# Beyond Control: Access, embodiment, and therapeutic interaction in VR for older adults – insights from a co-design workshop

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## Abstract

This paper examines interaction design challenges in virtual reality (VR) therapeutic applications for older adults in geriatric and palliative care. Drawing on a co-design workshop with six clinical psychologists, the study explores how interaction unfolds across the full trajectory of therapeutic VR use – from preparation and onboarding through immersion to post-session reflection. The findings reveal that interaction emerges through the ongoing negotiation of diverse embodied conditions, therapeutic mediation, and clinical environments. Informed by disability studies and critical access perspectives, the paper argues that therapeutic VR systems actively shape conditions of participation, autonomy, and engagement, advancing an understanding of participation as a situated, interdependent, and care-dependent achievement.

## 1. Introduction

Virtual reality (VR) is increasingly used in healthcare, particularly in mental health, pain management, and palliative care (Appel et al., 2021). Systematic review evidence suggests that VR interventions in palliative care are feasible, generally well tolerated, and associated with improvements in pain, psychological well-being, and emotional distress, though evidence remains methodologically limited and highly heterogeneous across technologies, intervention formats, and clinical contexts (Mo et al., 2022; Moloney et al., 2023). For older adults which we define as individuals aged 65 years and above, in line with standard gerontological usage, VR offers access to otherwise unreachable environments and the possibility of influencing affective and psychological states (Li et al., 2024). Engagement with immersive technologies is shaped by perceptions of autonomy and control, both of which may be affected by age-related changes in health and everyday functioning (Langer & Rodin, 1976; Bandura, 1977). VR interventions are frequently framed as tools for restoring agency, however we cannot predict whether interaction will be successful, especially for users with limited prior experience with immersive technologies (Huygelier et al., 2019; Saredakis et al., 2020). In therapeutic VRinteraction unfolds within complex relations between users, systems, and care environments. Implementation studies (Kouijzer et al., 2023) point out that organisational resources, staff training, workflow integration, and local infrastructures all influence how VR is introduced and sustained in healthcare settings. This paper examines how interaction emerges in practice through a co-design workshop with clinical psychologists working with older

adults in geriatric and palliative care. Drawing on disability studies and critical access scholarship (Hamraie, 2017; Titchkosky, 2011; Garland-Thomson, 2011; Jain & Bayerlein, 2026), the paper argues that therapeutic VR systems actively configure participation – embedding assumptions about bodies, perception, and control that shape who can engage and how.

## 2. Methodology and workshop context

As this study is qualitative and exploratory in design, we conducted an exploratory co-design workshop with six clinical psychologists (all women, mean age approximately 45) who have more than ten years of clinical practice and direct experience using immersive VR with older adults. All held specialist qualifications in clinical psychology and had incorporated VR into their practice on an exploratory basis without formal VR-specific training. Participants used HMD-based immersive VR, including commercially available applications, 360-degree video experiences, and in one case self-recorded nature videos, to support relaxation, reminiscence, and therapeutic engagement. The workshop was based on the method of narrative inquiry (Clandini & Connely 2000). It followed a structured co-design process, recognising participants as domain experts in the generation of design-relevant knowledge (Sanders & Stappers, 2008; Ng et al., 2024). It consisted of four phases: (1) mapping a typical VR therapy session; (2) identifying common barriers and breakdowns; (3) analysing these challenges through a multi-dimensional analytical framework developed by the first author (see Table 1); and (4) recalling situations in which VR had worked particularly well. Data were generated through guided group discussion, structured worksheets, and facilitated reflection. Workshop outputs were reviewed and synthesised to identify recurring barriers, enabling conditions, and interactional patterns. Given the small and contextually specific sample, the findings are exploratory and context-bound rather than generalisable.

| Dimension | What it captures | Example issues from workshop |
|---|---|---|
| **Communication** | Understanding instructions, therapist– patient interaction | Lack of shared vocabulary (e.g. "controller"); verbal guidance difficult without screen mirroring |
| **Cognition** | Memory, attention, comprehension | Interaction logic not adapted to varied prior experience; multistep structures create confusion |
| **Technology** | System performance and usability | Calibration errors, crashes; unstable internet; video lag; device not properly configured |
| **Body position** | Physical posture and stability | Device design does not accommodate non-seated positions or postural variability; dizziness risk |
| **Interaction** | Input methods and control | Difficulties using controllers; unclear interaction affordances; discomfort with navigation |
| **Emotional responses** | Affective reactions | Anxiety, frustration due to technical delays; fear in unexpected situations |

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|---|---|---|
| **Social/ therapeutic support** | Role of therapist | Continuous facilitation required; therapeutic mediation integral to interaction; loss of connection without mirroring |
| **Physical comfort** | Sensory and bodily comfort | Headset weight and fit not designed for diverse body sizes; fatigue from extended wear |
| **Infrastructure/ context** | Spatial, temporal, and organisational conditions | Lack of dedicated space; long setup time; limited time for session and reflection |

*Table 1: Multi-dimensional analytical framework of VR therapy use in clinical contexts.*

# 3. Findings

## 3.1. Interaction as relational achievement

The workshop revealed that interaction in therapeutic VR is not given, but must be continuously achieved. The multi-dimensional framework highlights how therapeutic VR use unfolds through embodied, relational, and infrastructural conditions that shape participation, access, and therapeutic engagement. Breakdowns frequently occurred in relation to headset placement, controller use, physical stability, misunderstood instructions, and fatigue or dizziness. This indicates that interaction depends on the alignment of diverse embodied conditions, system design, and contextual support. Such breakdowns reflect normal conditions of use, extending beyond the immediate interaction moment to include preparation time, device setup, and infrastructural constraints, often introducing friction before engagement could even begin. Participants described numerous situations in which interaction could not begin until organisational and bodily preconditions were in place. One participant noted that group-based sessions, while therapeutically valuable, were rarely feasible due to insufficient staffing: there were simply not enough ward staff available to move patients to a shared space. Another highlighted that CBT-based relaxation techniques (cognitive behavioural therapy) were difficult to implement because the hospital environment offered neither privacy nor appropriate space. Both accounts suggest that interaction in therapeutic VR is shaped well before the headset is placed on the patient.

