

Redesigning a VR Group Intervention to Support a Mentalising Stance in Professional Caregivers of People with Intellectual Disabilities

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DOI: [10.54337/aau.icdvrat26.40](https://doi.org/10.54337/aau.icdvrat26.40)

Abstract

This paper presents the redesign of a virtual reality (VR) group intervention aimed at supporting professional caregivers' mentalising stance during emotionally intense care interactions with people with intellectual disabilities. Prior to evaluating the intervention's effectiveness, this study explores how the intervention can be adapted with and for professional caregivers. Therefore, professional caregivers assessed the previous and/or adapted VR group intervention and provided feedback on multiple occasions. This resulted in an adapted intervention featuring more engaging informational content on mentalisation prior to the VR interactions, more authentic VR interactions due to the transition from pre-scripted to AI-driven avatars, and better structured reflection sessions following each VR interaction to encourage shared learning.

1. Introduction

Professional caregivers play a crucial role in establishing meaningful, trusting relationships with people with intellectual disabilities (Rinaldi et al., 2023). Key to fostering these relationships is mentalisation; the ability to understand and interpret mental states in oneself and others (Bateman & Fonagy, 2016). In everyday interactions, mentalisation is enacted through a mentalising stance: an open, curious, non-judgmental attitude in which people acknowledge uncertainty, stay flexible, and actively attend to the mental states underpinning behaviour rather than solely focusing on observable actions (Sharp et al., 2020). Maintaining this stance can be demanding, especially in care settings. For one, professional caregivers need to be particularly sensitive to the meaning of their clients' behaviour and the underlying needs or internal states, as people with intellectual disabilities often have difficulty communicating about and reflecting on their internal experiences (Derks et al., 2019; Reinders, 2010; Schuengel et al., 2010; Scotland et al., 2015; Simons et al., 2020). Second, professional caregivers in today's disability care face many emotionally demanding and stressful situations (Baker et al., 2024; Olivier-Pijpers et al., 2020). As stress is known to suppress one's mentalising capacity (Luyten et al., 2019), professional caregivers may more easily lose their mentalising stance in daily interactions with clients. Training and education in mentalisation are therefore essential to adequately support professional caregivers in maintaining and strengthening their mentalising skills. However, mentalisation is still insufficiently embedded in current educational curricula (Fagerbakk et al., 2023; Jansen et al., 2023) and accessible opportunities within the workplace to practice and strengthen mentalising skills of professional

caregivers remain limited. Taken together, these considerations led to the development of a Virtual Reality (VR) group intervention to support professional caregivers in practicing mentalisation. Practicing mentalisation in VR enables professional caregivers to rehearse challenging, high-arousal interactions in a safe and controlled environment (Cho et al., 2024). Evidence from our prior randomised trial indicated that the VR group intervention is promising, although adjustments are needed. That is why this study aimed to further develop the VR group intervention and to identify the refinements that emerged from this process.

2. Methods

The initial intervention consisted of three components: (1) knowledge clips and an article providing background information about mentalisation, (2) VR interactions with a pre-scripted avatar dealing with difficult situations or stressful circumstances, and (3) a group reflection moment following each participants' VR interaction, which were iteratively refined using a design-based approach. This design-based approach involved two heterogeneous groups of approximately eight professional caregivers, including team managers, developmental psychologists and support staff, who participated in co-creative sessions (see Figure 1), following the principles of design thinking and, more specifically, the CeHRes Roadmap (Kip et al., 2025). During the first two design sessions, the first group of participants experienced the intervention and provided feedback on user experience, relevance, and implementation conditions. In the third design session, a second group of participants provides feedback on the intervention. Afterwards, individual interviews are conducted with participants from this second group to explore how they apply what they have learned in daily practice, what changes they experience in their interactions with clients, and what meaning they attribute to these changes.

