

# Imagery of a Face Enhances Event-Related Potentials to Ambiguous Visual Stimuli

Lingxi, Lu<sup>1,3</sup>; Yonghong, Tian<sup>2,3</sup>; Tiejun, Huang<sup>2,3</sup>; Xihong, Wu<sup>2,3</sup>;

Wen, Gao<sup>2,3</sup>; Liang Li<sup>1,3</sup>

1. Department of Psychology, Peking University, Beijing 100871, China
2. School of Electronics Engineering and Computer Science, Peking University, Beijing 100871, China
3. Key Laboratory on Machine Perception (Ministry of Education), Peking University, Beijing 100871, China

Previous studies have shown that face stimuli can elicit specific event-related potentials (ERPs), including N170, vertex positive potential (VPP), N250, and P2. These ERP components may be based on different bottom-up and top-down interactions at different processing levels. This study was to isolate the top-down modulation from the bottom-up driving processes and identify which ERP component(s) are more specific to the top-down modulation by eliminating physical features of faces and controlling face imagery.

Sixteen younger-adult participants received two blocks of ambiguous stimuli. In each block, they were instructed to imagine either faces or houses upon looking at the ambiguous stimuli. The peak amplitude and latency of VPP at the fronto-central sites and N170 and P2 at the occipito-temporal sites were measured and analyzed.

The N170 component, which was highly sensitive to structural information of face stimuli, was not observed in ERP waveforms to the ambiguous stimuli. However, both the amplitudes of VPP and that of P2 were significantly larger when participants tried to imagine faces from ambiguous figures or noise images than when they imagined houses from the same stimuli. Also, VPP was larger and P2 was more lateralized when they were induced by ambiguous figures compared to when they were induced by noise images.

The results of the present study indicate that although VPP and P2 can be well elicited by face stimuli, they are strongly modulated by top-down face processing when bottom-up influence is eliminated.

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