29
- Participant characteristics: white, non-Hispanic (79%), single (83%), unemployed (52%), average years of education = 15.13 (SD = 1.68), average age = 21 yrs (SD = 2.43)
- Exclusion Criteria:
  - Age < 18 years
  - BMI > 35
  - Recent psychological trauma
  - Current diagnosis of anorexia nervosa
  - Chronic pain condition (e.g., back pain)
  - Cardiovascular, neurological, and/or circulatory problems
  - Current acute illness

Procedure

- Healthy participants

Eating Disorders Inventory - 3
- 91 item self-report questionnaire
- Measures eating disorder symptoms and psychological traits associated with eating disorders
- 12 subscales

Subscales
- Drive for Thinness - extreme desire to be thinner
- Bulimia - thinking about and engaging in binge eating, eating in response to being upset
- Body Dissatisfaction - discontentment with the size and shape of particular body regions
- Low Self-Esteem - negative self-evaluation
- Interpersonal Alienation - disappointment, estrangement, and distrust in relationships
- Interpersonal Insecurity - social discomfort, difficulties discussing personal thoughts and feelings with others
- Asceticism - tendency to engage in self-denial as a spiritual ideal
- Maturity Fears - desire to return to childhood

Data Analysis

- Percentage bend correlations used to examine the relationships between pain sensitivity measures and EDI-3 subscales
- Robust correlation that lessens the influence of outliers

Pain Ratings

- Pain ratings made following each stimulation using a computer-presented, vertically-oriented scale
- Bottom-to-top, scale labeled: 0 (no sensation), 1 (just noticeable), 25 (uncomfortable), 50 (painful), 100 (maximum tolerable)
- Used as a measure of subjective pain
- Pain threshold at rating of 50
- Pain tolerance at rating of 100

Results

- EDI-3 subscale - NFR threshold - Pain threshold - Pain tolerance
- Drive for Thinness - .16 - .08 - .27
- Bulimia - .00 - .11 - .27
- Body Dissatisfaction - .12 - .32 - .46*
- Low Self-Esteem - .17 - .16 - .16
- Personal Alienation - .18 - .28 - .22
- Interpersonal Insecurity - .12 - .33 - .25
- Interpersonal Alienation - .08 - .01 - .27
- Interceptive Deficits - .11 - .08 - .02
- Emotional Dysregulation - .45* - .09 - .10
- Perfectionism - .09 - .13 - .17
- Asceticism - .06 - .18 - .28
- Maturity Fears - .15 - .20 - .08

* p < .05

Conclusions

- Eating disorder traits may have differential effects on pain sensitivity
- Emotional dysregulation may promote sensitization of nociception at the spinal level
- Body dissatisfaction may contribute to hypalgesia
- Future studies of pain processing in eating disorders should differentiate between effects on nociception and subjective pain

Percentage bend correlations used to examine the relationships between pain sensitivity measures and EDI-3 subscales

Future studies of pain processing in eating disorders should differentiate between effects on nociception and subjective pain.