When the World Opens Up: Journeys of People with Intellectual Disabilities in Social Virtual Reality

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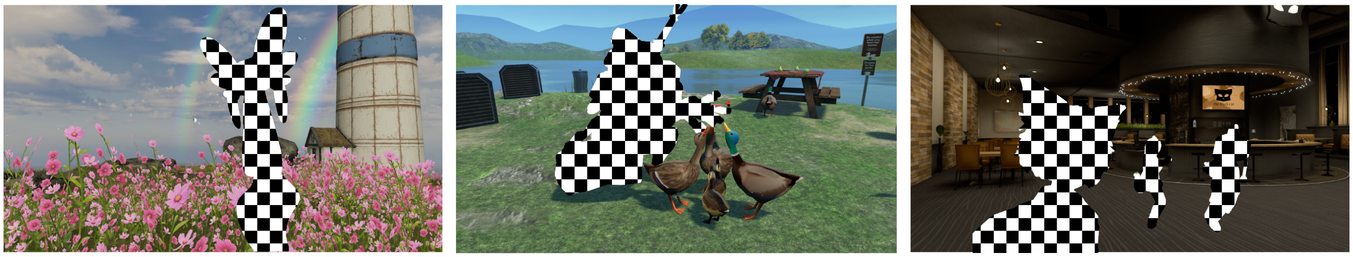

Figure 1: Over three scaffolded sessions, 11 adults with mild intellectual disabilities entered the open *wild* of VRChat, moving from low-stimulation scenic worlds like Fallen Books (left) and structured activity spaces like Udon Bird Sanctuary (centre) to high-traffic social hubs such as The Black Cat (right). Along the way, they pursued their own interests, navigated safety together, and built confidence through interdependent care. For privacy, we replace participant avatars with checkerboard silhouettes in all figures; these are conceptual placeholders rather than the avatars participants used.

Abstract

Adults with intellectual disabilities (ID) face systemic social exclusion that narrows autonomy and life opportunities. While social virtual reality (VR) offers a powerful medium for identity expression and community belonging, research often adopts a remedial paradigm, focusing on training functional skills in scripted environments. This paper challenges this deficit-based model by treating social VR as an open world for participation. Following 11 adults with ID across multi-session engagements with VRChat, we employed an adaptive, relational method to scaffold participant leadership. Findings reveal that participants used the platform for interest-driven discovery, sustained through interdependent care webs. Crucially, the study demonstrates how social VR supports transferable confidence and emerging digital citizenship, enabling some users to transition from novices to community leaders. We contribute six Disability Justice-aligned design principles articulating a *world-making paradigm* that reorients Human-Computer Interaction toward supporting personhood and self-determination in mainstream digital publics.

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CCS Concepts

• Social and professional topics → People with disabilities; **• Computing methodologies → Virtual reality**; **Perception**; **• Information systems → Social networking sites**; **• Security and privacy → Social aspects of security and privacy**; **• Human-centered computing → Empirical studies in accessibility**.

Keywords

Intellectual disabilities, virtual reality, VRChat, Disability Justice

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1 Introduction

Adults with intellectual disabilities (ID) face *profound social exclusion*, often feeling "left out" even from services designed for their inclusion [90]. This is not just a feeling, but a measurable reality: they are up to four times more likely to experience chronic loneliness [39], have smaller social networks [106], and are systematically under-represented in cultural and community life [42]. These outcomes are a result of persistent social and environmental barriers from the low expectations and overprotection that limit autonomy [117] to the quiet, systemic exclusions that narrow a person's chances to build a connected and meaningful life.

Unfortunately, technology design and research in Human-Computer Interaction (HCI) often reproduce these same exclusionary patterns. Despite calls for more justice-oriented approaches, the field's engagement with the ID community remains sparse and narrowly focused. A survey of top accessibility venues (CHI/ASSETS, 2010–2019) found that only 2.8% of papers addressed ID, with aims skewed toward "increasing independence" through skills-training and behaviour change [82]. This remedial bias positions people with ID as subjects to be corrected rather than as whole persons with inherent worth, experiences, and the right to lead conversations about their own lives [14]. A Disability Justice approach challenges this, demanding that we target the social arrangements that produce exclusion and instead centre self-determination and the leadership of those most impacted [102].

This *tension between remediation and self-determination* is starkly visible in research on virtual reality (VR). The dominant approach applies VR for people with ID as a tool for training functional life skills in simplified, scripted environments, such as cooking [74], shopping [29], or transport [91]. Such studies cast VR as a padded corner for practising deficits, prioritising control over agency. As Bennett and Rosner [10] critiqued, these methods create a harmful power dynamic in which designers' interpretations of disability override the expertise of disabled people themselves. Across extended reality (XR) more broadly, critical syntheses similarly argue that "disability inclusion" is still too often framed as remediation toward normative functioning, and call for approaches that centre disabled people's own ways of living, sensing, and relating [110, 113].

In contrast, research with other marginalised communities shows what VR can become when users are in control. Work in social VR has documented how platforms such as VRChat function as *third places* where LGBTQ+ users build safer spaces for identity expression and mutual support that may be unavailable offline [1, 76]. Disabled people are likewise already present in these worlds: they use avatars and social norms to negotiate visibility, manage stigma, and experiment with more affirming self-presentations, sometimes in ways that spill over into greater confidence and sustained social support beyond the headset [28, 31, 36, 47, 121]. These studies suggest that when VR is treated as an open, interest-driven social world rather than a closed training tool, it can support identity, community, and care.

The divide between using VR as a deficit-focused training tool and embracing it as a platform for social participation points to a persistent gap in how HCI has imagined the role of VR in the lives of people with ID. To challenge this, our study explores what becomes possible when we stop designing for deficits and instead design for agency. We take up this question in social VR, a compelling site for this work for several reasons. Unlike the sterile, controlled environments common in remedial studies, it is an unscripted, public world where interaction is socially negotiated. Crucially, its affordances like avatar embodiment allow for new forms of identity expression and self-presentation, while the virtual space removes many of the logistical and physical barriers that can limit participation in offline life.

Our study builds on and extends accessibility and social VR research in three ways. *First*, we focus on adults with mild intellectual disabilities, a group largely absent from existing social VR accessibility work despite being targeted by remedial VR interventions. Second, methodologically, we conducted a multi-session, in-situ qualitative study in a mainstream platform (VRChat), rather than relying solely on retrospective interviews, brief exposures, or bespoke prototypes. We followed participants as they entered, explored, and in one case continued to inhabit the *wild* of VRChat over time (see Figure 1). Third, analytically, we interpret their trajectories through a Disability Justice–aligned *world-making* lens that foregrounds digital citizenship, personhood, agency, and interdependence.

Our contributions are twofold: (1) an empirical account of how adults with ID participate in a mainstream social VR platform, together with an adaptive, relational method for scaffolding and studying this engagement; and (2) six Disability Justice–aligned design principles that together articulate a *world-making paradigm* for social VR with adults with ID, offering an alternative to prevalent remedial, skills-focused VR training approaches with this group.

2 Related work

This section first reviews the remedial legacy of technology for people with ID. We then introduce the Disability Justice frameworks that challenge this paradigm, before focusing on VR as a critical site where the tension between remediation and participation is clearly visible.

2.1 The remedial legacy of technology for people with ID

Historically, society's response to disability has been dominated by a medical model. This model frames a person's cognitive, sensory, or physical difference as an individual pathology or private 'tragedy' to be 'fixed' [79, 85, 104]. By locating the 'problem' within the person, this perspective reduces the complex identity of a disabled individual to their functional limitations compared to a normal baseline, often framing their disability as synonymous with inability [21]. Much of the technology designed for people with ID echoes this model. Rooted in a well-intentioned desire to help, the goal has often been normalisation: providing support that helps individuals learn and behave in ways that minimise their perceived deficits [70]. This has led to a proliferation of tools focused on remedial training, such as cognitive software for memory skills, educational apps for repetitive practice, and even behavioural correction systems.

As critical HCI scholars like Frauenberger [46] argued, the philosophical position underlying this remedial paradigm is inherently reductionist. It presumes that the complex, lived experience of disability can be adequately understood and addressed by focusing solely on a person's functional limitations. This has shaped the field's dominant understanding of accessibility, often limiting it to a narrow, functional goal of providing a tool that enables a user to complete a specific, isolated task [38, 114, 123]. While crucial, this approach fails to account for the rich interplay of social and emotional factors that truly shape participation [105]. It overlooks fundamental human needs for community belonging and identity expression [33]. A narrow focus on task completion often neglects the crucial question of whether the experience is genuinely meaningful or empowering, thereby failing to address broader opportunities for technology to support agency in more holistic ways [13, 46].

2.2 Rethinking disability in HCI

A foundational shift in disability research has been the move from the medical model to the social model, which locates disability in the barriers created by inflexible environments and exclusionary attitudes [111]. *Disability Justice*, a framework developed by queer, Black, and Brown disabled activists such as Sins Invalid [66], extends the social model by foregrounding *intersectionality*, *collective access*, and *full humanity* [97]. A core principle is *wholeness*: the recognition that "each person is full of history and life experience" and has inherent worth outside of capitalist notions of productivity [14]. Disability scholars note that portraying people only as vulnerable dependents is objectifying and de-agencifying, whereas acknowledging dynamic agency leads to more inclusive structures [93]. Another key principle is the *leadership of those most impacted*: "nothing about us without us", which challenges HCI to centre the lived expertise of people with ID themselves [111].

