

Eye fixation and visual cuing in horizontal sound localization

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Experiments were performed to determine 1) whether a priori information influences sound localization, 2) whether the influence depends on the modality through which the information is provided, and 3) how eye fixation influences behavior.

Localization performance was measured for transient auditory stimuli originating in the frontal horizontal plane. In most runs, a cue preceded the stimulus and indicated (correctly or incorrectly) the hemisphere (left vs. right) from which the subsequent target arrived. The cues differed by modality and the cue-to-target onset asynchrony (SOA: 400 to 1600 ms). The listeners were instructed to focus their attention to the cued side. A follow-up experiment evaluated the effect of eye fixation on the visual-cue performance.

Results show modality-dependent effects of cuing in terms of both bias and standard deviation in responses. A cue that indicated an incorrect side biased the responses towards its side in both modalities, while a visual correct-side cue caused either no bias or a lateral bias. A visual cue that indicated an incorrect side also caused an increase in the standard deviations at the largest SOA, suggesting that the mechanisms that control auditory spatial attention are modality dependent and that they operate on the time scale of seconds.

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