

# Do all negative images similarly retain attention? Time course of attentional disengagement from disgust- and fear-evoking stimuli

## Background

An attention bias towards threatening or fearful information has often been shown, particularly in high-anxious individuals (for review see e.g. Bar-Haim et al., 2007).

Literature in the field seldom distinguish between different types of negative emotions (for exceptions see Carretié et al., 2011, Charash & McKay, 2002; Cisler et al., 2008) while many stimuli that are used might elicit feelings of fear and/or disgust.

Disgust and fear are both negative emotions but they are characterized by different physiology and action tendencies which might elicit different attentional biases. If so, treating fear- and disgust-evoking stimuli as one single category is unjustified and could account for some inconsistent results previously reported.

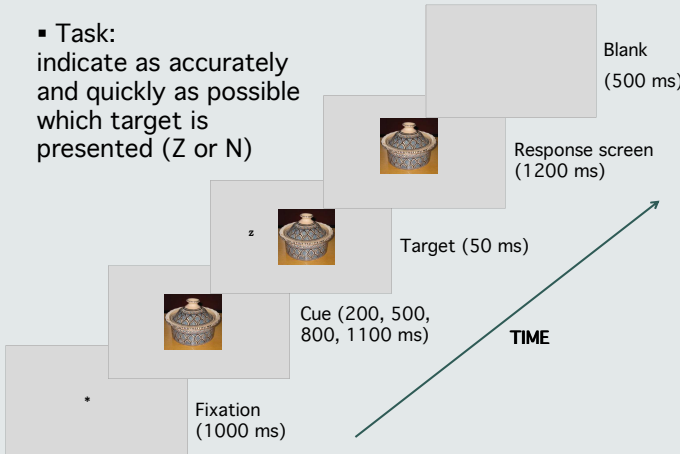
## Aim

Investigate whether fear- and disgust-evoking images produce different attentional disengagement patterns.

## Methods

- N = 30 (female aged between 19 and 30 years old, M = 21 years)
- 640 trials: 16 test blocks composed of 40 trials each (10 disgust, 10 fear, 20 neutral)
- 4 cue-target intervals
- The identity and the position of the target (above, below, left, right) varied at random

### Covert orienting paradigm (adapted from Fox et al., 2001)



10 fear-evoking IAPS pictures (mean arousal = 5.40, mean valence = 2.76; mean fear = 3.24, mean disgust = 2.08)



10 disgust-evoking IAPS pictures (mean arousal = 5.64, mean valence = 2.52; mean fear = 1.57; mean disgust = 4.06)

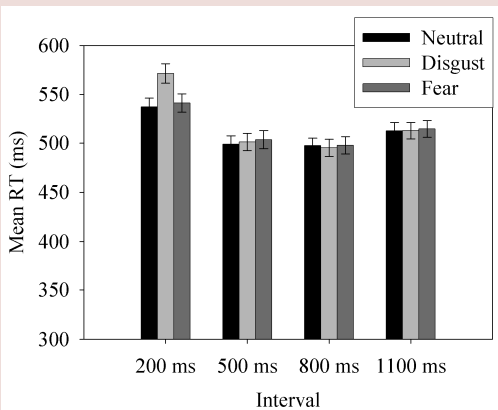


20 neutral IAPS pictures (mean arousal = 1.86, mean valence = 6.54; mean fear = 1.00; mean disgust = 1.00)

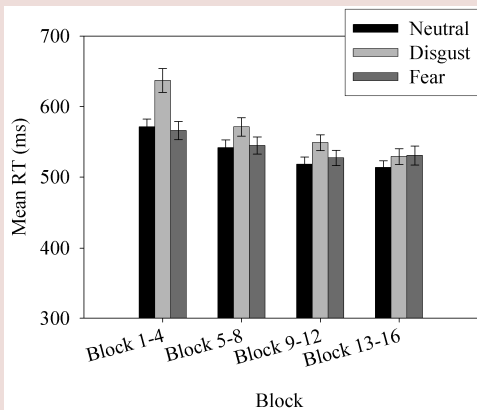
Similar valence and arousal ratings!

Stimulus set (based on ratings from 15 independent female judges)

## Results



### Habituation pattern with 200 ms interval:



- Main effects of Emotion and of Interval
- Slower RTs with the shortest interval
  - Slower RTs with disgust-evoking pics
- Emotion X Interval interaction,  $p < 0.001$
- Longer RTs for disgust with 200 ms interval
- Similar pattern with Accuracy

- Main effects of Block
- Block 1-4 > Block 5-8 > Block 9-12 // Block 13-16
- Block X Emotion interaction,  $p < 0.001$
- Longer RTs for disgust in blocks 1-4, 5-8, and 9-12
- No significant effect on Accuracy

## Discussion

Only disgust-evoking pictures produced significant delayed attentional disengagement and this effect was short-lived.

More time and attention resources may be necessary to fully assess the potential risk implied in these images while fear-evoking images might be sufficiently clearly hazardous at an early stage of processing, allowing fast disengagement and quick responding.

The lack of an overall effect for the fear-evoking pictures can not be explained by a faster habituation rate towards these stimuli.

Additional checks showed that the emotion effect was not driven by individual images.

Therefore, one should look beyond the dimensions of valence and arousal and take the type of negative emotion into account when studying attentional biases towards negative emotions.

## References

- Bar-Haim et al. (2007). Threat-related attentional bias in anxious and nonanxious individuals: A meta-analytic study. *Psychological Bulletin*, 133, 1-24.
- Carretié et al. (2011). Decomposing unpleasantness: Differential exogenous attention to disgusting and fearful stimuli. *Biological Psychology*, 86, 247-253.
- Charash & McKay (2002). Attention bias for disgust. *Journal of Anxiety Disorders*, 16, 529-41.
- Cisler et al. (2008). Attentional bias differences between fear and disgust: Implications for the role of disgust in disgust-related anxiety disorders. *Cognition & Emotion*, 23, 675-687.
- Fox et al. (2001). Do threatening stimuli draw or hold visual attention in subclinical anxiety? *Journal of Experimental Psychology: General*, 130, 681-700.