

Evoked responses to auditory vs. visual attentional cues in auditory spatial discrimination

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A spatial attention task using the Posner paradigm was employed to examine whether directing automatic auditory spatial attention affects listeners' performance and how neuronal activity changes during task performance. In a previous study (Kopco et al, 2018, 'Visual vs. auditory attentional cueing and auditory spatial discrimination', Cognitive Neuroscience Society, 2018, Poster E3), we found 1) better performance following a visual cue vs. auditory cue, mainly driven by a decrease in performance when the auditory cue was presented from an incongruent location; and 2) that target-elicited ERP amplitudes of the late auditory components covaried with the observed behavioral performance. The current study focused on the ERPs elicited by the auditory cues, while also considering the effect of the visual cues. Auditory-evoked N1 component varied for different combinations of hemispheric laterality and cue position, but not as a function of cue validity. Analysis of responses in the 100-400ms interval did not find clear evidence of auditory-evoked occipital potential contralateral to an auditory cue (ACOP), previously reported as a correlate of attentional processing. However, later components (400-700ms) varied for different combinations of hemispheric laterality, cue position, and cue validity. These results suggest that an automatic auditory spatial cue can cause attentional modulation in the primarily visual occipital areas at delays larger than those previously reported for ACOP. [Work supported by EU H2020-MSCA-RISE-2015 grant 691229, VEGA 1/0355/20]