Contribution ID: **763** Type: **Poster**

Implicit adaptation to unnatural visuomotor mapping in an immersive environment

Friday, September 12, 2025 12:30 PM (1h 45m)

INTRODUCTION. Implicit adaptation is an important issue in extended reality settings. Here we investigated adaptation by artificially amplifying the visual consequences of head rotation (Augmented Gaze-AG) to facilitate immersive visual exploration in a 360-deg telepresence environment (virtual biking).
METHODS. Eighteen participants completed three 3-minutes exposures performing a task consisting in detecting a visual target presented in the frontal or rear space. In two exposures, AG was applied (x3 horizontal amplification, linear and non-linear). Immediately and five minutes after each exposure, participants made instructed head turns in darkness to test adaptation retention.
RESULTS. During AG exposures, head movements decreased, and visual exploration increased, as compared to control exposure. Also, participants glanced more to the rear space, which improved task performance and judgement of task easiness. AG did not increase cybersickness, but worsened sense of reality (UX ratings), though this was less pronounced at the end of exposure, compared to the beginning. Following AG exposures, head turns directed to spatial references in darkness ("turn rightward", "turn backward") had smaller amplitude compared to control (motor aftereffect). When the instruction contained a visual reference ("turn to the biker face"), amplitude further decreased (cognitive aftereffect).
DISCUSSION. Besides confirming that AG facilitates visual search without unpleasant symptoms, these preliminary results suggest that participants adapted to such highly unnatural visuomotor mapping through reduced perceived unnaturalness of AG over time. The presence of distinct cognitive and motor aftereffects suggests that both explicit and implicit adaptive changes can take place with even very short exposures to AG.

If you're submitting a symposium talk, what's the symposium title?

If you're submitting a symposium, or a talk that is part of a symposium, is this a junior symposium?

Primary authors: DALMASSO, Vittorio (Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano); Dr CORNARO, Camilla (Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano); Dr CASTAGLIUOLO, Giulia (Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano); Prof. DE'SPERATI, Claudio (Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano)

Presenter: DALMASSO, Vittorio (Laboratory of Action, Perception and Cognition, Facoltà di Psicologia, Università Vita-Salute San Raffaele, Milano)

Session Classification: Lunch and poster 2

Track Classification: Attention, perception and consciousness