Positive mood attenuates the happiness superiority effect in visual search for schematic faces

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Positive mood attenuates the Happiness Superiority Effect in visual search for schematic faces

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Introduction

The Anger Superiority Effect (ASE) describes the finding that an angry face in a crowd is found faster than a happy face (Hansen & Hansen, 1988). However, this effect is prone to low level perceptual confounds when using photographic faces as stimuli. Other studies have used schematic faces in an attempt to reduce the influence of these confounds yielding consistent replications of the ASE (Horstmann, 2009).

Becker et al. (2011) argued that the ASE in most studies is due to methodological confounds which conceal a true Happiness Superiority Effect (HSE) The source of the HSE is argued to be an innate positivity bias which leads to efficient detection and processing of happy expressions**.** Five recommendations were made to avoid them.

1. **Vary the number of distractors (set size)**
2. **Hold backgrounds constant across conditions of interest**
3. **Use a fixed target search design**
4. **Control for low level perceptual confounds in stimuli**
5. **Use heterogeneous backgrounds**

No previous study using schematic faces has adhered to all five of these recommendations. The current investigation aimed to do so. As we incorporate all five recommendations, we predicted a HSE, despite previous studies using schematic faces obtained an ASE.

Experiment 1

Method

In two tasks, participants indicated the presence or absence of a target face (happy targets in one task and angry targets in the other). These targets were presented amongst either 1, 3, or 5 distractors which were random combinations of sad and scheming faces (see Figure 1). Backgrounds were identical across tasks.

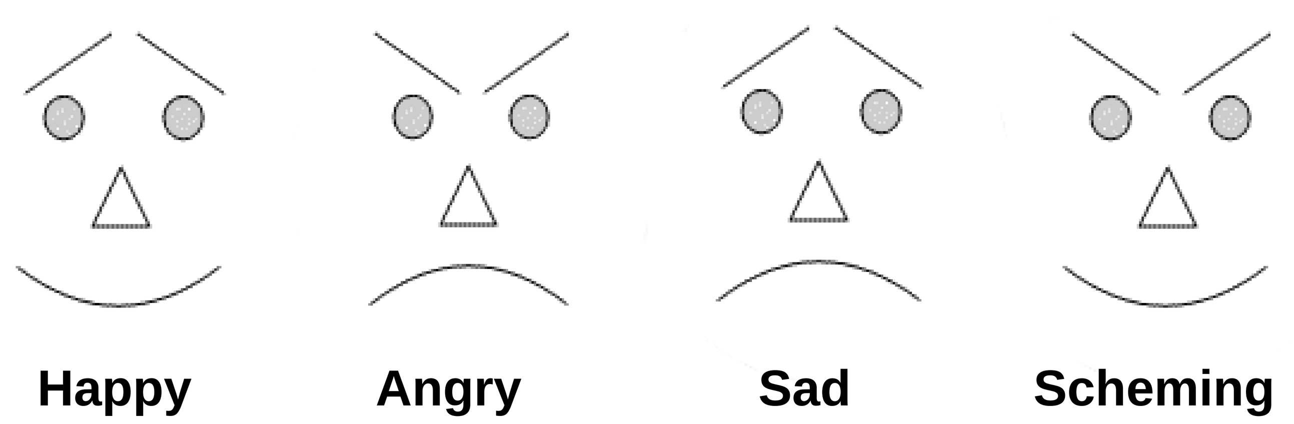

Figure 1. Schematic stimuli used in Experiments 1 and 2

Results

Participants were faster to detect happy targets, $F(1, 37) = 22.14$, $p < .001$, and detection time slowed with increasing set size, $F(3, 111) = 800.20$, $p < .001$ (see Figure 2). On non-target trials participants were also faster when searching for happy faces, $F(1, 37) = 389.76$, $p < .001$, and the response time difference between target and non-target trials increased as set size increased, $F(3, 111) = 186.61$, $p < .001$.