Building on these shifts, a growing body of justice-oriented HCI scholarship critiques the field's own remedial legacy. Researchers have noted how technologies, particularly for neurodivergent players, often adopt a medical framing that reduces engagement to a form of therapy, undermining autonomy and play for its own sake [108]. In contrast, competency-based approaches highlight how everyday digital practices can scaffold confidence and self-determination [6, 7, 107]. Reimagined co-design methods create space for genuine influence [16**?**], while artefacts like TalkingBox surface overlooked strengths and interests [17]. As Safari et al. [101] found, participants report pride and ownership when design aligns with their interests, demonstrating that technology designed around curiosity and identity resists the de-agencifying tendencies of deficit-based models.

Critical perspectives like *crip technoscience* further inform this trajectory by emphasising how disabled people creatively hack and repurpose technologies to fit their own desires [60]. Within HCI, this has inspired critiques of *independence* as a default design goal, proposing instead *interdependence* as a more realistic and just orientation [9]. Such work aligns with Bircanin et al. [16]'s notion of "co-designing in the middle," which reframes design as a relational and ongoing practice that resists the neurotypical impulse to parse complex social realities into a series of controlled events. By challenging designers to abandon fixed agendas and instead navigate the ambiguities of the *middle*, meaning is allowed to emerge from the encounter itself [16]. Together, these justice-oriented approaches in HCI connect directly with Disability Justice principles by foregrounding *wholeness*, *collective access*, and the *leadership* of those most impacted.

2.3 Virtual reality from remedial tool to a world of participation

VR is an inherently experiential technology. Its core affordances of immersion and presence offer unique opportunities for learning and interaction. For researchers working with people with ID, VR has been compelling because it provides a controllable and engaging medium to simulate real-life scenarios, offering *learning by doing* opportunities that are difficult to replicate in traditional settings. However, as Gerling et al. [53] critiqued, *accessibility research has often failed to engage with the very experiential qualities that make VR powerful.* Recent years have seen a surge in research using VR with people with ID, but as systematic reviews confirm, *this work has largely perpetuated a remedial paradigm* that reduces the technology to a tool for procedural skills-training [94, 122]. This includes training for daily living skills like cooking [29, 74], shopping [109], and transport or navigation [5, 34, 72, 91]; vocational skills like job interviews [23]; and therapeutic interventions for cognitive functions like attention [15], physical fitness [77], and emotional regulation [51]. While research has successfully demonstrated that VR is an engaging medium for these tasks, its scope is profoundly limited. The cumulative body of work essentially answers a limited question: *Can people with ID learn a procedure in a controlled virtual space?* This is no longer a sufficient goal for HCI. As Gerling et al. [53] argue in a powerful call to action, we must afford research with disabled people "the same nuance and care as when addressing non-disabled persons, placing the same emphasis on *experience as an outcome parameter*." To answer this call requires shifting the research context from bespoke training applications to the kinds of open-ended, social worlds where rich experiences can unfold.

2.4 Accessibility and social VR

Social VR platforms like VRChat represent such a world. For many users, they serve as *third places* that overcome geographical barriers and enable a powerful sense of co-presence for social interaction. This potential is leveraged by specific marginalised communities. Research in HCI has documented how LGBTQ+ users, for example, use social VR to find social support and create safe spaces for identity formation that may be unavailable to them offline [1, 76].

Accessibility research shows that disabled people are not waiting to be included into social VR, they are already present and actively reshaping these spaces. Because mainstream platforms often centre normative bodies and communication styles, disabled users develop rich, self-directed practices to negotiate access and safety [80]. This agency is most visible in avatar systems, which serve as a primary site for identity work [75]. Customisation is not treated as cosmetic, studies show how disabled users leverage avatars to manage stigma, selectively disclose disability, and experiment with affirming self-presentations [58, 119]. This world-making extends beyond individual representation to the social infrastructure of the platform itself. Recent work explores how embodied interaction is made feasible through sighted or AI-powered guides, as well as haptic and audio cues that convey non-verbal signals otherwise inaccessible in virtual environments [30, 32, 67]. Together, these practices demonstrate that access in social VR is an active, ongoing negotiation of both self and the virtual space.

At the same time, social VR platforms are not utopias. The same openness that enables connection and world-building also exposes users to harassment, exclusion, and sensory overwhelm [49, 78]. Disability signifiers on avatars can invite targeted abuse. In response, communities have evolved tactics such as "staying mute" or carefully curating worlds to manage social anxiety and conflict [28, 119]. Because of these complexities, the dominant research paradigm has favoured keeping people with ID in tightly controlled, safe training simulations rather than open social worlds. However, disability advocates argue that such overprotection can be inherently harmful by denying disabled people the dignity of risk [96]. By moving beyond scripted environments, we uphold the right of people with ID to encounter complex social situations and to develop their own judgments, relationships, and coping strategies in the wild of a mainstream platform.

3 Methodology

We adopted a qualitative, exploratory design grounded in Disability Justice and a practice of *being with* participants to study participation in an open-ended social VR world rather than a task-based, remedial exercise. We first outline the approach, then participants/ethics, and finally data collection and analysis. Methodologically, we remain cautious about how findings from VR settings travel beyond VR.

3.1 Study design and rationale

Our work explored how people with ID encounter an open-ended, socially immersive virtual environment for the first time. Unlike most VR studies with this group, which focus on one-off, skills-based training, our methodology was designed around a three-session structure that unfolded over multiple days. This decision was a commitment to embracing temporal flexibility, a core principle of relational co-design [16]. While we began with a flexible plan of potential worlds to visit, the study's trajectory was fundamentally shaped by the participants themselves. In conversations between sessions, we actively solicited their preferences and ideas, asking what they had enjoyed and what they might like to explore next.

Our exploratory approach was structured around commitments from accessible HCI [11], disability studies [55], and the principles of Disability Justice [14]. Unlike standardised protocols, which often filter out unpredictability, our methodology embraced participants' unique embodied and relational styles as a central site of inquiry. It thus served a dual purpose: beyond data collection, it functioned as a practice of inclusion, deliberately designed to prioritise participant agency and embrace the contextual richness that standardised methods typically discard.

This approach was realised through a collaborative and iterative process grounded in interdisciplinary and lived expertise. Our team included researchers with backgrounds in VR and ID, a long-term VRChat user, and an autistic public contributor, who co-developed materials and piloted the full protocol. To conduct our study, we selected VRChat for its unique capacity to support open-ended exploration, allowing us to tailor experiences to individual interests while using private instances to manage safety in the beginning. VRChat is a multi-user social VR platform in which people appear as avatars and move between user-created 'worlds' that vary in activities, aesthetics, and social density. Worlds can be public (open to anyone), friends-only, or private instances. Users communicate primarily through spatialised voice chat, simple gestures, and in-world objects. This structure made it possible for us to select lower-stimulation or more structured worlds for initial sessions, then gradually move towards busier public hubs as participants' confidence grew.

Although prior comparative work in other domains suggests that some virtual field studies can reproduce high-level behavioural patterns seen in corresponding real-world deployments, it also shows that VR can systematically shift behaviour (e.g., increased exploration/interaction, device/controller constraints, and the absence of everyday distractions such as smartphone use). We therefore treat our findings as situated in social VR and interpret transfer to non-VR contexts cautiously [84].

3.2 Participants and ethical considerations

Here we outline how participants were recruited and deemed eligible, who took part, and the ethical safeguards put in place to enable informed, ongoing, and as-safe-as-possible engagement with VRChat.

3.2.1 Recruitment and eligibility. Participants were recruited through ID services and community organisations in the region surrounding the University of Kent in the UK. Recruitment was carried out in collaboration with local support networks and community centres in a mix of urban and coastal areas in the UK. A public-facing poster, outlining the study's aims, procedures, inclusion criteria, and contact details in accessible language, was distributed across these networks. Researchers also visited day centres and drop-in programmes that regularly support adults with ID. During these

(a) Session 1: low-stimulation scenic world (BloomingSky Rest).

(b) Session 2: structured activity space (Udon Bird Sanctuary).

(c) Session 3: higher-social-demand space (e.g., No Time Two Talk).

Figure 2: Gradual exposure across three scaffolded sessions in VRChat, moving from calm scenic environments to structured activities and then to more socially demanding settings.

visits, the study was introduced through short presentations and informal conversations with both staff and potential participants, enabling accessible in-person explanations of the study's purpose and procedures. Where participants expressed interest, the team arranged in-person meetings with them and, where applicable, their carers or support staff. These meetings included detailed explanations of the study and demonstrations of the VR equipment to support informed decision-making. Participants were invited to involve a carer in the sessions if this reflected their usual living arrangements or support preferences. All participants received a £10 shopping voucher for each VR session they attended and for the post-study interview, in recognition of their time and contributions.

To be eligible, participants needed to: (i) be aged 18 or older; (ii) have a pre-existing diagnosis of mild intellectual disabilities as defined by IQ range of 50 to 69; and (iii) be able to communicate in English. Participants were excluded from the study if they (i) did not have the capacity to provide informed consent, or (ii) had been medically advised to avoid VR due to conditions such as epilepsy. Capacity to consent was assessed using a structured protocol adapted from Arscott et al. [4], which involved six questions designed to evaluate participants' ability to understand, retain, and communicate key aspects of the study. The questions addressed the study's purpose, duration, potential risks and benefits, the right to withdraw, and how to ask questions or raise concerns. Individuals who were unable to demonstrate sufficient understanding across all six areas were not enrolled in the study. Carers were not subject to formal eligibility criteria, as their role was to support participants and contribute contextual insight, rather than being the primary focus of the study.

3.2.2 *Demographics.*

Thirteen volunteers participated in the study, including 11 adults with mild ID[1] and two adult carers, who accompanied two of the participants. All 11 adults with ID completed the full protocol. They ranged in age from 31 to 65 years (M = 48.6, SD = 12.03). Most were White British (10 of 11) and over half lived with family or a foster family (6 of 11). All could read and write their names, and most reported being able to read text messages (10 of 11) and emails (8 of 11). The majority had attended college-level education. Several reported co-occurring conditions, such as anxiety (4 of 11), depression (4 of 11), autism (3 of 11), and physical or motor impairments. Additionally, they were digitally active, using smartphones to access the internet (10 of 11) and engage with mainstream platforms like YouTube, Facebook, and TikTok (7 of 11). Demographic data was not collected for carers.

