

The Left-to-Right Valence Mapping affects the Posner Cueing Task: on the independent contribution of reflexive and voluntary mechanisms of covert orienting of attention

Tuesday, September 24, 2024 5:40 PM (10 minutes)

Cue-to-target spatial correspondence in the Posner cueing task is known to facilitate responses under conditions of short asynchrony between a peripheral cue and a target shape. How this benefit is modulated by target properties, such as faces expressing either the most positive or negative emotion in a set, remains an open question. We addressed this issue with the expectation that the spatial mental representation of valence from facial expressions of emotion may influence motor reactivity in a way consistent with a compatibility effect based on the left-to-right valence mapping of emotions. The results align with our expectations. Beyond a global facilitation of cue validity, the spatial correspondence between the target side and its left-to-right valence mapping captured attention, producing a larger left-to-right advantage for the most negative emotional target presented in the task (angry vs. happy face in Experiment 1, neutral vs. happy face in Experiment 2a, angry vs. neutral face in Experiment 2b). This effect can be accounted for by a novel chronometric framework that allows the extraction of the independent contributions of two well-known encapsulated components of involuntary covert orienting of attention from response latencies: an endogenous and an exogenous latency component, the former directed towards the target and the latter towards the cue. The results show that the left-to-right valence mapping impacts only the endogenous latency component. This supports a model of involuntary covert orienting involving strongly overlapping and intertwined reflexive and voluntary orienting mechanisms, with the latter depending on the target's properties.

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Session Classification: Mini-talks