Contribution ID: **693** Type: **Poster**

Training spatial orientation and cognitive maps: early results from a virtual tool

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

Introduction
Cognitive map formation and spatial orientation are essential for navigation, yet traditional assessments often lack ecological validity. The Virtual Spatial Configuration Task (VSCT) is a VR-based tool designed to assess allocentric spatial abilities. In a previous validation study with 54 participants, VSCT performance showed a significant correlation with the Spatial Configuration Task (SCT; r=.43, p =.002), supporting its construct validity. Given these promising results, the ecological validity and the gamification literature, we explored whether repeated practice with the VSCT could lead to improvements in spatial abilities.
Methods
Building on these findings, we launched a longitudinal training study. After completing the Santa Barbara Sense of Direction Scale (SBSOD), participants randomly performed VSCT (experimental group) or the Rey Auditory verbal learning task (control group) once per week. Spatial abilities were assessed at baseline and after three weeks using the SCT and the Cognitive Map Task (CMT).
Preliminary Results (N =10)
VSCT and SCT scores were strongly correlated at post training (r = .79, p =.0063). Analyses revealed significant improvements in SCT scores from T1 to T3 (p =.0054), VSCT accuracy from T1 to T2 (p <.0001), and remained stable thereafter, and in CMT scores from T1 to T3 (p <.0001). No meaningful associations were ever found with the SBSOD.
Conclusions
Results reinforce the convergent validity of the VSCT and suggest that repeated exposure to VSCT enhances spatial skills. Moreover, they back up the potential of VR-based training as effective, and accessible, to improve allocentric spatial abilities across multiple spatial tasks.

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?

No

Primary author: UMILTÀ, Alberto (Unibo)

Co-authors: Dr TESSARI, Alessia (Unibo); Dr BURLES, Ford (University of Calgary); Dr LI PIRA, Giorgio (Unibo); Dr OTTOBONI, Giovanni (Unibo)

Presenter: UMILTÀ, Alberto (Unibo)

Session Classification: Lunch and poster 2

Track Classification: Memory