3.2.3 *Ethical considerations.*

The study received a favourable opinion from the Research Ethics Advisory Group of the School of Psychology, University of Kent and the Ethics Board of the underlying project's funding body. The study was designed with a strong emphasis on ethical safeguards, guided by best practices for working with adults with ID in digital and immersive contexts. To ensure clarity and accessibility, we co-developed *easy read* versions of the information sheet and consent form with a Patient and Public Involvement (PPI) representative. All materials were provided to and reviewed with each participant to support informed consent. Where carers were expected to attend sessions, they were also offered standard dedicated information sheets outlining their supportive role and were invited to provide written consent to participate in the activities and interviews. Participants were regularly reminded that they could pause, take breaks, or withdraw at any point without consequence.

3.3 Procedure

Our procedure was designed to enact the principles of Disability Justice in practice, creating a supportive and flexible research experience. Reflecting our commitment to temporal flexibility [16], participants took part in three VR sessions using Meta Quest 3 headsets, spaced across multiple weeks. Most participants completed all three sessions within a period of approximately 2–3 weeks with the exact timing adjusted to fit their existing routines and service schedules. Sessions took place either at the host institution or in local community centres, depending on participant preference. The first session lasted up to 90 minutes to accommodate onboarding, while subsequent sessions were approximately one hour each. All VR sessions were run with one focal participant at a time. Participants did not share the virtual environment with each other during the study. In two cases, a familiar carer joined the same world in a separate headset at the participant's request, acting as an additional source of reassurance rather than a co-participant in the research.

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[1] To provide context for our findings and maintain research transparency, we report the following demographic information. We offer this data not to define or limit our participants, but to situate them within their specific social and diagnostic contexts, in line with the Disability Justice principle of acknowledging intersectionality.

Session 1. Scaffolding for agency. The first session prioritised building a foundation of comfort and competence. We began by reviewing a co-designed physical guide with each participant, which used images and simple text to explain the headset, controllers, and key VRChat menus. This guide was developed with our neurodivergent collaborator after his pilot session to ensure its clarity. Following this, the session focused on familiarisation with avatar creation, movement, and the use of safety tools in a controlled, low-pressure setting (see Figure 2 left for one of the worlds explored in this phase).

Session 2. Participant-led exploration. The focus of the second session shifted to participant leadership. Based on conversations with the researchers about their interests, participants chose from a curated list of public worlds, allowing them to guide the experience toward what they found personally meaningful (see Figure 2 middle for one of the worlds explored in this phase).

Session 3. Supporting independent engagement. The final session supported more independent engagement in active public worlds like The Black Cat[2] This was designed to provide an opportunity for participants to navigate the complexities of an unscripted social environment on their own terms, with support available but not imposed (see Figure 2 right for one of the worlds explored in this phase).

To support this gradual exposure, we developed a flexible world-selection framework. While we came to each session with a curated list of pre-vetted worlds, this list served as a starting point. The initial list was compiled by the research team and our long-term VRChat user collaborator, drawing on their knowledge of accessible, relatively stable worlds and pilot testing for sensory load and social norms. The ultimate trajectory was guided by a collaborative process, adapting to participants' in-the-moment comfort and expressed interests. Our curated worlds were grouped into categories that reflected a progression from low to high social and sensory complexity. Each world[3] was pre-tested by the research team to ensure it met baseline safety and accessibility standards:

- *orientation & familiarisation spaces:* private or default worlds for learning controls (e.g., VRChat Home – a common starting environment).
- *low-stimulation exploratory worlds:* quiet, often scenic environments for practising movement with minimal social pressure (e.g., Emerald Valley, a calm outdoor landscape).
- *structured social worlds:* environments with a clear, simple activity to scaffold interaction (e.g., Udon Bird Sanctuary, a bird-feeding mini-game, and No Time Two Talk, a timed conversation game).
- *ambient social hubs:* popular, public worlds with a relaxed atmosphere, allowing for observation and optional engagement (e.g., Midnight Rooftop, a laid-back rooftop hangout).
- *active social hubs:* dense, unpredictable public worlds for experiencing the full *wild* of VRChat (e.g., The Black Cat).

Within this framework, participants could request to revisit favourite worlds, skip or leave worlds that felt uncomfortable, and suggest new themes (e.g., "a world with animals" or "a world like a pub"), which we then used to search for additional worlds on the fly where possible. In this way, the curated list structured the experience without fixing it in advance. Throughout all sessions, the physical and virtual setup was designed to provide comprehensive support. A researcher was always physically present in the room with the participant and simultaneously co-present in VRChat as an avatar via a desktop client. This dual presence allowed for real-time monitoring of both physical comfort and in-world interactions. The researcher did not wear a headset. Instead, they sat next to or slightly in front of the participant facing both the participant and a monitor that displayed the desktop VRChat client. This arrangement allowed them to watch the participant's body language and physical comfort while also seeing, hearing, and responding to in-world interactions in real time. The researcher's role was intentionally adaptive: in the beginning, it was more hands-on, providing direct guidance and scaffolding. As participants grew more confident across the sessions, the researcher's intervention became progressively lighter, stepping back to allow for autonomous exploration and only intervening in specific situations when support was needed or requested. When a carer joined a session, they used a separate headset in an adjacent room with a second researcher providing dedicated support. Participants were reminded at the start of each session that they could take a break or stop at any time without consequence. After data collection ended, we held a voluntary group debrief meeting for all participants and carers. During this meeting, P2 shared that he had continued using VRChat at home and expressed an interest in talking more about his experiences. We subsequently invited him to take part in a separate, optional follow-up interview about his ongoing use.

3.4 Data collection and analysis

We now outline the procedures used to gather our data and the analytic approach we employed.

3.4.1 Data collection. The study was qualitative and exploratory in nature. We gathered data from multiple sources to create a rich, triangulated account of each participant's experience. Our data corpus included:

1. **Observational data.** Across all three sessions, we collected data through two complementary methods. We used real-time observational logs to capture objective details, such as participants' direct actions, verbal quotes, and interaction sequences. Immediately following each session, we expanded on these logs by writing reflective field notes, which included the researcher's subjective interpretations, analytical memos, and reflections on the research process itself.
2. **Data from semi-structured interviews.** Following the final session, participants took part in a 30 to 45-minute semi-structured interview to discuss their overall experience (e.g., "Which virtual place did you like the most? Why?"; "How did you choose your avatar? What do you like about it?"; "Can you tell me about a time you felt uncomfortable or unsafe? What did you do?"). Carers who attended were also interviewed to capture their unique perspective on the participant's journey and the technology's impact.

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[2] The Black Cat is a popular, high-traffic bar-like hub world in VRChat that attracts a wide range of users and provides opportunities for spontaneous social encounters.

[3] All named worlds (e.g., VRChat Home, Emerald Valley, Udon Bird Sanctuary, No Time Two Talk, Midnight Rooftop, The Black Cat) are publicly available in VRChat and can be found via the in-platform world search.

(3) **Data from a follow-up interview.** For one participant who independently purchased a headset after the study (P2), we conducted a 60-minute follow-up interview two months later, arranged after a group debrief where he volunteered to discuss his ongoing use.

3.4.2 Data analysis. We analysed our full data corpus, comprising observational logs, reflective field notes, and interview transcripts using Reflexive Thematic Analysis (RTA), following the principles outlined by Braun and Clarke [19]. All semi-structured and follow-up interviews were audio-recorded and transcribed verbatim.

For our observational data, we wrote real-time logs during each session and expanded these into more detailed, reflective field notes immediately afterward. The entire data corpus was managed and coded in NVivo, with a collaborative whiteboard (Miro) used for visual theme development. In line with RTA principles, the analysis was led by the first author's deep and reflexive engagement with the data. They first familiarised themselves with all transcripts and notes, writing initial memos. Then, they coded the data inductively. Observational logs and field notes were coded for recurring behaviours, interaction styles, and responses to different worlds. Interview transcripts were coded for participants' accounts of their experience, their perceptions of social encounters, and their reflections on agency and comfort. In line with RTA principles, we purposefully did not calculate inter-coder reliability.

Instead, interpretive differences between the researchers were embraced as a resource for deeper reflexive discussion. After initial coding, the first author began integrating the material to identify patterns. Codes and key extracts were exported to Miro, where they were visually clustered and organised into candidate themes. During this stage, observational data was used to confirm, elaborate on, or sometimes complicate the accounts from the interviews, allowing for a richer, triangulated understanding of each participant's journey. Candidate themes, each supported by a rationale and representative extracts, were then refined through review sessions with the wider research team.

In these meetings, we checked for coherence within themes, ensured clear boundaries between them, and confirmed their alignment with our research questions. To enhance the trustworthiness of our findings, we practised triangulation throughout the refinement process. We consistently compared data across our different sources (observational logs and interview transcripts) and over time (across the three sessions) to build a coherent and multi-faceted interpretation. Through this iterative process of discussion and refinement, overlapping themes were merged and broad ones were split, resulting in the final set of themes that form the basis of our findings.

3.5 Researcher positionality and power

It is important to acknowledge that our backgrounds and experiences shaped both the conduct of this study and the interpretation of its findings. The second author who conducted all fieldwork, has a long-standing background in qualitative research with people with ID. This expertise was essential for building rapport, navigating ethical complexities, and creating a care-centred, relational approach throughout the sessions. The first author who co-led the analysis, brings expertise in immersive technologies and HCI, providing a lens to connect participant experiences back to broader HCI conversations. The wider research team further expanded our interpretive lens, contributing deep knowledge of online safety and the specific cultural norms of VRChat from a lived, long-term user perspective. This diversity was crucial for our analysis, allowing us to build a more holistic account that situated participant actions within technical, social, and disability-specific contexts.