## 3.2. Tension between control and presence

Interaction was organised through competing logics. A first logic emphasises control, task completion, and goal-oriented action – the dominant paradigm in many VR systems. A second logic, highlighted by participants, centres on presence, sensory immersion, and affective engagement: nature-based environments and calm atmospheres were valued not for enabling action, but for supporting relaxation and emotional connection. A third logic emerges at the level of infrastructure and mediation: physical constraints, technical contingencies, and institutional conditions shape the therapeutic session before it has even begun.

Participants drew a consistent distinction between task-oriented and experiential engagement. Several emphasised that VR activity without a clear therapeutic goal was perceived as ineffective: "VR activity is not effective if it has no goal." At the same time, the most meaningful therapeutic responses often arose not from task completion but from ambient, emotionally resonant experiences – a patient watching personal photographs in a virtual cottage, or moving through a forest environment that invited reflection on different life stages. In these cases, presence and emotional

connection proved to be the primary therapeutic mechanisms, not interaction in the conventional sense of system control.

### 3.3. Autonomy as design-dependent

Autonomy emerged not as an individual capacity but as a condition that needed to be actively restored and scaffolded through design. One participant described working with oncology patients whose sense of control had been severely diminished by illness: the therapeutic goal was to identify and amplify whatever domains of control remained, even where control over the illness itself was no longer possible. Another participant described a VR task in which patients were placed in an unfamiliar environment and invited simply to decide whether they wanted to stay or leave, where this framing choice itself is a therapeutic intervention. A recurring theme was the importance of giving patients responsibility: caring for a virtual animal, tending to a plant, or making decisions within the virtual environment. These examples suggest that autonomy in therapeutic VR is less about interface control and more about the restoration of a sense of agency within a constrained clinical reality.

## 4. Critical interpretation

The findings highlight the limits of control-oriented interaction models in therapeutic VR. While HCI has traditionally prioritised efficiency and usability, these frameworks do not fully capture the embodied and relational nature of interaction in clinical contexts (Hornbæk & Oulasvirta, 2017). This limitation can also be understood through the concept of technoableism (Shew, 2020), which describes a broader cultural and design logic in which technologies are framed as empowering solutions for disability while simultaneously reproducing normative assumptions about desirable bodies, functioning, and participation. Ability-based design offers an important perspective by emphasising adaptation to users' situated capacities and recognising diversity in how interaction is achieved (Wobbrock et al., 2011). Disability studies extends this perspective by directing attention to the relational conditions through which exclusion emerges. Difficulties often arise through mismatches between bodies and systems organised around idealised assumptions about perception, movement, communication, and control (Garland-Thomson, 2011; Titchkosky, 2011). These can be further approached through perceiving access as a relational and political condition shaped through social, material, and institutional arrangements (Hamraie, 2017). In therapeutic VR for older adults in hospitalized care settings, access encompasses usability, opportunities for different forms of engagement, the possibility of non-performance, and recognition of embodied variability. This understanding aligns with broader European policy frameworks that position accessibility as a fundamental condition for equal participation and inclusion (AccessibleEU Consortium, 2024). A recurring theme across participants' accounts was the concept of ‘learned helplessness’, which is the progressive withdrawal of agency that occurs when patients repeatedly experience their actions as ineffective or irrelevant. This dynamic, well documented in gerontological and clinical contexts (Langer & Rodin, 1976; Bandura, 1977), was identified by participants as one of the central challenges that therapeutic VR might address, not through task performance, but through the restoration of meaningful choice and consequential action within the virtual environment. Therapeutic VR can therefore be understood as an interaction ecology in which participation emerges through the ongoing negotiation of situated embodiments, technological systems, therapeutic practices, and clinical infrastructures.

## 5. Design implications

The findings point to a need to rethink dominant interaction paradigms in therapeutic VR for older adults in geriatric and palliative care settings. Systems should support open-ended forms of engagement that allow participation at different paces and through different modes of interaction. Alternative input methods, including gaze-based selection, voice interaction, simplified one-button controls, therapist-assisted interaction, and passive immersive experiences, may better accommodate the diverse bodily, cognitive, and sensory conditions encountered in clinical practice. Reducing reliance on conventional hand-held controllers may broaden opportunities for participation across a wider range of users and care contexts. Design attention should therefore extend beyond the immersive experience itself and consider the wider therapeutic process in which VR is embedded. Preparation procedures, onboarding strategies, technical setup, therapist involvement, and opportunities for post-session reflection all influence the quality of participation and therapeutic engagement.

## 6. Conclusion

This paper examined how therapeutic interaction emerges in VR applications used with older adults in geriatric and palliative care settings. The study contributes to current discussions of therapeutic VR by drawing attention to the interdependent nature of participation. Clinical psychologists described therapeutic engagement as a process sustained through guidance, adaptation, interpretation, and negotiation between diverse embodied conditions, technological systems, and therapeutic goals. A further contribution lies in the methodological approach. By combining temporal process mapping with a multi-dimensional analysis of barriers and enabling conditions, the workshop framework made visible forms of therapeutic mediation, embodied adaptation, and infrastructural support that are often difficult to capture through conventional usability studies. Therapeutic VR is best understood as part of a wider ecology of care, in which more inclusive design and implementation depend on attention to the relationships among people, technologies, and clinical environments.

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