Effect of Immersive virtual reality Face-name Memory Training on Long-term Associative Memory In Subjective Cognitive Decline: Preliminary Results

Maria Stefania De Simone[1,2], Gaetano Tieri[3], Silvia Zabberoni[1,2], Alberto Costa[1,2], Erika Tenaglia[1,2], Carlo Caltagirone[2], Giovanni Augusto Carlesimo[2,4]

[1]Department of Economics, Psychology, Communication, Education, and Motor Sciences, Niccolò Cusano University;
[2]Department of Clinical Neuroscience and Neurorehabilitation, Laboratory of Neuropsychology of Memory, IRCCS Santa Lucia Foundation;
[3]Virtual Reality and Digital Neuroscience Lab, Department of Law and Digital Society, University of Rome UnitelmaSapienza;
[4]Department of System Medicine, University of Rome Tor Vergata

Introduction and Aim

Subjective Cognitive Decline (SCD) is increasingly recognized as a potential preclinical stage of Alzheimer's dementia (AD). Emerging research indicates that the self-perceived cognitive difficulties reported by individuals with SCD are often indicative of objective alterations affecting specific cognitive processes that are more demanding than those typically assessed by standardized neuropsychological tests. In particular, a frequently reported memory difficulty in SCD is the impairment in remembering face-name associations, which points to a subtle deterioration of long-term associative memory processes (De Simone et al., 2023, 2025). Consequently, developing and implementing training programs to enhance face-name memory represents an important priority for achieving ecologically relevant cognitive improvements in SCD.

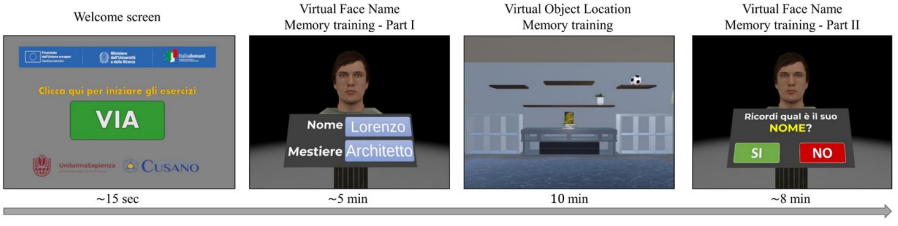
- Here, we aimed to evaluate the effectiveness of a face-name memory training program, delivered through an immersive virtual reality (IVR) environment and administered via a telemedicine approach, on long-term associative memory ability in individuals experiencing SCD.

Immersive Virtual Reality Training

A sample of 26 individuals with SCD was randomly allocated to one of two groups:

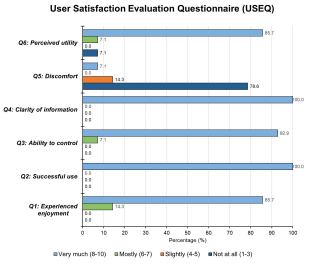
- the **Training group** (n=14), which received 20 cognitive training sessions three times a week for 5 consecutive weeks;
- the **Active Placebo group** (n=12), which received 20 sessions of simple exercises with prearranged instructions requiring minimal cognitive processing, for 5 consecutive weeks.

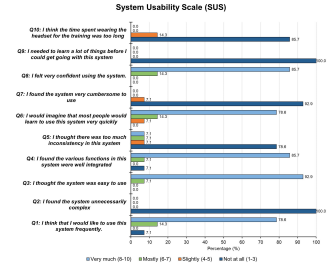
IVR apparatus and telemedicine platform

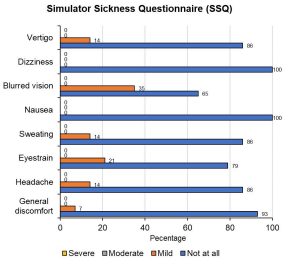


Results

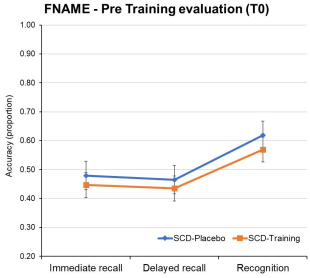
Usability and feasibility

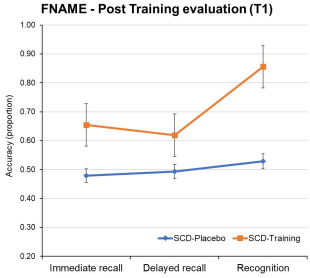






Cognitive performance





Conclusions

- The immersive virtual reality-based Face-Name memory training demonstrated positive effects on long-term associative memory.
- Considering its relatively low implementation costs and ease of accessibility, this intervention holds promise as a valuable contribution to primary prevention initiatives aimed at reducing the risk of dementia.

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