

## EMOTIONAL COMPETITION IN SPATIAL ATTENTION: AN HIGH-DENSITY EEG STUDY IN HEALTHY SUBJECTS

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### Grant 124/22

**Background:** Emotional stimuli drive attentional processes allocation. However, little is known about how spatial attention operates when concurrent emotionally salient contents of opposite valence compete directly for attentional resources. A negative emotional attentional bias has been described in mood disorders using dot-probe task, contrasting responses to negative and positive emotional stimuli presented simultaneously to neutral ones. These studies suggested a stronger implicit and automatic engagement of attention by negative than positive stimuli when the emotional content competes with a neutral one for attentional resource allocation. Instead, the dynamics of emotional priority competition when facing with concurrent stimuli of opposite emotional valence in healthy subjects are still largely unexplored.

**Aims:** In the present study, we investigated spatial attention dynamics during direct competition between positive and negative facial expressions, using a modified dot-probe task (m-DPT) combined with high-density EEG.

**Methods:** Twenty healthy female students completed a m-DPT task in which happy and sad faces were presented simultaneously, followed by a spatial probe appearing on the left or right side of the screen at the location previously occupied by one of the two emotional faces. Attentional prioritization was assessed by evaluating reaction times (RTs), event-related potentials (ERPs), and event-related spectral perturbations (ERSPs) in response to probe replacing the positive and the negative face. Valence-related effects (Positive vs. Negative) were tested using paired-samples t-tests, with cluster-based permutation correction to control for multiple comparisons in both ERP and ERSP analyses.

**Preliminary Results:** RTs did not differ between probes replacing positive versus negative faces, indicating no preferential prioritization at behavioral level under conditions of spatial emotional competition. Similarly, ERP analyses showed no reliable valence-related amplitude differences across P200, N200, or P300 components, suggesting a balanced neural processing of positive and negative stimuli. In contrast, time–frequency analyses revealed a significant modulation in a low-frequency delta–theta range (2–8.5 Hz), expressed as increased frontal oscillatory power for probes replacing positive compared to negative faces (cluster-based  $p < 0.05$ ).

**Keywords:** Emotional competition, Spatial attention, Electrophysiology

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