

IGSN - SYMPOSIUM

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Multisensory integration and cross-modal plasticity with emphasis in hearing and touch

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Effects of rhythmic tactile stimulation on auditory processing

Auditory perception can benefit from stimuli in non-auditory sensory modalities, as for example in lip-reading. Compared with such visual influences, tactile influences are still poorly understood. It has been shown that single tactile pulses can enhance the perception of auditory stimuli depending on their relative timing, but whether and how such brief auditory enhancements can be stretched in time with more sustained rhythmic tactile stimulation is still unclear. To address this question, we conduct human EEG/behavioral audio-tactile experiments, in which healthy participants perform detection tasks on auditory stimulation consisting of a differently modulated signal and noise, while receiving continuous tactile stimulation that fluctuates coherently (either in-phase or anti-phase) with either the signal or the noise. We find enhancing effects of in-phase tactile stimulation on auditory-evoked EEG responses and auditory perception. We also observe a suppressive effect of anti-phase tactile stimulation that affects only EEG responses evoked by the (task-relevant) auditory signal, probably reflecting impairment of top-down attention. Overall, these observations line up with results from single tactile pulses and support the notion that ongoing rhythmic tactile stimulation can enhance basic auditory processing in a sustained manner.

Host:

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