We also acknowledge the inherent power imbalance between researchers and participants. As university-affiliated researchers, we held institutional power and acted as gatekeepers to the research process. Our methodology was a deliberate attempt to mitigate this imbalance. By adopting a relational, participant-led approach and rejecting a rigid protocol, we sought to cede control and create a space where participants could genuinely shape the study's direction. This commitment to sharing power is a core tenet of Disability Justice and was a constant focus of our reflexive practice.

At the same time, the second author's continuous presence in both the physical room and as an avatar in VRChat inevitably shaped how participants engaged with the platform. Being accompanied by a researcher may have made some participants more cautious in their social encounters or more inclined to direct conversation towards the researcher rather than strangers. For others, this dual presence functioned as a confidence scaffold, making it feel safer to approach unfamiliar worlds and people. When we interpret participants' apparent confidence, hesitation, or ease in social VR, we therefore read these as emerging within this socio-technical and relational arrangement, rather than as properties of individuals alone. We see our subjectivity and positionality as an integral part of the knowledge-making process. Our collective expertise allowed us to interpret the findings through a dialogue between lived experience and critical design inquiry informed by disability theory. Our account is therefore intentionally situated, reflecting our commitment to a justice-oriented approach that values engaged and reflexive scholarship.

4 Results

What follows are stories and themes that show how participants made sense of VRChat: the ways they navigated safety, chose avatars, joined or left worlds, and, in some cases, carried the technology into everyday life.

4.1 Making sense of VRChat

When first trying VR, P1 laughed uneasily: *"This feels weird."* P3 described the first session as dizzying, but by the second noted improvement: *"I still got slightly dizzy this time, but I was much better."* Everyone began in the home world to learn basic movements, then moved into environments like *Udon Bird Sanctuary* where they could practise controls. With practice, the worlds started to open up. Some things remained frustrating, like remembering which button did what, or mapping the locomotion to the joystick, but repetition helped. **Learning built up gradually** for all participants, as P3 put it, *"I needed that time to process.[..] I got used to it this week."* P4 looked back at his early struggles with the pointer and concluded, *"At first the controls were a bit difficult, but then I got there in the end with the laser points."* In these early sessions, even when other

VRChat users were present in the virtual worlds, most participants focused on mastering the basics, and when conversations with others did occur, they were brief and tentative. This echoes earlier work showing that people with ID often require extended time to become comfortable with VR controls [122], yet our open setting also showed how confidence built naturally through exploration and repetition, without the tightly scaffolded tasks common in prior studies.

As familiarity grew, **attention began to turn outward**. Some participants stayed mostly within the researcher's suggested set of familiar worlds, often revisiting them across sessions. Others (four participants) expressed curiosity for a wider range, choosing places or activities that linked to their own interests. P4 asked to visit Spain, recalling a past holiday; P2 sought out *Pokémon* and *Furry Hideout*, connecting to hobbies he talked about often; P1 chose *Harry Potter*, and P6 tried *Diluc's Tavern* from anime. Activity-based spaces also appealed: in *Zombie Survival*, P2 joined others in fighting zombies, cooperating without needing much conversation. Others gravitated toward quiet or scenic spaces. P1 described a cherry blossom world as *"very pretty"*, while P11 recalled climbing a lighthouse in *Blooming Sky* as *"my favourite one, because it was a nice adventure… looking what's around."* For many, interactable objects gave a simple way in, which also gave rhythm to their explorations: P1 found a magic book and enjoyed spotting animals in *Emerald Valley*, while P6 made a routine of picking up food and cups, miming the act of drinking tea: *"I like exploring… and picking up things."* Unlike earlier VR studies that emphasised pre-designed training or therapeutic activities [15, 45, 70], here participants oriented their explorations around personal interests, suggesting more varied routes into making sense of VR.

Free-form **encounters with other VRChat users** in busy public worlds were often complicated. Groups could be hard to break into, and conversations were sometimes overwhelming, filled with noise or profanity. P3, after trying to greet others in the *Black Cat*, was met with *"go f*** yourself,"* while P4 backed away when users role-played "eating" his avatar – a doughnut. Simple greetings sometimes went unanswered: P4 and P11 both said *"hello"* but received no reply, leaving them unsure if they were being spoken to at all. By contrast, more structured environments offered clearer ways to participate. In *No Time to Talk*, one-to-one pairing helped sustain short conversations. P2 used the space to build and try out conversational routines, opening with Pokémon or Wetherspoons: *"I had time to think of what to talk about — my Pokémon collection and Wetherspoons."* P5 also enjoyed the chance to *"go into different worlds and talk to different people,"* though in practice their style leaned toward listening. They explained that *"sometimes it can be difficult to talk to people... it can be like that in real life,"* and valued conversations that felt slower: with one girl, "it was quite easy," while another user "just talked… quite fast," leaving them content to listen. P9 embraced one-to-one conversation, asking simple but genuine questions: *"Where are you from? What headset do you use? What are your plans today?"* He enjoyed seeing different avatars, mentioning in the interview: *"I like looking at new characters."*

Across exploration and social encounters, participants showed *crip technoscience* in practice [60]. Participants scaffolded their way in slowly, through familiar worlds, objects, or small conversational routines, rather than the rigid drills common in earlier interventions [29, 95]. This shows that learning in VR works best for people with ID when it moves at their own pace and follows their interests, not when it is forced to fit standardised routines [60, 92]. Carlson reminds us that expertise about ID has too often reproduced distancing and dehumanisation [25]. Our findings point toward a different possibility: when access is scaffolded slowly and participants shape their own routes into VR, authority shifts away from external experts and toward people with ID themselves.

Figure 3: Making sense of worlds together: participants and carers explored and interpreted unfamiliar VRChat spaces through shared attention and co-presence.

4.2 Care as collective practice in social VR

In our study, participants learned to navigate VRChat through **forms of collective access**: the practice of building access together through interdependence and mutual care [11, 12, 92]. This access was co-created with carers, researchers, peers, and even strangers, forming webs of support that gave hesitant learners the confidence to explore (see Figure 3). In interviews after the study, many emphasised how important this interdependence felt to them, often saying they would only return to VR if accompanied by someone they trusted. As P11 put it: *"I wouldn't want to go in on my own. I'd like to go in with mum."* P9 agreed, saying, *"I'd go in again, but not by myself... only if I had someone I know with me."* Similarly, P4 shared *"I'd like to go in again, but only if there's somebody there that I know... I wouldn't go by myself."* These reflections show that collective access was something participants themselves sought and saw as key to feeling safe and included. For participants, going into VR "with someone I know" was about more than abstract safety. It also meant having practical help with confusing controls, emotional reassurance in unfamiliar social situations, and the chance to share the experience as a joint activity rather than face it alone. Wanting to return only with a trusted other can be read as a way of setting the conditions under which participation feels workable. This resonates with the concept of *access intimacy* [92], which describes the comfort and trust that comes from knowing support will be available when needed.

One way collective access took shape was through **co-learning between participants and carers**. When P11 attended the VR session with her mother, VR became a place for co-learning. Both entered as beginners, sometimes figuring things out together, other times taking turns showing one another how to do something. In this way, the open-ended nature of VRChat turned support into a shared discovery process, where learning happened in both directions. During the interview, the carer recalled how P11 initially felt *"tense"* and struggled with the controls, but persisted until she relaxed and was *"having fun at one stage with the ducks."* Hearing her carer describe this, P11 smiled, glad to have her progress noticed. P11 drew reassurance from her mother's presence, while her mother appreciated moments when her daughter managed an action on her own. Social VR made this reciprocity tangible, challenging the idea that carers only give support and disabled people only receive it. Instead, progress emerged through a back-and-forth of guidance and recognition, an instance of what Bennett et al. [9] called *simultaneous assistance*, and Piepzna-Samarasinha [97] described as a *care web in practice*.

With researchers, collective access often meant offering gentle scaffolding rather than discovery together. In the second session, P6 quietly whispered to the researcher, *"I don't know how to do this."* The researcher repeated simple actions that P6 could copy without pressure. Over time, P6 began joining interactions on their own. Some participants often turned to the researcher avatar with casual comments, questions, or to make sense of unfamiliar social cues, for instance: *"Why are there so many windmills here?"* (P7); *"VR headsets should be available in our learning disability advocacy group"* (P10). These exchanges provided support and continuity, as participants and researchers adjusted VR step by step to make it workable in practice.

Participants with ID also built access together, drawing on each other's strengths through **mutual aid** – care rooted in collective survival, especially when formal support was limited [63, 97, 100]. P2, curious about VR, watched YouTube tutorials between sessions and, even without using a headset, explained what he had learned to P3. When they returned, P3 performed much better, a change he directly credited to P2's help. This peer-to-peer learning highlights how disabled participants sustained one another's access through interdependence, making visible the often-overlooked work that people with disabilities do to co-create access with and for each other [9].

Social VR platforms like VRChat are known to be mixed-ability spaces, where people with and without disabilities share environments and interact [3]. In our study, this openness enabled **participants with ID to connect with strangers** through moments of *simultaneous assistance*, involving **small, reciprocal acts** such as guiding exploration, initiating conversation, or co-creating together. For example, in one session at the *Black Cat* pub world, a stranger offered to *"show P11 around"*, guiding her through different areas and helping her figure out how to make her avatar stand.[4] In the *No Time to Talk* world, P3 started a conversation about yoga that unfolded into an exchange about flexibility and spring flowers, demonstrating how initiating social interaction can itself be a form of access support. Another user showed P1 how to draw in VR, and together they created a shared image by writing their names side by side. These small acts gave participants with ID ways to join in on their own terms, while also offering their partners companionship or shared activity.

