**Introduction**

- The purpose of the study was to determine if laboratory-induced pain has possible effects on attention as captured by eye tracking technology.
- Eye-tracking is a growing field used to detect eye movements and analyze human processing of visual information for interactive and diagnostic applications.
- In one case, there was a negative relationship between levels of pain and attention to some environmental demands. (Eccleston and Crombez, 1999)
- However, other studies were not able to find a difference between levels of pain and attention. (Crombez, 1996)

**Method**

- 36 participants: all college students.
- The participant information was collected from a Malingering study done in the laboratory (Aguerrevere, et. al, 2017) with on the control group and the acute pain group participants being used.
- The previous study found that controls and acute pain conditions did not differ from each other in TOMM scores or eye tracking indicators (Aguerrevere, et. al, 2017).
- Eye movement was recorded by the Tobii x2-650 eye-tracker paired with a 17” LCD monitor set at a resolution of 1024x768. The eye-tracker samples the position of users’ eyes at the rate of 50Hz.
- Acute pain was induced using the Medoc Q-sense.
- The Medoc Q-sense quantitatively assesses thermal sensitivity and threshold.
- Pain sensitivity was assessed by the recorded temperature in which they first felt pain.
- Pain threshold was determined by the temperature when the participants indicated that the pain was overbearing.

**Method cont.**

- Eye tracking variables:
  - Time to first fixation
  - Total fixation duration
  - Fixation count
- Eye movement was mapped with integrated log data, user events, and TOMM drawing features during on-screen task performance.
- Areas of Interest (AOIs) were generated by a javascript application.

**Results**

- There is a negative relationship between pain threshold and fixation count ($r = -.45, p<.05$).
- Those individuals with lower pain thresholds have a significantly greater number of fixations compared to those with higher pain thresholds (see figure 1 and 2).

**Conclusions**

1. Subtle effects of laboratory induced pain on attention can be observed with eye tracking technology.
2. Individuals with lower pain thresholds may spend more attention fixating on a number of objects.
3. Lower pain thresholds seems to be a good indicator for higher fixation counts.
4. The results support (Eccleston and Crombez, 1999) in that levels of pain and attention to some environmental demands have a negative relationship.