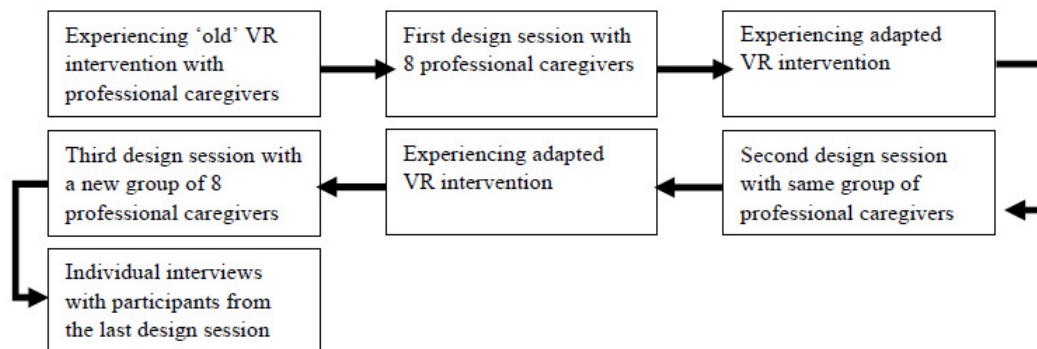


Figure 1: Design-based methodology of adapting the VR group intervention.

3. Results

Based on professional caregivers' feedback, we identified facilitating and hindering factors across the intervention core components that shaped the next iterations. First, feedback on the length and content of the knowledge clips led to the development of shorter and more targeted clips. Feedback on the outdated article resulted in its replacement with a more recent article. Participants emphasised the importance of embedding the intervention within what is already familiar in the care organisation and how mentalisation differs from other conversational skills, such as solution-focused communication. Second, feedback on the VR component highlighted the importance of more natural interactions and more responsive avatars. In the initial VR app, the avatar's responses did not always align with participants' verbal input, disrupting the flow of the

interaction and reducing its perceived realism. To increase conversational naturalness, we partnered with a VR company to integrate AI-driven avatars, allowing responses in the simulation to be delivered more rapidly and to be better adapted to the user's input. Third, feedback on the reflection session indicated the need for more structure with clearer and more concrete guidance, leading to the use and testing of predefined reflection formats. Based on ongoing feedback, further adaptations are currently being made in preparation for a third iteration, for which a new group of participants will be recruited. Consequently, outcome data and completed qualitative analyses are not yet available at this stage.

4. Discussion and conclusion

This study showed that the further development of the VR group intervention was not only a process of practical refinement but also provided insight into the conditions needed for the intervention to be meaningful in practice. First, the findings suggest that background information about mentalisation should be offered in an appealing and accessible way. In addition, the findings suggest that implementation may be strengthened when the VR group intervention is clearly connected to the care facility's vision and ways of working and when its position in relation to familiar conversational approaches (e.g., solution-focused communication skills) is made explicit. Second, the findings underline that the quality of the VR interaction is crucial. As the intervention is designed to practice and train mentalising skills, a more natural and flexible VR experience is essential for enabling meaningful interactions and achieving the intervention's intended purpose. The choice for AI-driven avatars was therefore deliberate, as they are intended to enable more dynamic, responsive, and realistic conversational practice than would be possible in more fixed or scripted formats. This aligns with emerging work on AI-driven virtual patients in healthcare education, suggesting they may offer flexible, repeatable, and potentially realistic opportunities for communication skills training (Bowers et al., 2024). Finally, the study highlights the importance of structuring reflection sessions, as more structure may help shift reflection from a descriptive discussion of events towards the exploration of underlying mental states and shared meaning-making, thereby strengthening its relevance for mentalising. Taken together, these findings led to adaptations to the VR group intervention, creating a better fit with what professional caregivers indicated would enhance its learning potential. In this way, the VR group intervention may optimally support professional caregivers in making sense of behaviour in terms of underlying mental states and to ultimately engage in meaningful interactions with people with intellectual disabilities. Future research will evaluate whether the redesigned intervention effectively contributes to professional caregivers' mentalising stance.

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