

# Caricature valence: The effects of eyebrow diagonality and cartoonization of negative-affect facial image stimuli on valence perception

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## Background

**Caricaturization:** “grotesque or ludicrous representation of persons or things by exaggeration of their most characteristic...features.”<sup>1</sup>  
→ technique used in (negative-affect) political cartoons<sup>2</sup>

1 **IV1:** Eyebrow diagonality

2 **IV2:** Cartoonization

- Eyebrows = exaggerated feature in caricaturized faces<sup>3</sup>
- Diagonality = “furrow” of the eyebrows<sup>4</sup>
- Caricatured faces are typically rendered as cartoons
  - Not usually photorealistic

**Outcome measure:** perceived  $\ominus$  /  $\oplus$  emotional valence of stimuli.<sup>5</sup>

**$H_1$  (alternative hypothesis):** **Eyebrow diagonality** and **cartoonization** of **negative-affect human face stimuli** will have main effects and interaction effects on **valence** perception.

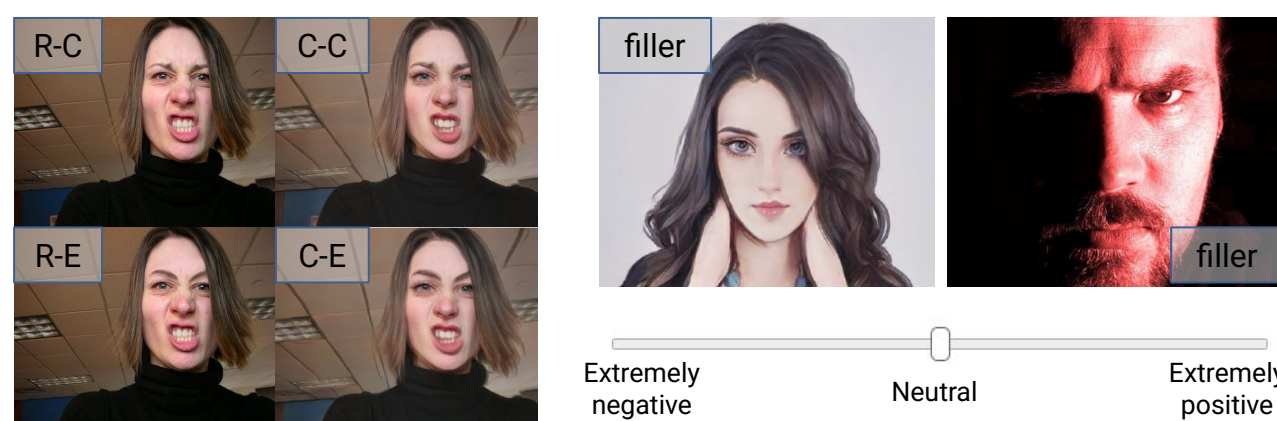
## Methodology

**Participants:** Amazon MTurk workers ( $n = 100$ )

**Apparatus:** Internet-connected computer with web browser.

### Study Design:

- Within-participant, 2x2 study design
- **IV1 levels:** control, eyebrow manipulation; **IV2 levels:** realistic, cartoon; 4 conditions (5 stimulus images per condition)
- 20 filler images + 20 stimuli = 40 trials (interspersed)
- **Each trial** = image + slider scale presentation; participants responded with perceived valence ratings