4.3 Safety between vulnerability and agency

P4 spoke fluently about safety tools, even suggesting design improvements: *"You'd have to click with the laser...but maybe have a little block button around the avatar, like where the mic is, so it's easier."* He knew the sequence of steps and described them with confidence for both blocking and muting: *"The microphone is under the Y wasn't it?"* Yet when confronted in practice, the tools were not used. In one session, a tiger and wolf avatar role-played "eating" his doughnut-shaped avatar. Instead of blocking, he backed away, visibly uncomfortable but silent. Later he admitted, *"I was going to try and block them but I was a bit too slow."* The episode shows how knowledge of procedures did not translate in the moment, leaving him to fall back on embodied responses like retreat. What made him feel safe was recognisability. He said he trusted avatars more if they carried familiar cues like *"a little flag saying what country they were from [..] you might feel safer knowing you're talking to someone from the UK"*, even while conceding *"that could be fake as well in the virtual world, but you never know."* His chef avatar, chosen because he had worked as a kitchen porter, also felt reassuring: a character he could identify with, grounded in past experience. In interviews, he concluded he felt *"about 90% safe"* in VRChat, an oddly precise number that showed how safety, for him, rested less on formal tools than on the confidence he had built in navigating controls and the reassurance of familiar signs, while always knowing he could step away if things became uncomfortable.

Participants **described safety in VR in terms of what felt familiar and welcoming**, rather than in abstract categories such as privacy or misinformation [27]. Avatars played a central role in

Figure 4: *The Black Cat*, a high-traffic social hub in VRChat. Its fast-paced, unpredictable interactions made safety an ongoing negotiation between vulnerability and agency, supported by in-the-moment strategies (e.g., retreating, seeking reassurance, proximity management, and leaving), with platform tools (mute/block/report) often discussed but rarely used under pressure.

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[4] In VRChat, if a user is seated in the physical world, their avatar will also appear seated, which can result in awkward or unnatural movement. Users can configure their avatar to appear standing through VRChat's calibration settings.

these judgments: P7 considered human forms more trustworthy than animal characters, while P3 argued that VR could never feel entirely safe because avatars masked who people "really were": *"You're not talking to a real person... if they had a picture of themselves, then I'd feel safe."* Environments also mattered: P3 described "darker worlds" as unsafe, and friendliness itself became a marker of safety, with several participants saying it felt "mean" to turn away someone who was "kind." Some drew boundaries differently: P9 felt safe precisely because avatars could not touch him: *"You can see them, but they're not close to you. They're not touching."* P10 feared bullying in crowded spaces: *"If there's more people in there, they'll definitely gang up on you… I've had that online before"*, while P5 declared she would *"never"* meet strangers in VR because *"you still have to be careful."* These concerns were especially visible in *The Black Cat*, a high-traffic social hub (see Figure 4), where fast-moving and unpredictable encounters made safety feel more like a lived negotiation than a simple matter of applying tools.

These accounts show how participants weighed the risks of embodied presence against the affordances of distance. Alongside these perceptions, participants pointed to platform tools as ways to secure themselves if needed. P2 explained: *"You don't talk about, like, sensitive topics... if they keep on that, you just block them,"* concluding, *"I feel comfortable, and I don't have any worries when interacting with people through VR."* P11 echoed: *"If someone does something wrong, you just report them."* Yet others acknowledged the limits of such protections: P10 described feeling *"safe because you got the block button, unsafe because they might hurt my feelings."* That hesitation reflects a deeper emotional vulnerability.

In moments of harm or discomfort, participants rarely relied on the platform's safety tools, even though they had been trained in blocking and muting and could describe them confidently in interviews. P1, who had mastered blocking during training, never used it in hostile encounters. After her view was blocked and she was sworn at, she tried a polite rebuke: *"Children, language"*, then escalated to *"F*** off,"* in evident frustration. P2 responded to unsettling behaviour (users rapping nonsensically or switching voices between a child and an adult) by *"walk[ing] out the door in the game."* Participants' accounts of not blocking pointed to both practical and social barriers: it felt *too slow* (P4); *unnecessary* unless *someone was really rude. Normally I'd just go...there are millions of people, so they're never going to find you again"* (P1's carer); or simply *not nice* (P5, P7, P11, who worried it would seem impolite). The same gap between intention and practice surfaced for less visible risks. Several insisted they would *"never"* share personal information, yet personal details slipped casually into conversations: P7 told strangers, *"I live in Margate"*; P11 wrote their real name in the environment. Only P2 showed a different reflex, muting himself to speak privately with the researcher.

In this gap between **knowing safety and doing safety**, participants were not unusual. Prior work shows that adults with ID can explain privacy rules or blocking procedures, yet often fall back on avoidance or politeness in practice [27, 115]. Survey data confirm the mismatch: nearly 60% report cyberbullying, but few actually use safety tools [115]. In social VR, these vulnerabilities are amplified: harassment is embodied and proxemic, involving chasing or touching, while the platform's safety tools demand rapid, multi-step actions that often fail in the moment [18]. At the same time, the culture of instant intimacy in VR creates an illusion of safety that can mask manipulation [37, 44, 73]. For participants with ID, who often understand safety in surface-level terms and who, as emotion regulation research shows, draw on a narrow repertoire of coping strategies such as silence or retreat [88], this combination of opacity and pressure made them especially vulnerable. Yet vulnerability was not the whole story. Participants exercised agency by judging avatars and environments and choosing when to withdraw. P11's carer observed that disabled people are often *"willing to please and do the right thing,"* but also insisted: *"Let the individual know, don't take away the independence, they just need guidance."*

4.4 (World and self)-making in VRChat

In our study, participants used VRChat to make sense of themselves and their worlds in ways that went far beyond training specific skills. **Avatars were often the starting point**, and engagement with them deepened across sessions. Early choices were sometimes quick or tentative, but over time, participants increasingly lingered at the mirror, experimenting with different bodies before settling on one that felt right. P5, for instance, moved from spending a few minutes on a tiger furry in his first session to enthusiastically trying out multiple fantastical avatars in later sessions, remarking: *"I got to try them all out."* Mirrors worked here as safe rehearsal spaces, enabling low-risk experimentation before entering social encounters. P3 looked for avatars that matched his personality, insisting *"I am flamboyant."* P4 linked his doughnut-chef avatar to past work in restaurants: *"Because I've been in the past… a kitchen porter."* For P1, avatars created possibilities for social connection that felt difficult offline. Her carer explained: *"[Participant 1] struggles to make friends, so I think it would be really good for her… They can't see you, they just see your character. They don't know if you're slim, fat, disabled."* In this sense, avatar choice became a way of making oneself approachable, echoing earlier work on how mediated identities and alternative representations can reduce stigma and lower barriers to social participation [2, 71].

These examples show how participants engaged **avatar choice as a form of identity expression and negotiation.** Prior research

Figure 5: Participants began in calm scenic worlds and gradually expanded into new VRChat worlds aligned with their interests.

suggests avatars are critical tools for impression management, allowing users to obscure or experiment with aspects of identity such as gender, age, or ability [24, 26, 81]. Our findings add that people with ID approached avatars with a range of intentions: some as long-standing aspirations (P10: *"I always wanted to be a wolf"*), some reflecting internalised social roles (P1: *"I'm going to be a little girl"*, echoing infantilising cues noted by Kittelsaa [71]), and others primarily for aesthetic or sensory appeal (P9: *"I like looking at new characters"*). This spectrum echoes earlier work showing that people with ID construct alternative identities – worker, dancer, friend – through everyday symbolic practices that emphasise competence and belonging [71]. It also highlights that avatar use unfolded less as a single choice and more as an ongoing negotiation, where identities were tried and sometimes abandoned across sessions. In this way, avatar play resonates with Bircanin et al.'s call to remain open to evolving and situated forms of participation, where meaning is produced in the moment rather than predefined in advance [16].

Participants also **gravitated to places and routines that reflected personal interests and memories.** P1 found joy in a cherry blossom world: *"very pretty"*; P6 made a ritual of picking up cups and miming drinking tea. Participants treated the environment itself as an object of care and attention. In *Emerald Valley* (Figure 5), several spent time quietly orienting, looking around, tracing landmarks, and letting the atmosphere settle before engaging with any specific interaction. For P4, walking down a virtual beach evoked memories of holidays abroad: *"It just reminds me of going to like a different country, going down like a footpath to the sand and the sea."* In our study, far from passive, participants showed reflective intent in how they explored VR, challenging deficit-based assumptions about ID [59]. What mattered was practising everyday freedoms [60, 92] and experimenting with agency through play [112]. These insights align with inclusive HCI research that centres strengths and interests rather than deficits [25, 101], showing how value emerges in the middle of everyday encounters, rather than in predefined training scripts [16].

Figure 6: *Popcorn Palace*, a world P2 frequently revisited after the study to relax, watch videos, explore, and quietly co-presence with others.

4.5 Beyond the lab, into life

Two months after first entering the virtual world, P2's initial need for a guide has completely dissolved into a deep and confident habitation. Now spending about four hours a day in VRChat, he has built a thriving social life, maintaining contact with over seventy friends on Discord. His journey refutes the remedial paradigm common in assistive technology, demonstrating instead a **profound arc of self-directed learning and community building**. He explains the platform's appeal simply: "Meeting random people in VRChat globally that I may never of meet in real life of all ages, having the same interest and finding people who accepts you for who you are in communities, it's exciting and to look forward to." This ease of connection is the foundation upon which he has built a distinct identity, choosing a "Hyvis persona dragon" avatar with special features that allow him to "breathe fire" or playfully "stick your tongue out." This is an act of identity, which allows him to be recognisable and build social capital. He has become a regular at an 18+ bar where, as he proudly notes, "everybody that goes to that world... always remembers me."

