



The Use of VR Memory and Conversational AI to Support Reminiscence Therapy for People with Dementia and Caregivers



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Project Summary

Dementia is associated with cognitive decline and social isolation in people living with dementia (PLwD), and increased caregiver (CG) burden. Non-pharmacological interventions such as reminiscence therapy support emotional well-being by encouraging active recall of meaningful life experiences in individuals. Building upon this approach, this study explores the use of **Virtual Reality (VR) Memory** and **Conversational Artificial Intelligence (AI)** to support reminiscence therapy for PLwD and their caregivers. An immersive, customizable VR environments was designed to stimulate memory recall, while an AI Avater supported conversations through various modes to encourage further memory recall, social connection, and engagement.

Project Goals

- Evaluate the feasibility and usability of the **VR Memory** application
- Assess potential implications of **Conversational AI** on social connectedness and QoL for PLwD, and CG burden.

Methods

VR Memory: 7 Participants engaged in the VR Memory app for 6 weekly, 30-min sessions using Meta Quest 3 headsets. The app created an immersive, virtual room with personalized media items and cognitive activities.

- **Evaluation/Scales:** VHIL Presence, Cornell, NASA Task Load Index, Neuropsychiatric Inventory, MoCa

Conversational AI: Post VR intervention, participants interacted with Conversational AI avatar, named “Mary”, through 3 interactive modes. Conversational mode encouraged open dialogue with Mary, while Open User Defined Storytelling mode encouraged memory recall through guided prompts. Caregiver Story Mode allowed CG to feed AI with a meaningful memory to build prompts upon.

- **Evaluation/Scales:** Zarit Burden Interview, System Usability, Social Connectedness, focus groups

Outcomes

VR Memory: Participants found VR Memory enjoyable, cognitively stimulating, and supportive of memory recall, with a reduction in depressive symptoms and an above-average intervention usability.

Conversational AI: Quantitative measures showed improved social connectedness among participant-caregiver dyads (+7 increase on the Social Connectedness Scale). Qualitative feedback indicated that the avatar, Mary, was engaging, supportive, and sustained meaningful conversation with minimal prompting. Caregivers also reported reduced stress, and greater engagement during sessions.

Implications

These findings suggest that **VR and AI-supported** reminiscence therapies have the potential to enhance dementia care across Durham Region. Integrating the technology into existing regional programs may help strengthen social and intergenerational connectedness, improve QoL for PLwD, and reducing CG burden. With further development, next steps include expanding partnerships with additional long-term care homes, assisted living, and retirement home settings beyond Durham and across Ontario, to reach and support more PLwD + CGs, province-wide.

