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Investigating effects of spatially disparate visual stimuli on auditory localization in VR environments

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Investigating the time and spatial constraints under which visual and auditory stimuli are perceived as a unique percept or as spatially coincident has been a topic of numerous researches in neuroscience. However, these findings have been derived up to now in extremely simplified stimulation context consisting in the combination of elementary auditory and visual stimuli usually displayed in dark and anechoic conditions.
The present experiment is conducted in a VR environment using a stereoscopic passive screen and binaural audio rendering. Auditory stimuli are displayed on headphones using individualized head-related transfer functions and visual stimuli are integrated in a visual background in order to convey visual perspective.
The experiment investigates the effect of a spatially disparate visual stimulus on the auditory localization judgments (crossmodal bias), as well as the relation between the magnitude of the crossmodal bias and the perception of a unified bi-modal stimulus. The present study will indicate whether previous findings (Hairston et al., Journal of Cognitive Neuroscience, 2003) still hold in more complex audio-visual contexts such as those offered by VR environments.