

# **Electrophysiological correlates of attentional cueing and auditory spatial discrimination**

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## **Abstract**

We performed behavioral and EEG experiments to examine whether directing automatic auditory spatial attention affects listeners' performance and how neuronal activity changes during task performance (Kopčo, N., Šebeňa, R., Hrebenarova, B., Ahveninen, J., Best, V., & Shinn-Cunningham, B., 2018, "Visual vs. auditory attentional cueing and auditory spatial discrimination", Cognitive Neuroscience Society). We found better performance following a visual cue vs. auditory cue, mainly driven by a decrease in performance when auditory cue was presented from an incongruent location. Analysis of target-elicited ERPs showed that amplitudes of the late auditory components covary with the observed behavioral performance. The current study examines the ERPs elicited by the cue sounds. Specifically, it focuses on two components, an early N1 and a late Auditory-evoked Contralateral Occipital Positivity (ACOP). First, it evaluates whether auditory-evoked N1 component elicited by a lateralized cue is larger than N1 elicited by a frontal cue over the hemisphere contralateral to the sound location, while this component is expected not to be modulated by attentional. Second, it examines whether ACOP, previously associated with automatic attentional processes, can predict the correctness of the behavioral responses on a trial-by-trial basis, while it is expected that the signal is not modulated by cue location. Preliminary results suggest that N1 activation follows the predicted behavior, while ACOP does not, possibly due to fact that the cues were not always lateral in this study, as was the case in the previous ACOP-related studies.