Introduction
Research suggests emotional pictures modulate pain and the nociceptive flexion reflex (NFR, a measure of spinal nociception), such that arousing pleasant pictures (erotica) inhibit pain/NFR and unpleasant pictures (mutilation) facilitate pain/NFR. While emotional pictures reliably modulate pain and NFR at the group level, there is considerable individual variability in emotional modulation. Given this, we have argued that individual differences in emotional modulation of pain/NFR may contribute to individual differences in pain sensitivity. Specifically, an attenuated capacity for erotica-inhibition and a heightened capacity for mutilation-facilitation may contribute to hyperalgesia. Therefore, the current study is designed to address this issue in a group of healthy, regularly menstruating women across the mid-follicular and late-luteal phases of the menstrual cycle.

Objective
Examine whether individual differences in emotional modulation of pain and NFR are associated with individual differences in experimental pain sensitivity (i.e., electrocutaneous pain threshold/tolerance, ischemia pain threshold/tolerance, mechanical pressure-pain threshold).

Participants
Healthy Female Participants: N = 41
- Participants Characteristic: White, non-Hispanic (71%), married (73%), employed full-time (56%), yrs of education = 15 (SD = 1.79), average age = 31.00 yrs (SD = 3.48), average menstrual cycle length = 29 (SD = 3.29), average length of luteal phase = 15 days (SD = 3.48)
- Exclusion Criteria:
  - >18 yrs of age
  - Failure to regularly cycle within 2 months of study inclusion
  - Use of hormone preparations within 6 months
  - Menopausal or post-menopausal
  - Current use of anxiolytic, antidepressant, and/or antihypertensive medication
  - Recent use of analgesic medication
  - Use of hormone preparations within past 6 months
  - Menopausal or post-menopausal
  - Current use of anxiolytic, antidepressant, and/or antihypertensive medication
  - Recent use of analgesic medication
  - Current use of anxiolytic, antidepressant, and/or antihypertensive medication
  - Recent use of analgesic medication
  - Current use of anxiolytic, antidepressant, and/or antihypertensive medication

Methods
- **Electrocutaneous Pain**
  - Pain Ratings made following each electrical stimulation
  - Electrocutaneous Pain Threshold:
    -Ascending series of 2 mA stimulations presented to sural nerve of ankle. Threshold = first stimulus (in mA) rated >20 on the NRS
  - Electrocutaneous Pain Tolerance:
    - Ascending series continued until pain rating of 100 achieved or max intensity (40 mA) reached

- **Mechanical Pressure-Pain**
  - Pain Sensitivity: Mechanical Pressure-Pain
  - 24 pictures presented in pseudorandom order
  - 40 pictures per valence (unpleasant, neutral, pleasant)

- **Nociceptive Flexion Reflex (NFR) Pain**
  - NFR Pain Window: Ischaemia Pain
  - Baseline NFR Window

- **Data Analysis**
  - ANOVA procedure in SPSS 14.0 (2 way)
  - Pain Ratings and NFR Baseline Window during pictures: averaged by picture valence and converted to 4 change scores (e.g., erotica minus neutral) to quantify differences in emotional modulation of pain/NFR
  - Pain Sensitivity: Mechanical Pressure-Pain
  - Mechanical Pressure-Pain Threshold: Pressure (in kg) when participant first indicated mechanical pressure as being painful

Results: Electrocutaneous Pain Threshold
- Individual differences in emotional modulation of pain and NFR were not associated with individual differences in electrocutaneous pain threshold.

Results: Mechanical Pressure-Pain Threshold
- Individual differences in emotional modulation of pain and NFR were not associated with individual differences in mechanical pressure-pain threshold.

Conclusions
- These results suggest individual differences in emotional modulation are associated with individual differences in pain sensitivity and menstrual phase may influence these associations.
- Future research is needed to determine whether findings extend to men and clinical populations that may have a disruption of emotional modulation (i.e., fibromyalgia, PMDD, major depression).