

Affective ratings of surprise faces are modulated by visual field and by adjacent facial expressions within the same visual field

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Emotional expressions of briefly flashed faces can influence affective evaluation and various measures of neural activity. Given that face-responsive inferotemporal neurons have large receptive fields, often including the entire contralateral visual hemifield, we hypothesized that responses to surprise faces might be modulated by concurrent facial processing within the same hemifield if there is insufficient time to attend to individual faces. We developed a procedure to test this idea in which each trial included two faces presented for 50 or 100 ms backward-masked by Gaussian noise to limit visual attention. Participants made four-choice affective ratings of surprise faces concurrently presented with a happy or angry face. A central post-cue presented briefly at the offset of the masks indicated which face to rate. Within hemifield, surprise faces paired with angry faces were rated as more negative than surprise faces paired with happy faces. When faces were presented in opposite hemifields, no influence of emotional expression was found on surprise-face ratings, ruling out a high-level response bias from processing of emotional faces. In addition, left-visual-field surprise faces were rated as more negative than right-visual-field surprise faces. In sum, happy and angry faces modulated affective judgments of surprise faces presented within the same hemifield, but not across hemifields. In the absence of selective attention, we may tend to see an average expression of multiple faces in the same visual field due to the large receptive fields of inferotemporal neurons.