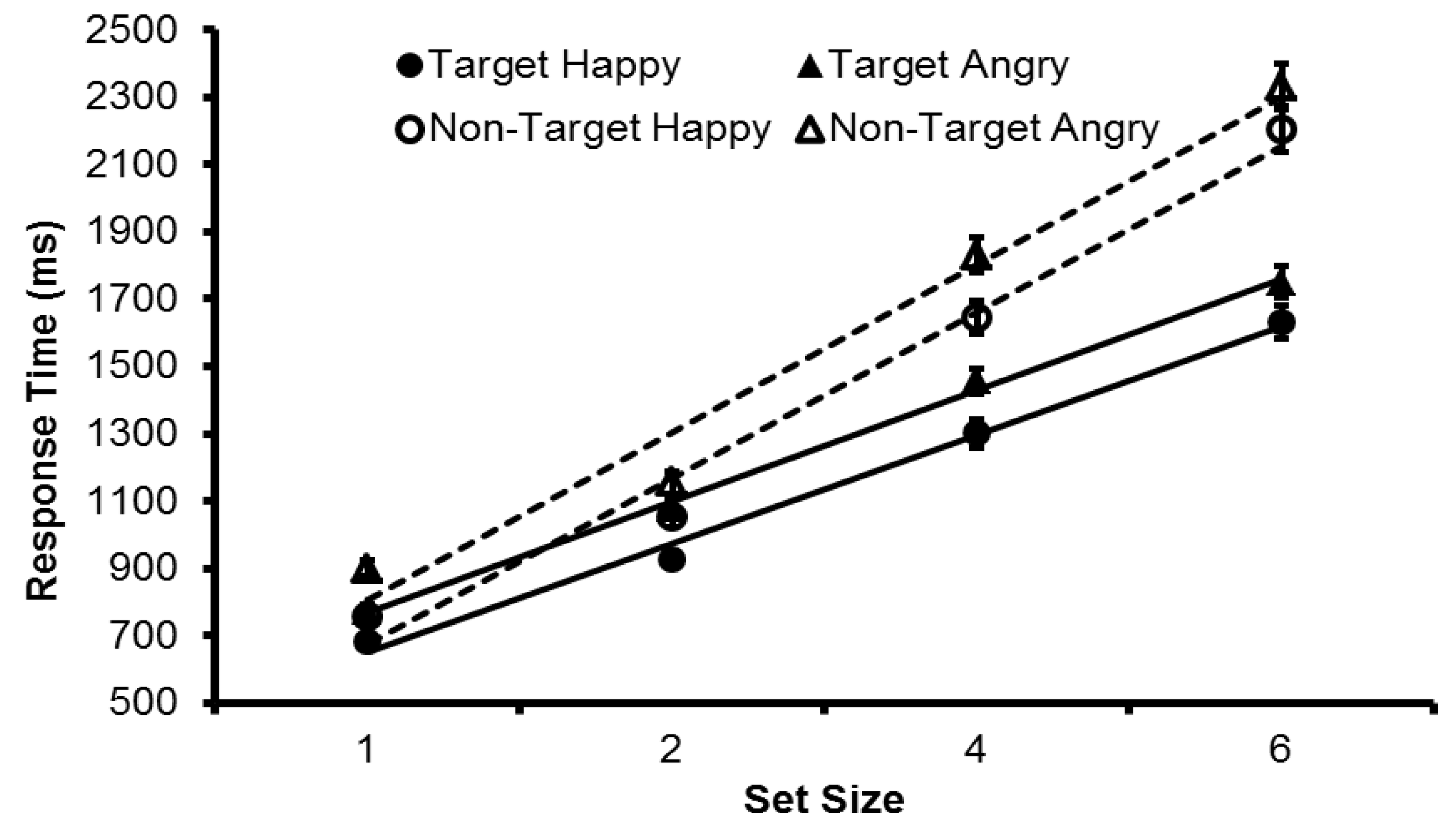

Figure 2. Response times for indicating the presence or absence of happy and angry targets in Experiment 1.

Experiments 2

Method

To determine whether the HSE in Experiment 1 could reflect a positivity bias, Experiment 1 was replicated with a positive or negative mood induced prior to each search tasks (see Figure 3). Consistent with the emotion categorization literature, if the HSE is due to a positivity bias, it should be significant and larger for participants in the positive mood condition than those in the negative mood condition.

