Which gender do we perceive in a painful face?

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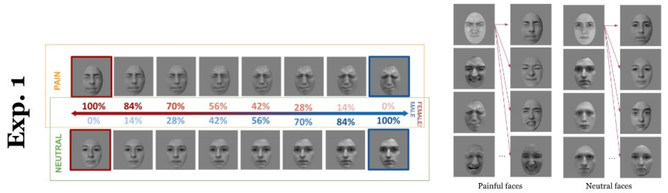
Theoretical Background

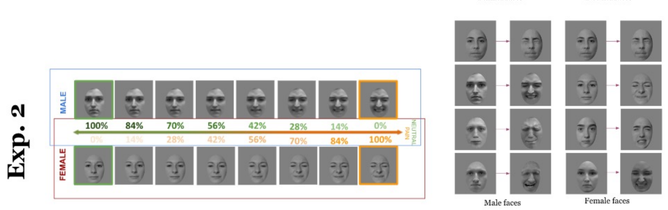
Although our representations of gender in relation to an expressed emotion remains poorly understood, some studies have found an association between male gender and negative emotions[1-3]. Since pain is a negative emotion, we predicted that it should be more easily perceived in male faces[4].

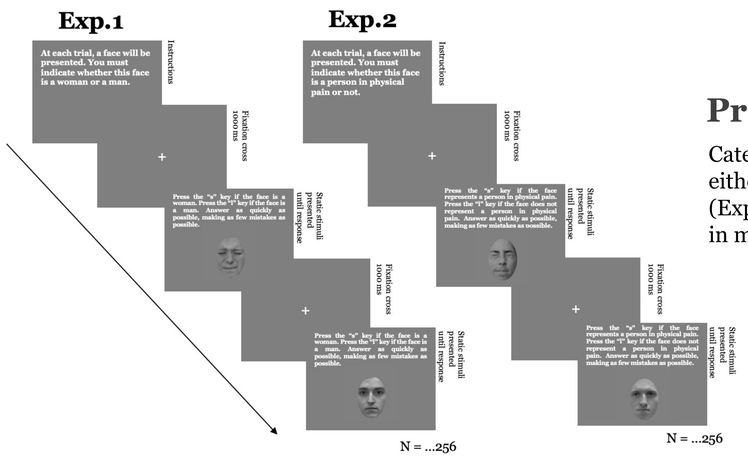
Thus, **the goal of the present project is to measure the association between the representation of gender and pain facial expression**, from two different angles, which is the perception of gender for neutral vs. pain faces, and conversely, the perception of pain in female vs. male faces.

Methods

- **Subjects** : 119 (65 women, Exp.1) and 122 (62 women, Exp. 2)
- **Trials** : 256 per experiment and participants
  - *Exp. 1* : 8 ID x 8 levels of intensity x 2 emotions x 2 genders
  - *Exp. 2 :* 4 ID x 8 levels of intensity x 2 genders, repeated 4 times
- **Stimuli** : 8 facial identities (4 women) taken from the Delaware Pain Database [5]
  - Using FantaMorph[6], a continuum of 8 levels of intensity of gender (Exp.1) and emotional state (Exp.2) were created.







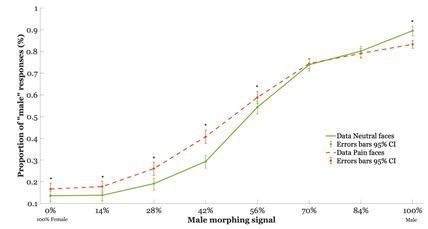
Procedure

Categorize the gender of faces displaying either neutral or pain facial expressions (Exp. 1) and the presence of physical pain in male and female faces (Exp. 2).

Results

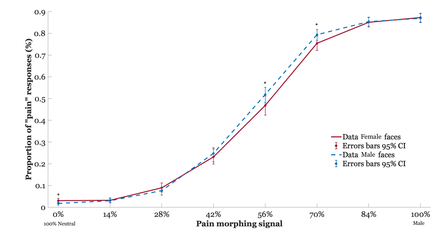
Exp. 1 A repeated measure ANOVA revealed a main effect of condition (gender intensity), as well as a significant effect of the stimulus emotion. There was an interaction between condition and stimulus' emotion.

A Wilcoxon signed rank test was conducted to compare the proportion of "male" responses in pain and neutral faces (* indicates significant differences).



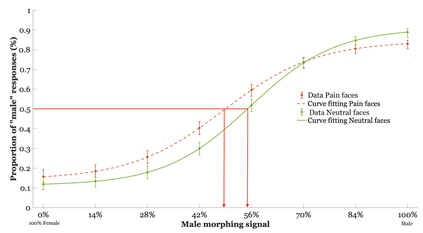
Exp. 2 A repeated measure ANOVA revealed a main effect of condition (emotion intensity), but there was no significant effect of the stimulus gender. There was an interaction between condition and stimulus' gender.

A Wilcoxon signed rank test was conducted to compare the proportion of "pain" responses in male and female faces (* indicates significant differences).

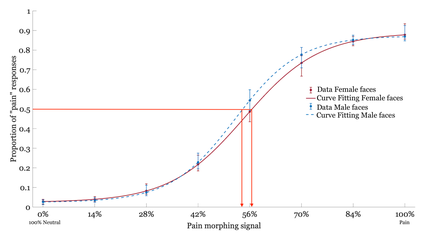


Curve Fitting

Data points were fitted with a logistic function to calculate the point of subjective equality (PSE, equality at 50%) where the face looked equally male and female (Exp. 1) or expressing pain and neutral (Exp. 2).



Exp. 1 A 10,000 iterations bootstrap revealed a difference between thresholds for painful and neutral faces.



Exp. 2 A 10,000 iterations bootstrap revealed a difference between thresholds for male and female faces.

Conclusions

Taken together, our data show that observers perceive significantly more masculine features in a face expressing pain (Exp. 1) and they attribute less pain to feminine faces (Exp. 2). These results reinforce the view that gender modulates emotion perception and show that negative emotions are more easily associated with male faces. However, further studies are required to better understand the impact of face gender on our ability to decode the facial expression of pain.

References

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