With friends he has come to trust, he shares in *Popcorn Palace* (see Figure 6) a private YouTube link to a movie he made with a national intellectual disabilities charity, letting them see an important part of his life. He explains he shares it, showing them the "productions that you like created over time." This act connects his virtual persona with his real-world history, a method of building intimacy and demonstrating a multifaceted identity far beyond what deficit-focused frameworks would assume. His curiosity also extends to the very nature of embodiment in VR. He describes learning about "phantom sense from a friend," a phenomenon where virtual touch can evoke a physical sensation. He recounts experimenting with this, allowing a friend to hold a virtual hairdryer to his face or a virtual needle to his neck, driven by a desire to understand the limits of his own perception. This self-led, experimental learning is a powerful example of agency, a world away from the prescribed, risk-averse tasks of remedial software.

This agency is also evident in how he navigates the platform's social complexities. He has learned to distinguish between welcoming and hostile environments, preferring worlds with "less trolls," and has developed strategies of disengagement rather than confrontation. Yet this is balanced with an intentional openness: he keeps his user filters off to "give everyone a chance." P2's story also shows a clear evolution from being a recipient of help to a provider of it. He takes on the role of a cultural translator and mentor for his friends. For example, when a friend described his autistic friend as "uncanny valley," P2 stepped in and "explained to him that he's autistic and we don't have a lot of expressions." This has led to moments of profound interdependence, such as when he organised a "private meeting" with a mutual friend to create a plan to help someone who had expressed suicidal thoughts. This formation of a spontaneous *care web* demonstrates a complex social and emotional competence, affirming that participation is a collective, not just an individual, act.

Perhaps the most striking evolution is P2's transformation into a technical expert and design critic. He speaks with fluency about linking his headset to a gaming computer for "extra features" and can explain the intricate process of calibrating software to "lay in your actual bed and then lay in a virtual bed in the game." This mastery culminates in a clear call for better design, critiquing a user interface that is "very complicated to navigate" and lacks "icon pictures." His enthusiastic "Yes, please" when asked if he would help design a better UI is a clear offer to act as a co-designer, embodying the *nothing about us without us* principle. P2's deep investment is clear in his plans to get age-verified and attend Furality, a major virtual convention. He illustrates that when people with ID are given access to platforms that invite creativity, social negotiation, and even governance responsibilities, **they innovate on their own terms and lead**.

5 Discussion

Our findings show that when given access to an open, mainstream digital world, adults with ID act as agents of their own experience, engaging in interest-driven discovery and sustained by resilient webs of care. These findings present a fundamental challenge to HCI's dominant remedial paradigm, especially in skills-focused VR and independence-oriented interventions, which is misaligned with the socially situated, negotiated, and interdependent realities we observed. Although VR can approximate certain real-world audience behaviours, prior work also outlines factors that can diverge across virtual and physical settings (e.g., environmental cues, social norms, and interaction constraints), which we consider when interpreting our findings [84].

We interpret our findings through a **world-making paradigm**. Following Goodman, we treat "worlds" as configurations that people actively build through symbols, practices, and shared routines [56]. We ground this lens in critical disability scholarship that explains how liveable worlds are made and sustained. Ginsburg and Rapp [54]'s account of "disability worlds" foregrounds the creation of valid kinship and culture outside normative life courses, while McRuer [89]'s "crip world-making" emphasises generative, anti-assimilationist practices for making hostile environments liveable. To address the specific context of ID, we draw on Carlson [25]'s defence of epistemic authority – the right of people with ID to be recognised as knowers – and Keller and Kittay [69]'s ethics of care, which reframes dependency as a fundamental condition of human flourishing. In conversation with Hamraie [60]'s "crip technoscience," we understand participants' use of VRChat as a practical, collective accomplishment: building access, negotiating norms, and sustaining worlds with others. This lens shifts the analytical goal from repair to wholeness [12, 14] by making visible the ways people achieve participation through interdependence and creative negotiation. Where a remedial lens might see a user failing to complete a task independently, a world-making lens reveals a person successfully constructing a liveable existence with and through others.

From this analysis, we distil six principles for social VR with adults with ID. Although grounded in VRChat, these principles are intended to inform platforms and services with similar social VR affordances. They contribute at three levels: (1) a direct, actionable guide for platform design and governance; (2) an articulation of a Disability Justice–aligned, world-making paradigm for social VR with adults with ID that pushes back against remedial framings in ID-focused VR; and (3) a concrete case study of justice-oriented HCI that translates these theories into practice by prioritising agency and interdependence [10]. We now turn to these six principles and their implications for practice and design.

5.1 Principle #1: Design for participation in mainstream worlds

> This principle foregrounds questions of who is recognised as belonging in mainstream social VR publics and what socio-material scaffolds, on- and offline, make that belonging liveable and safe.

In our study, adults with ID entered VRChat, a commercial, general-population platform, with scaffolds wrapped around the platform: private instances, curated world lists, visual guides, and co-present support. This configuration allowed participants to experience *presence*, *participation*, *acceptance*, and *achievement* [65]: P4 finding a culturally resonant space, P2 becoming known as a regular, and P11 moving from initial tension to "a nice adventure" and "having fun with the ducks." We designed these scaffolds with the recognition that social VR is not a single, uniform setting: architectural and spatial affordances shape what encounters and norms a place invites, from quieter "hangout" worlds to high-traffic hubs [61]. At the same time, our approach acknowledges that mainstream social VR is not a neutral backdrop: recent work documents disability-targeted harassment, privacy risks, and accessibility failures in platforms such as VRChat and Rec Room, with abuse often intensifying when disability is visibly marked on the avatar [3, 48, 120]. This has prompted work on proactive, in-world safeguarding mechanisms, such as embodied moderator agents that can intervene during disruptive encounters and increase perceived safety [43].

These observations help clarify why simply building disability-only VR is not enough. Segregated platforms, while often well-intentioned, are a form of exclusion by design [8, 60, 62, 68]. They function as virtual silos where interactions are largely confined to other disabled peers and paid staff, and social encounters are scripted or highly predictable, creating a social ceiling for recognition and growth. Work in social and political theory suggests that identity is formed through reciprocal recognition in the public sphere: we become who we are by being seen and acknowledged by others who are different from us [64]. At the same time, studies of disabled people in social VR warn that poorly designed public spaces can drive users into self-protective withdrawal to private instances, reproducing segregation in another form when harassment and inaccessible safety tools make open worlds unusable [52]. Our findings suggest that the alternative is to organise safety around participation in mainstream spaces, embracing a dignity of risk [96] in which adults with ID encounter manageable challenges with support instead of being shielded from them through exclusion.

For social VR practice, this means treating mainstream platforms as the starting point, so that adults with ID share the same digital publics as everyone else rather than being diverted into disability-only *walled gardens*. In our study this translated into adults with ID entering public VRChat worlds while sessions took place in ordinary community settings. Non-disabled VRChat users and peers thus encountered them as co-participants in a shared activity. To make this feasible in practice, we wrapped VRChat with

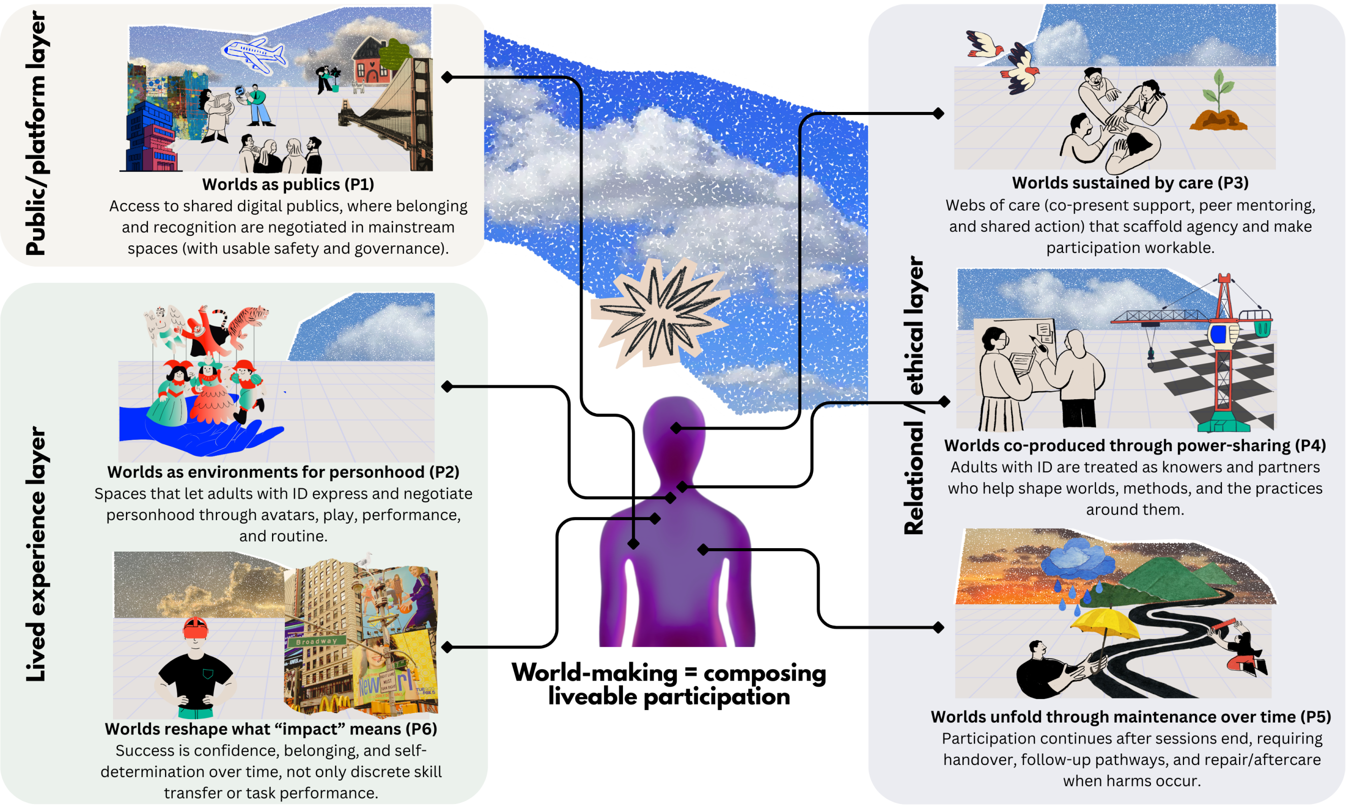

Figure 7: A world-making paradigm for social VR with adults with ID. The six facets (P1–P6) show how liveable participation is assembled across public/platform conditions, lived experience, and relational/ethical supports over time.

supports: in concrete terms, this meant *starting in private or low-traffic instances before moving into busier publics*, *using Easy Read guides to the headset and safety actions*, or *running sessions from community centres* so that travel did not quietly exclude people. These arrangements located adults with ID in mainstream digital and physical worlds, creating conditions for recognition and world-making.