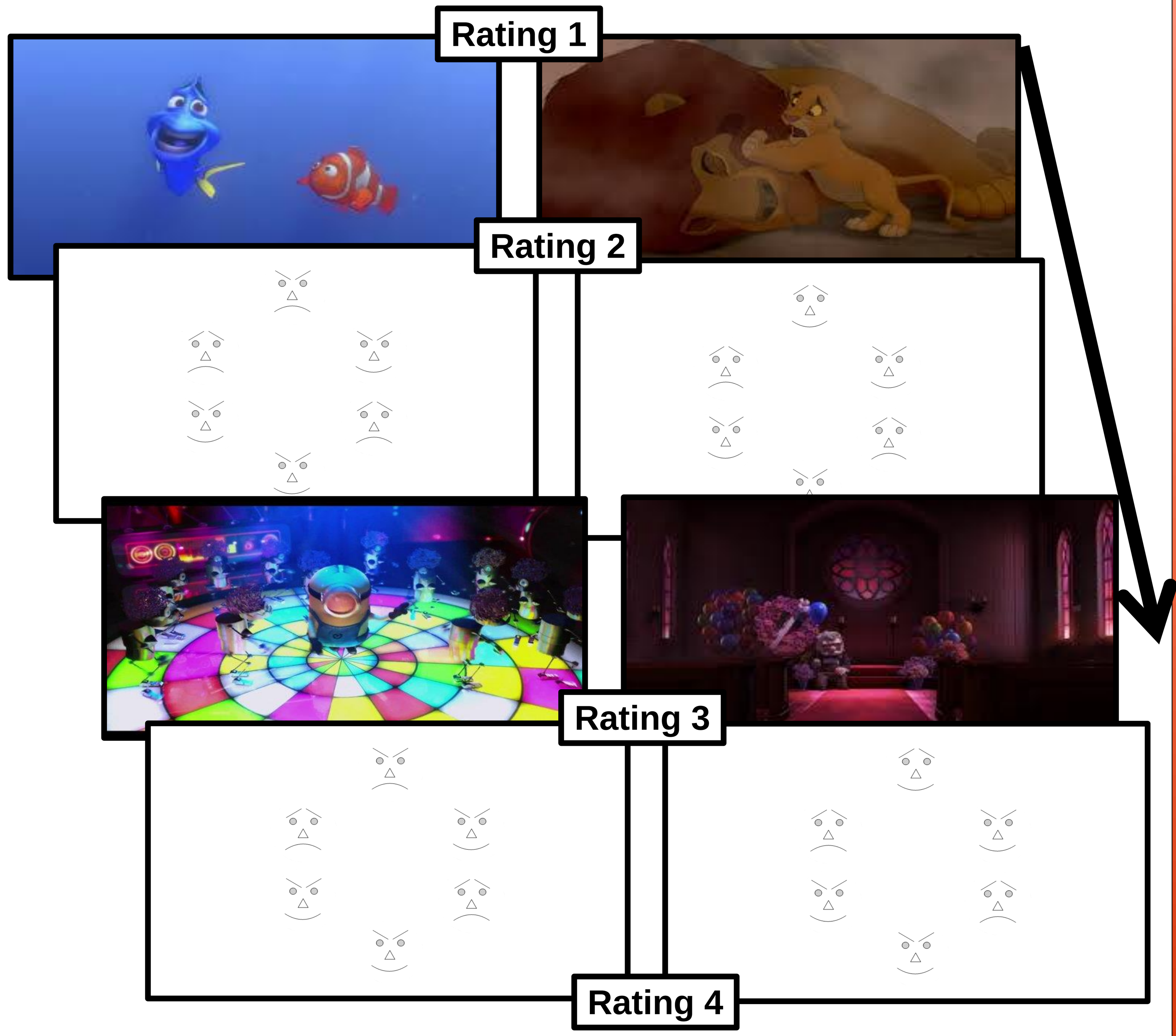

Figure 3. Timeline describing Experiment 2 procedure for both mood conditions

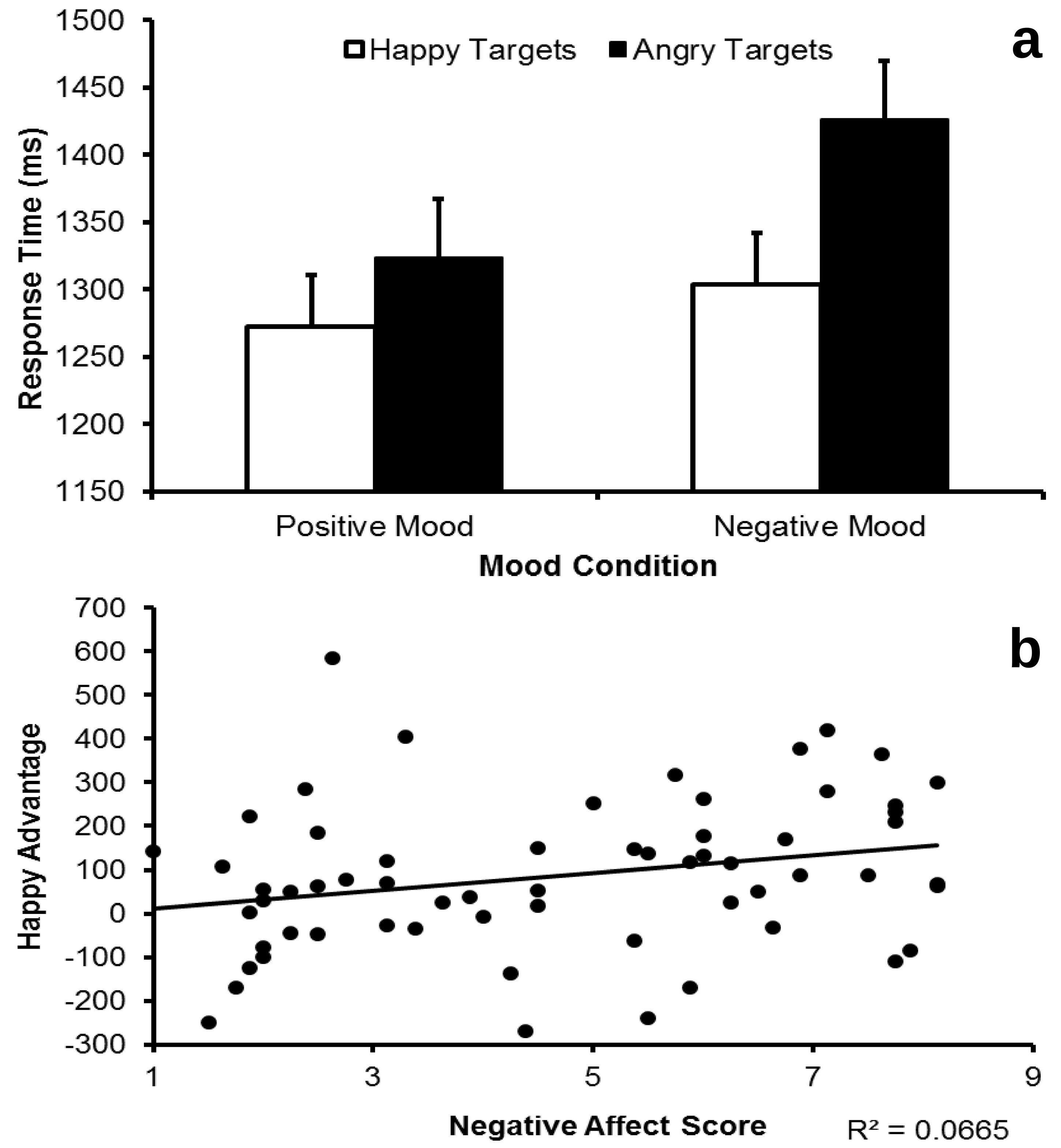

Figure 4. Average RTs for happy and angry tasks as a function of mood (Figure 4a). The relationship between self-rated negative affect and the magnitude of the HSE for each participant. (Figure 4b)

Results

The predicted target emotion x mood interaction did not reach significance, $F(1, 60) = 2.68$, $p = .107$, however contrary to predictions, follow up contrasts demonstrated that the HSE was significant for participants in the negative mood group, $t(60) = 3.96$, $p < .001$, but not in the positive mood group, $t(60) = 1.65$, $p = .104$ (Figure 4a). Higher ratings of negative affect (based on ratings of Happiness, Joy (reverse scored), sadness and unhappiness, taken after the mood inductions) were related to larger HSEs, $r(60) = .258$, $p = .043$ (Figure 4b).

Conclusion

A positivity bias is unlikely to account for the HSE observed with schematic faces as inducing positive mood reduced rather than increase the magnitude of the HSE. It is possible that positive mood increases global or holistic processing which facilitated the detection of the more difficult to discriminate schematic angry target faces.

Craig, B. M, Becker, S. I., & Lipp, O. V. (2014). Different Faces in the Crowd: A Happiness Superiority Effect for Schematic Faces in Heterogeneous Backgrounds. *Emotion, 14*(4), 794-803. doi: 10.1037/a0036043

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