

# IGSN - SYMPOSIUM

Monday, June 17<sup>th</sup> 2024 • 15.00 (3 pm)

FNO – 01 / 117

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

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### **Aging and digitalized tactile augmentation: Lessons learned from cortical processes of multisensory plausibility in virtual environments**

Mechanisms underlying perceptual processing and inference undergo substantial changes across the adult lifespan. If utilized properly, technologies could support and buffer the relatively more limited neurocognitive functions in the aging brains. This talk will present results from recent studies using functional near-infrared spectroscopy (fNIRS) to investigate neural mechanisms of multisensory congruency and expectancy based contextual plausibility in younger and older adults. Specifically, hemodynamic brain responses while participants experienced virtual car-riding scenarios were assessed. In these scenarios, the plausibility of vibrotactile stimulation was manipulated by delivering stimulation intensities that were congruent or incongruent with a given audio-visual context of a scenario. Relative to effects observed in young adults, although highly plausible vibrotactile stimulations confirming with contextual expectations also elicited higher brain hemodynamic responses in seniors, this effect was limited to virtual scenarios with extreme expectancy violations. Moreover, individual differences in plausibility-related frontal activity did not correlate with plausibility violation costs in the sensorimotor cortex, indicating less systematic frontal context-based sensory filtering in older adults. These findings have implications for advancing digital supports in aging societies.

**Host:**

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