At the same time, being in mainstream spaces intensifies the need for careful scaffolding and safety. In interview, P4 described the blocking process as "too complicated", highlighting that core safety actions must be simple and prominent. This gap between knowing and doing safety echoes wider reports of disabled social VR users facing harassment, limited accessibility, and protection mechanisms that are difficult to use in the moment [3, 116, 120]. For platform designers, this means treating social VR as shared public space that must be safe and accessible by default for adults with ID, with *large, always-visible icon-based controls* for muting, blocking, and leaving, *low-text interfaces* aligned with Easy Read principles, *clear reporting routes*, and *safety-by-design protections* that do not depend on navigating multi-step settings mid-encounter. These requirements are further complicated by the fact that comfort and quality of experience in immersive media vary substantially across people and contexts. Human factors can shape how intense or manageable a world feels [103]. In practice, this strengthens the case for offering multiple entry points (quiet, structured, and busy) and letting participants control pace and exposure. Emerging regulatory frameworks, such as the European Accessibility Act [40] and the EU Digital Services Act [41], can be read as policy levers that support shifting from repair to wholeness.

5.2 Principle #2: Design environments for personhood, not tools for remediation

> This principle focuses on social VR as an environment where adults with ID express and negotiate personhood through avatars, performances, and routines.

The label 'intellectual disability' can obscure a person's inner world, making them subject to a remedial gaze. This gaze, as Bennett and Hannah argued, is often tied to a rights-based, capitalist logic of normative function where the goal is to fix a person [12]. It produces prescriptive tools that treat identity as a stable problem to be solved, measure success as compliance, and inadvertently reproduce ableist assumptions about what constitutes valuable or appropriate use. Similar dynamics appear beyond VR. For example, Mack et al. showed how much LLM research relies on archetypical and normative representations of disabled people, enforcing narrow ideas of “regular” ways of being and doing [83].

Instead of treating social VR as another prescriptive tool, we suggest approaching it as an environment. An environment acts as a canvas for a person's full personhood to emerge. It begins with a different premise: that a person is already whole, and the goal of design is to provide the resources for them to express that wholeness. This is because an **environment supports identity as a performance**, and its power comes from its productive ambiguity. Unlike a prescriptive tool, an environment's inherent openness is a feature that enables authentic self-expression and identity exploration. In our study, VRChat functioned as such an environment: participants chose avatars that resonated with their interests, used mirrors as rehearsal spaces, settled into favourite worlds, and took up roles as explorers, regulars, and informal hosts. We come to know ourselves not as static beings, but through the stories we tell and the roles we play [22]. VRChat made those stories and roles available in ways that a tightly scripted training task cannot.

In much of the VR training literature with adults with ID, these possibilities are present but typically subordinated to tightly specified skill goals and evaluation metrics. Remedial tools often narrow the freedom to play and perform, especially when success is defined primarily as task completion or behavioural change. By contrast, the open worlds of VRChat offered an “open stage” instead of a narrow script: participants prioritised changes in *being* over *doing*: exploring worlds, gaining confidence in crowds, initiating conversations, and becoming “regulars.” Our argument is not to abandon skill transfer, which remains valuable for rehearsing behaviours [20, 35, 86, 87, 99], but to situate it within a broader design goal of supporting ways of living. In Disability Justice terms, this is the difference between repair and wholeness [12, 14, 57]. Table 1 sketches this analytic contrast between a dominant remedial framing in VR training with adults with ID and the forms of world-making we observed in VRChat.

Taken together, the contrasts in Table 1 imply that designers must see themselves less as tool-makers and more as creators of world-like environments that support personhood. For many adults with ID, opportunities for unsupervised adventure, fandom, and everyday pleasures in public space are constrained by stigma, low income, and risk-averse support arrangements. Open, social VR environments can offer one way of accessing and experimenting with these pleasures and roles alongside others. Practically, this means designing beyond narrow, skills-only training by supporting adventures, friendships, and routines in existing public worlds and allowing participants' interests to lead exploration, with session plans that follow their preferred worlds rather than a fixed training script. In this paradigm, success means supporting dignified, self-determined engagement with participants feeling at home in certain worlds, becoming regulars or informal guides, and building relationships over time, rather than achieving task completion or behavioural compliance. Evaluation criteria and processes should therefore be co-developed with adults with ID and their carers, so that what counts as a good outcome, and how it is measured, grows out of their own accounts of a good and meaningful life alongside service and research priorities.

5.3 Principle #3: View interdependence as a scaffold for agency

This principle highlights how webs of care and shared action in and around social VR scaffold individual agency and make these worlds workable in practice.

The foundational work of Bennett et al. [9] rightly argues that **independence and interdependence are not a dichotomy**. Our study provides a deep, empirical demonstration of their dynamic relationship, showing that a resilient web of care functions as a scaffold for agency. This finding challenges the individualising tendency of a rights-based framework and instead provides a living example of what a justice-based approach to access as a collective endeavour looks like in practice, aligning with a Feminist Ethic of Care [69].

This scaffolding was particularly visible in the embodied, co-present medium of VRChat, where support could be given through shared action; the presence of P11's mother, for instance, created the safety for P11's own confident exploration to emerge. The care web also extended into participants' everyday lives through acts of mutual aid, as seen when P2 independently researched VR on YouTube and then coached P3, directly improving his experience. Together, these moments show that interdependence is not the opposite of independence; rather, the resilience of the care web is what creates the conditions for individual agency to flourish.

For social VR and its surrounding services, this means designing for movement between interdependence and independence over time, rather than treating them as separate or competing goals. Concretely, systems can support interdependence by making it easy to share control temporarily. For example, they can let a trusted supporter co-navigate menus, see what the user sees, or trigger safety actions, while still preserving private spaces and moments where the person acts alone. As our study showed with P2 coaching P3, some adults with ID also develop strong enthusiasm and expertise around social VR. Platforms and services can intentionally recognise and scaffold these peer roles through, for instance, buddy modes, mentor badges, or simple ways for experienced participants to support newcomers. Such peer support can increase trust and openness, because help comes from someone with shared experience, while also recognising and valuing the expertise of adults with ID themselves. Adjacent work on scaffolded social interaction similarly shows that mediated support can increase social connectedness while raising design questions about preserving agency and control [118]. At the level of services, HCI must also work with the tension between policy frameworks that idealise independence (for instance, strict privacy rules that prevent staff from seeing a user's screen) and the lived reality that people sometimes want to invite others in when trying something new. Design work here involves creating mechanisms and governance arrangements for selective, reversible sharing of control, so that adults with ID can choose when to draw on their care networks and when to explore on their own.

Table 1: Illustrative contrast between common VR training approaches with adults with ID and discovery-driven world-making observed in VRChat, and resulting implications for social VR design

Common VR training approaches with adults with ID (literature)	World-making in VRChat (this study)	Implications for social VR design
Structured, deficit-focused training (e.g., shopping, cooking, recycling) that positions participants as learners to be remediated [29, 91, 95, 122]	Exploratory, identity-driven play. P10: *"It'll be difficult to decide on a character."* P2 choosing Pokémon and Furry Hideout worlds linked to hobbies.	Design open, interest-led environments that treat adults with ID as fans, explorers, and regulars, not only as trainees in pre-defined tasks.
Repetitive practice with predefined outcomes [29, 95]	Gradual, interest-driven discovery. P6 repeatedly testing out food objects: *"I like exploring... and picking up things."* P11 describing the adventure of climbing in Blooming Sky: *"my favourite one, because it was a nice adventure... looking what's around."*	Support wandering, replay, and discovery (e.g., easy ways to return to favourite worlds and follow emerging interests).
Evaluation framed as task completion or performance improvement [29, 91, 95]	Value found in play, pleasure, social contact, and meaning-making. P5: *"I like going into the different worlds and talking to different people."* P9: *"It's interesting to learn different languages in the VR you know."*	Centre success metrics on dignified, self-determined engagement (enjoyment, social contact, confidence, belonging), not only on behavioural or task performance.
Authority rests with designers and experts who define skills [25, 29]	Authority shifts toward participants, who decide what matters in the world. P2 building routines in No Time to Talk: *"I had time to think of what to talk about – my Pokémon collection and Wetherspoons."* P9 reflecting on diversity of avatars: *"They're all good, different characters and different languages as well."*	Share control over worlds, routines, and topics: let adults with ID choose and host worlds, set regular meetups, and shape the activities that matter to them.

5.4 Principle #4: Share methodological power through co-creative partnerships

This principle treats the social VR research and support setting itself as a shared world to be co-created with adults with ID, rather than a place where data are simply extracted.