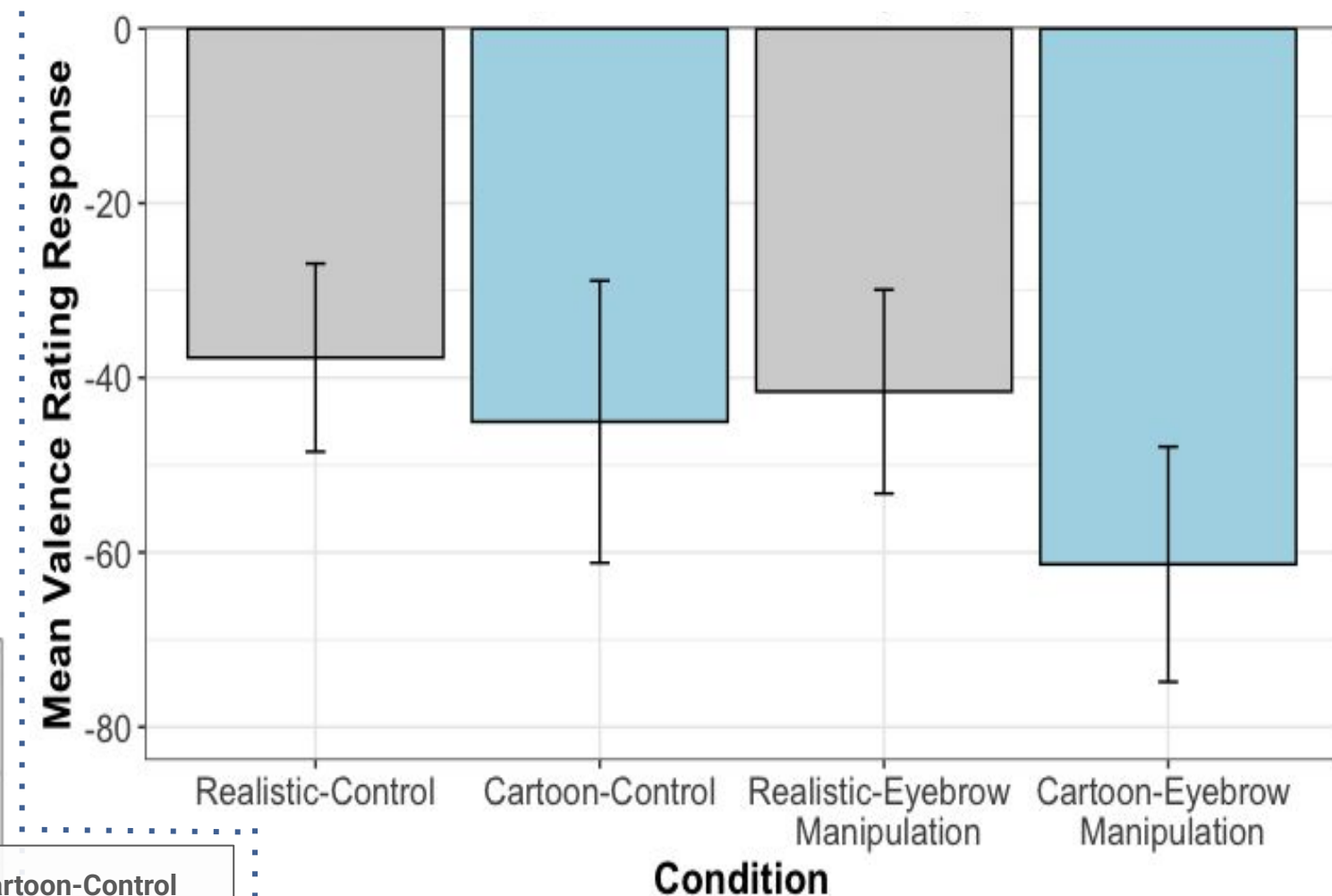
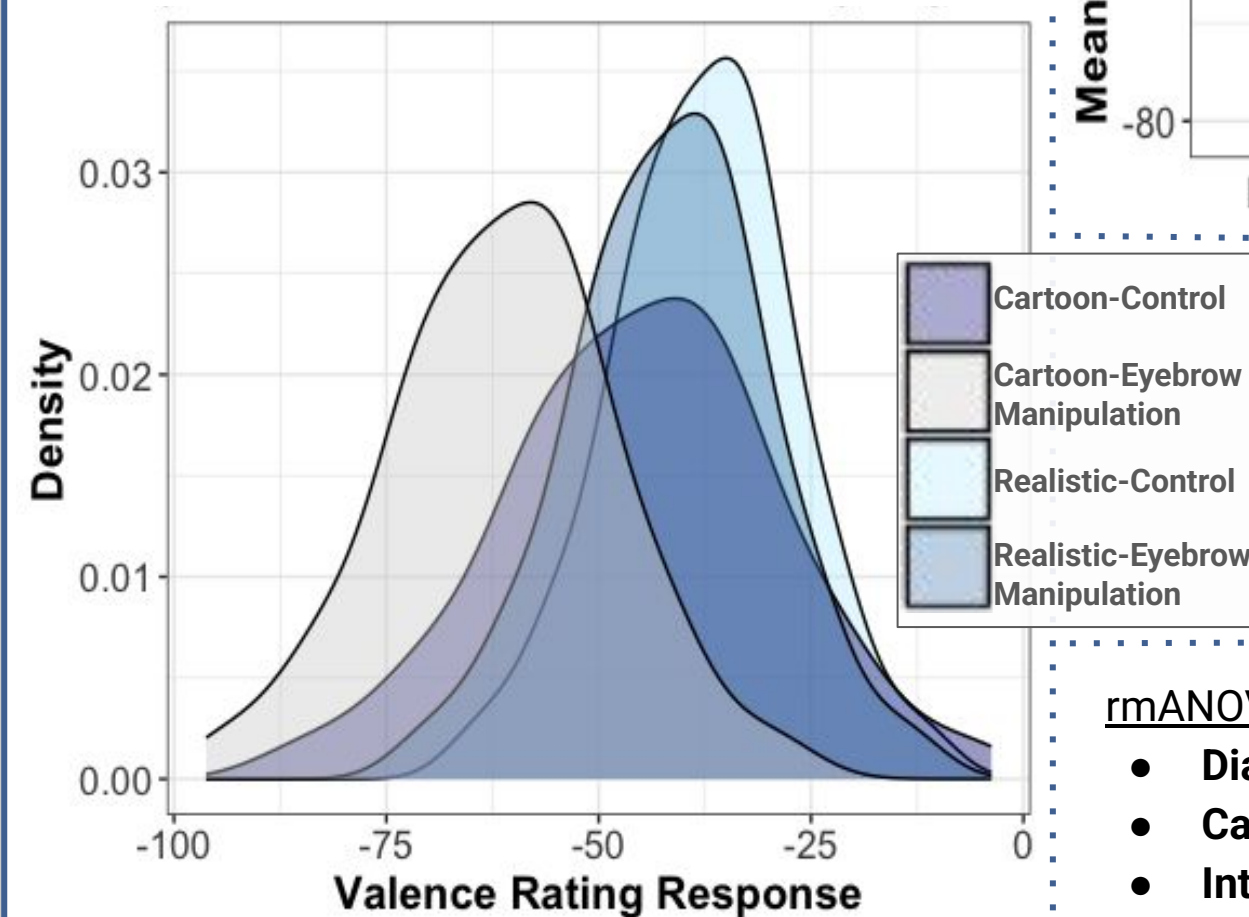
**Figure 1.** Stimuli and filler images, and slider scale (for valence ratings).

