The role of emotional vs. non-emotional factors in the speed of proactive guesses during visual scene recognition

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Abstract

Several models have emphasized the role of proactive processes through which perceptual evidence accrues over time before a decision can be made about the identity of a visual object. However, the role of emotion in these predictive coding processes is still unclear. Recently, we found that emotional (pleasant or unpleasant) scenes were associated with a delayed accumulation of evidence relative to neutral scenes, suggesting that emotion may rapidly modulate proactive processes during visual object recognition. Here, we investigated whether this emotion effect may be explained by trial-to-trial fluctuations along other non-emotional properties, namely familiarity and visual complexity. Independent ratings of every visual stimulus along these two dimensions were obtained and included as concurrent predictors in a multi-level proportional odds model, used to estimate at the single trial level the probability of response at each stage of perceptual processing. Results showed that, overall, more familiar and less complex visual scenes were associated with earlier recognition times. Importantly, when controlling for these two factors, a substantial delay in recognition times for pleasant relative to neutral or unpleasant scenes was still significant, suggesting a positivity offset during emotional scene perception. These results indicate that proactive guesses during visual scene recognition are reliably influenced by the rapidly extracted emotional content of the visual input, even when controlling for non-emotional factors.

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