Care-oriented co-creative work in immersive contexts shows how "making together" can itself be the method: an approach where meaning and ethical value emerge through relationship, reciprocity, and situated participation rather than a fixed protocol, even when the population and setting differ from ours [98]. A justice-oriented approach requires a constant negotiation of the power imbalance inherent in research. It means moving beyond short-term, extractive studies where participants are treated as data sources and toward long-term, co-creative partnerships. Aligning with Bennett and Rosner's call to **shift empathy from "being like" to "being with"**, and echoing work on "co-designing in the middle" that emphasises flexible, ongoing design engagements, we adopted an adaptive, multi-session methodology that foregrounded reciprocity and attunement. Participants were invited to suggest worlds, comment on what was working or not, and revisit favourite places. Over time, this relational approach made different forms of expertise visible: P4's unsolicited interface suggestions, and other participants' comments on which worlds worked for them and which did not are all assertions of epistemic authority that a short, fixed protocol would likely have missed. These moments resonate with Disability Justice's commitment to centring the leadership of those most impacted [14].

A truly relational partnership, however, is especially important in doing research in social VR, where experiences are improvised, embodied, and often extend beyond the spaces researchers can see. Worlds change quickly, social encounters are unpredictable, and much of what matters for adults with ID (i.e., sensory load, safety, comfort, enjoyment) is felt in the moment rather than easily reported afterwards. In this context, it is not enough to invite feedback within a fixed protocol. We must be willing to **co-design the methodology** itself. The methods we typically use in HCI privilege a specific type of verbal, analytical knowledge, which can be a profound misfit for participants who express themselves more through action or creation. In our study, contributions such as P4's unsolicited interface suggestions and P2's readiness to shape which worlds we visited and how sessions ran showed a clear capacity to steer the inquiry itself. This suggests a powerful next step for the field: to explicitly invite adults with ID to become methodological partners, and at times design leads or facilitators of design activities, thereby honouring the Disability Justice principle of centring the leadership of those most impacted [14].

This implies a methodological reckoning with our own power. For social VR and disability-focused work, methods need to be designed as long-term, adaptive, and multimodal arrangements rather than short, tightly controlled protocols. This includes multi-session designs, attention to acquiescence and non-verbal expression, and distributed ways of hearing from participants beyond the lab (for example, simple visual or audio check-ins, carers' and peers' observations, and in-world artefacts that can be revisited together). HCI must create and advocate for structures that support these relational, co-creative forms of inquiry over short-term, extractive studies. This involves rethinking ethical review and funding models to value the slow, unpredictable work of building and sharing power with participants, and being prepared for our participants to become our partners, critics, and methodological co-designers. In this view, method design itself becomes a site of justice work.

5.5 Principle #5: Plan for ongoing responsibilities beyond the study

This principle foregrounds the temporal and ethical dimensions of world-making, attending to how our methods and responsibilities extend beyond the study as participants continue to live with social VR.

The **neatness of a conventional research protocol stands in tension with the messy, ongoing nature of participants' lives**. While our adaptive methodology was a deliberate attempt to prioritise flexibility and time, we must also acknowledge its boundaries. P2's most profound growth – his journey from participant to community leader – unfolded in the months following our planned sessions, much of which we could not formally capture. Much of this took place beyond our scheduled visits, reminding us of the vast landscape of lived experience that research can only ever partially see. His story calls for humility about what our methods can truly represent and for a broader view of what counts as impact.

This raises a deeper ethical question about what it means to introduce adults with ID to complex, unscripted worlds like VRChat. By facilitating access, we help to create new possibilities and new vulnerabilities. Our findings on the *gap between knowing and doing safety* suggest that while we can teach procedural actions (e.g., how to mute, block, or leave a world), we cannot fully anticipate or control the long-term social and emotional complexities of online life. Many of the changes that mattered to participants (for example, greater ease in social situations, feeling less alone, relationships that moved from VRChat to Discord) emerged slowly, often between or after formal sessions. Our ethical duty of care, therefore, does not end when the final interview is complete or the headset is packed away.

This implies a methodological and ethical shift [50] for social VR research and practice. We must move beyond a model of "study and depart" and plan explicitly for life beyond the study. In practical terms, this can mean agreeing in advance what support will be available after sessions end; coordinating with carers and services; signposting ongoing communities or peer mentors; offering follow-up check-ins or routes back to support if something goes wrong later; and discussing when and how to step away from VR. It also means investing in community leadership: preparing and resourcing trusted figures, including enthusiastic participants like P2, to act as ongoing points of contact and facilitators once researchers have left, in line with calls to move from "being like" to "being with" [10]. For HCI, this requires evaluation frameworks that locate impact in trajectories rather than single endpoints, and ethics and funding structures that recognise these ongoing responsibilities and the slow, relational labour of building and sharing power with participants.

5.6 Principle #6: Support transferable confidence, not just transferable skills

This principle focuses on how experiences in social VR can reshape trajectories of confidence, belonging, and self-determination beyond the headset.

The ultimate value of a virtual experience is often judged by what "transfers" to the real world. In the remedial paradigm, this is narrowly defined as the transfer of functional skills such as practising cooking in VR to cook better in a physical kitchen (see Table 1 for some examples). Our study, however, points to **a different form of transferability**: not primarily of procedural skills, but of social confidence, emotional well-being, and self-determination. An open, social environment acts as a rehearsal space for sociality, where the stakes are lower and the opportunities for connection are vast. In our study, social VR pushed people a little beyond their comfort zones, while support made that stretch feel safe.

This process of building confidence was visible in nascent forms across many participants; P3 gained comfort with the technology over time, noting *"I got used to it this week,"* while P9 practised initiating simple, genuine conversations with strangers. Nowhere was the outcome of this process more evident than in P2's journey. The thing that transferred for him was not a discrete skill, but a thriving social network that moved with him from VRChat to Discord, directly combating loneliness. The confidence he gained by becoming a *"regular"* and a mentor was a real shift in his social identity and his sense of what he could do. This suggests that the most important spillover from a virtual world may not be the ability to perform a particular task, but the internalised experience of belonging and capability, which can reshape how a person engages with their real-world life.

This implies that we must redefine and expand how we evaluate the impact of VR. The goal should not be limited to measuring whether a virtual skill transfers to a physical context. We should also ask whether the virtual experience enriched the person's social and emotional life and sense of self-determination. Practically, this calls for longer-term, qualitative and mixed-method follow-ups that attend to trajectories of well-being, social network size and quality, and self-reported confidence and agency, centring the lived, holistic impact of our work over narrow, functional outcomes.

6 Limitations

Our qualitative sample of 11 adults with mild ID, while consistent with similar exploratory studies in this area, was small and recruited through formal services and support organisations, and was predominantly White British. Consequently, our findings aim for theoretical depth and analytic generalisation rather than statistical generalisability, and may not extend to people with different support needs, limited service access, or from more diverse, intersectional communities. The logistics of the study, including the need to travel to community settings, coordinate with staff, and work within service timetables, also meant that participation was most feasible for people with relatively stable support and availability.

Engagement with social VR was uneven across participants. Most used VRChat only within facilitated sessions, and only one participant obtained their own headset and went on to experiment more extensively and build independent social networks. Our account of longer-term trajectories therefore leans heavily on this case and on participants' retrospective reports, not on systematic observation of unsupervised use. Furthermore, the constant co-presence of a researcher in the room and in VRChat undoubtedly influenced how participants behaved. Although the researcher was experienced in working with adults with ID and took steps to mitigate acquiescence, self-reported data were always interpreted in light of direct observations and known power dynamics.

Finally, our focus is solely on VRChat. The culture, moderation, and affordances of other social VR platforms may yield different experiences of access, safety, and world-making for adults with ID. Future research should therefore build upon this work by exploring these principles with larger and more diverse samples, across different platforms and configurations (including home-based use), and with peer-led or participant-led facilitation that can further redistribute expertise and control.

7 Conclusion: toward a world-making HCI

When adults with ID are given supported access to open, mainstream social VR, they explore, experiment, and build meaning with others, engaging in interest-driven discovery sustained by resilient webs of care. In our study, VRChat became less a remedial tool and more a liveable world: a place to try on avatars and roles, to practise sociality at a manageable stretch beyond their comfort zones, and, in P2's case, to grow from first-time user to community leader and design critic. These trajectories challenge HCI's dominant remedial paradigm, which narrows VR to a padded corner for practising deficits, and foreground adults with ID as agents and world-makers in their own right.

We have responded to this challenge by developing a Disability Justice–aligned, world-making paradigm for social VR with adults with ID. Empirically, we offered an account of how participants navigated a mainstream platform over time, using avatars, worlds, routines, and care webs to make social VR workable in practice. Methodologically, we described an adaptive, relational approach that treated access as something co-created across researchers, carers, and participants. Analytically, we distilled six principles that reorient social VR from segregated training tools toward mainstream participation, from prescriptive tools toward environments for personhood, from independence to interdependence, from extractive studies to co-creative partnerships, from bounded protocols to ongoing responsibilities, and from transferable skills to transferable confidence (e.g., initiating conversations, managing discomfort, joining communities) and self-determination. Together, these moves articulate how social VR can support adults with ID in composing and sustaining shared worlds.

Looking ahead, these insights carry responsibilities and opportunities. For social VR platforms and services, they call for safety and governance arrangements that treat adults with ID as part of the public, not as problems to be managed elsewhere. For practitioners, they invite programmes that wrap mainstream worlds with scaffolds for participation and care, rather than diverting people into disability-only silos. For HCI, they demand methods and ethics that share power over time, recognising that impact unfolds in trajectories of confidence, belonging, and relationship that extend beyond the endpoint of a study. As social VR and related technologies continue to evolve, we hope this work offers a concrete path toward a more liberatory HCI: one that designs not only tools that correct, but worlds in which adults with ID can live, belong, make friends, and be recognised.

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