## Results

**Figure 2.** Density distributions for valence ratings, by condition (simulated data using *rnorm()* in R).

### DESCRIPTIVE STATISTICS:

- **Realistic-Control:**  $\bar{x} \approx -37.69$ ;  $s \approx 10.78$
- **Cartoon-Control:**  $\bar{x} \approx -45.04$ ;  $s \approx 16.17$
- **Realistic-Eyebrow Manipulation:**  $\bar{x} \approx -41.58$ ;  $s \approx 11.68$
- **Cartoon-Eyebrow Manipulation:**  $\bar{x} \approx -61.37$ ;  $s \approx 13.47$



**Figure 3.** Bar plot depicting mean participant valence ratings, by condition (to accompany the statistically significant rmANOVA results). Displayed error bars indicate the standard deviation ( $s$ ) for each condition.

### rmANOVA RESULTS:

- **Diagonality:**  $F(1, 99) \approx 12666.63$ ,  $p \approx 2.75 \times 10^{-106}$ ,  $\alpha = .05$ ,  $\eta^2G \approx .13$
- **Cartoonization:**  $F(1, 99) \approx 1425.41$ ,  $p \approx 1.37 \times 10^{-60}$ ,  $\alpha = .05$ ,  $\eta^2G \approx .21$
- **Interaction:**  $F(1, 99) \approx 1198.02$ ,  $p \approx 4.10 \times 10^{-57}$ ,  $\alpha = .05$ ,  $\eta^2G \approx .05$

## Discussion

- Results from the rmANOVA and post-hoc Fisher's LSD tests show statistically significant and meaningful differences between conditions.
- Thus, eyebrow diagonality and cartoonization of negative-affect human face stimuli have main effects on valence perception, as well as interaction effects ( $H_1$  accepted).

### Implications:

- Caricaturists should carefully consider the ethics surrounding their works' messages.
  - Key aspects of caricaturization significantly impacted valence perception, which—when coupled with certain messages—can make political cartoons and caricatured works highly influential.

## References

