DOES “IN-VIVO” CATASTROPHIZING ENGAGE DESCENDING MODULATION OF SPINAL NOCICEPTION?

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BACKGROUND

- Catastrophizing & enhanced pain
  - Mechanism(s) unknown
- Catastrophizing not associated with nociceptive flexion reflex (NFR) threshold
  - Not descending modulation?
- Standard vs. “In-vivo” catastrophizing

1France et al, 2002, Pain
2Dixon et al., 2004, Pain; 3Edwards et al, 2005, J Pain

OBJECTIVE

To determine the relationship between “in-vivo” catastrophizing and:
- Spinal nociception (NFR Threshold)
- Subjective pain

PARTICIPANTS

78 healthy undergraduate students
- 25 male and 53 female
- Age: 22 yrs (SD=6.22)
- White non-Hispanic (68%)
- Single (87%)
- Employed (59%)
SPINAL NOCICEPTION: Nociceptive Flexion Reflex Threshold

France et al, 2002, Pain

SUBJECTIVE PAIN RATINGS

“In-Vivo” CATASTROPHIZING

- Coping Strategies Questionnaire
- 6-Items
- Negative / catastrophic thoughts & ideations
- Administered following pain testing (post-experiment)

Rosenstiel & Keefe, 1983, Pain

ANALYSES

- Hierarchical regression
- Control variables
  - Participant sex
  - Psychological Distress (CES-D)
  - Self-efficacy (SE-PR)
  - Pre-experiment affective state (SAM)
    - Valence/pleasure (unpleasant – pleasant)
    - Arousal (calm – excited)
  - Stimulus Intensity
RESULTS: Predicting Spinal Nociception

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (0=male, 1=female)</td>
<td>.074</td>
</tr>
<tr>
<td>Distress</td>
<td>.010</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>.132</td>
</tr>
<tr>
<td>Pre-exp affective valence</td>
<td>-.115</td>
</tr>
<tr>
<td>Pre-exp affective arousal</td>
<td>-.078</td>
</tr>
<tr>
<td>Catastrophizing ($\Delta R^2 = .003$)</td>
<td>.063</td>
</tr>
</tbody>
</table>

Model Summary: $R^2 = .03, p = .894$

RESULTS: Predicting Subjective Pain

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex (0=male, 1=female)</td>
<td>-.127</td>
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<tr>
<td>Distress</td>
<td>-.056</td>
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<tr>
<td>Self-efficacy</td>
<td>-.189</td>
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<tr>
<td>Pre-exp affective valence</td>
<td>.082</td>
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<tr>
<td>Pre-exp affective arousal</td>
<td>.063</td>
</tr>
<tr>
<td>Stimulus intensity (threshold)</td>
<td>.405*</td>
</tr>
<tr>
<td>Catastrophizing ($\Delta R^2 = .06$)</td>
<td>.265*</td>
</tr>
</tbody>
</table>

Model Summary: $R^2 = .20, p = .003$

CONCLUSIONS

- In-vivo catastrophizing is related to subjective pain, but not spinal nociception
- Does not engage descending modulatory mechanisms
- May influence pain affect by cortical-to-cortical mechanisms

1Seminowicz & Davis, 2006, Pain