
Positive emotion broadens attention focus through lessened position-specific encoding : evidence from visual ERPs

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Abstract

The efficiency of attention selection is not only determined by stimulus-specific effects or top-down expectations, but also by the internal state of the participant. As opposed to when we feel sad or angry, feeling happy usually broadens our thought –and action repertoires. However, the precise neural mechanism underlying these effects and their exact electrophysiological time-course remain largely unclear. For example, it remains unresolved whether a broader attention focus under positive mood may be accompanied by a break-down in selectivity (e.g. enhanced distractibility) during attention selection. To address this question, we used high density EEG during a standard paradigm enabling to lock primary attention focus in the center of the visual field, while visual textures/distractors are shown in the periphery relative to the centrally presented task-relevant stimuli. Either a neutral or a positive mood was induced and sustained throughout the realization of the task. ERP results for the central stimuli confirmed that selective attention was engaged towards them, equally so in both mood groups. As predicted, the earliest/retinotopic ERP response to the peripheral textures (i.e. the C1 component) showed a larger amplitude for close relative to far positions. However, this spatial gradient of visual attention was only observed for participants in a neutral mood, and not in a positive mood. A control behavioral study confirmed that positive emotion actually disrupted attention allocation to the peripheral distractors. A decreased position specific encoding of the stimulus in the primary visual cortex might possibly underlie a broadening up of attention allocation in positive mood.

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