

Dance Experiences in Social Virtual Reality: A Qualitative Interview Study

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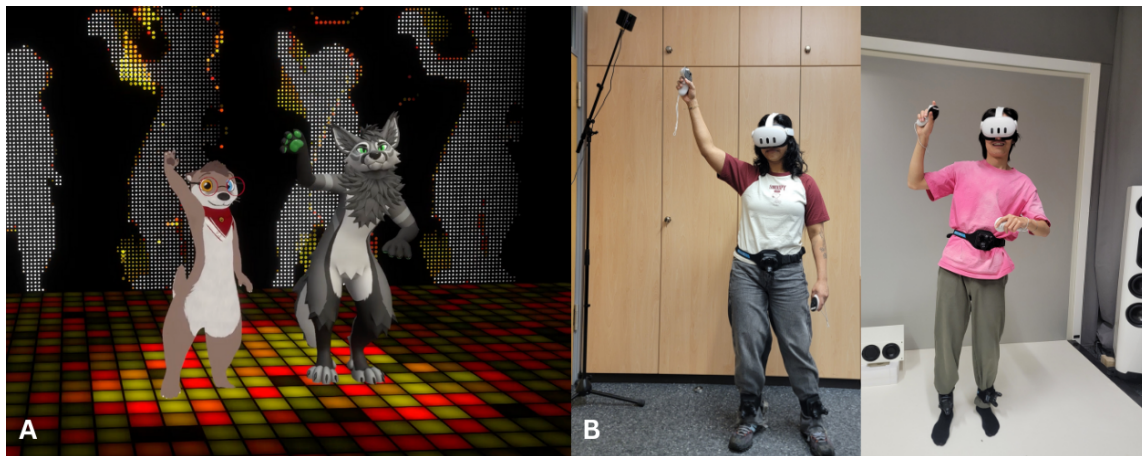


Figure 1: (A) Avatar-based dance interaction in VRChat. (B) Geographically distributed VRChat dancers.

ABSTRACT

Social virtual reality (SVR) platforms such as VRChat enable embodied, music-based social interaction through full-body tracked avatars, yet users' lived dance experiences remain underexplored. This qualitative interview study with 15 experienced VRChat dancers examines dance experiences and preferences (RQ1), psychosocial and physical outcomes (RQ2), technological affordances and constraints (RQ3), and strategies for coping with technical limitations (RQ4). Findings show strong benefits for self-expression, social connectedness, and physical activity, alongside persistent challenges for synchronization and entrainment caused by latency, tracking instability, and audio desynchronization. Users actively adapt their practices to sustain rhythmic coordination and immersion, informing future SVR design.

Index Terms: Social virtual reality (SVR); VRChat; social dance; latency; entrainment; social connectedness.

1 INTRODUCTION

Social Virtual Reality (SVR) environments provide immersive three-dimensional spaces that support embodied interaction among geographically distributed users. Platforms such as VRChat enable shared social practices including conversation, play, artistic performance, and dance. Dancing is particularly demanding in SVR, as it relies on rhythmic entrainment, sensorimotor coordination, and social synchronization, all of which are mediated by tracking systems, network latency, and avatar representations [4]. This study asks how experienced VR dancers master this complex experience

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and adapt strategies to overcome technological constraints. Their insights inform the design of future SVR systems that support synchronization and social interaction.

2 RELATED WORK AND RESEARCH AIM

Prior research demonstrates that SVR can foster social presence, intimacy, and community by enabling embodied interaction across distance [2]. Movement-based activities, including dance, are known to intensify immersion and emotional engagement while supporting physical activity and well-being [4].

At the same time, studies highlight persistent technical challenges such as latency, tracking inaccuracies, and limitations of avatar embodiment. These challenges are particularly consequential for activities that require precise temporal coordination. The concept of entrainment provides a useful lens for understanding how rhythmic synchronization and social coordination emerge—or fail—in mediated environments [3].

Existing empirical work on dance in social virtual reality highlights how shared movement can support affective engagement and social connection [4]. More broadly, studies on interpersonal relationships in SVR emphasize the importance of embodied, co-present activities for building closeness and intimacy [2]. Entrainment theory provides a well-established account of spatiotemporal synchronization between individuals and music and in-between moving individuals [3]. Finally, systems-oriented research demonstrates that network latency and temporal instability can substantially disrupt coordination and shared experience in immersive collaborative virtual environments, posing particular challenges for dance-based interaction [5, 1].

Against this background, the current study aims to answer the following research questions:

RQ1: How are the users' experiences and preferences of SVR dancing?

RQ2: How do users evaluate SVR dance in terms of positive and negative experiences on the psychosocial and physical levels?

RQ3: How do users evaluate SVR dance in terms of positive and negative experiences on the technological level?

RQ4: What tricks and skills do SVR dancers use to obtain better synchronization experiences?

3 METHODS

A qualitative interview design was chosen to capture detailed experiential accounts. Fifteen experienced VRChat dancers (aged 21–42) with at least six months of full-body tracked SVR dance experience participated. Participants were recruited through VRChat dance communities and Discord servers. The study received approval from the university's ethics committee and was conducted as part of a larger funded research project. Semi-structured interviews were conducted via voice chat and lasted between 37 and 120 minutes. Interviews covered dance practices, emotional and social experiences, technological affordances and limitations, and coping strategies. Transcripts were analyzed using qualitative content analysis with a combination of deductive and inductive category development. Inter-coder reliability testing of the codebook showed high agreement (mean Cohen's $\kappa = .90$ across all categories).

4 RESULTS

4.1 Users' Experiences and Preferences in SVR Dancing (RQ1)

Participants described diverse dance practices in SVR, including solo, partner, and group dancing. Seven of fifteen reported a preference for solo dancing, primarily due to lower technical demands and greater autonomy. However, eight of fifteen participants simultaneously expressed a strong interest in social and synchronized dance experiences when technical conditions allowed.

Dance styles ranged from highly individualized movement to structured genres such as hip-hop, sensual dance, and pole dance. Music preferences were similarly diverse, with electronic dance music being most frequently mentioned. SVR was described as enabling experimentation and creative self-expression that participants felt was less accessible in offline dance settings.

4.2 Positive and Negative SVR Dance Experiences on the Psychosocial and Physical Levels (RQ2)

Participants reported substantial psychosocial benefits associated with SVR dancing. These included feelings of social connection (12/15), self-expression (9/15), and freedom (8/15). Seven of fifteen participants emphasized the perceived safety of SVR dance spaces, noting the ability to control social interactions and avoid physical risk.

SVR dancing was also widely described as physically beneficial. 12 participants reported improved fitness, increased bodily awareness, and weight loss, often describing dance as their primary form of exercise. Negative experiences included occasional encounters with unfriendly behavior or harassment (8/15), as well as frustration when feedback or synchronization failed (4/15).

4.3 Positive and Negative SVR Dance Experiences on the Technological Level (RQ3)

From a technological perspective, participants highlighted convenience (6/15), and low ongoing costs (4/15) as key advantages of SVR dancing. However, technological constraints were pervasive. Latency across audio, movement, and network transmission was identified as the most disruptive factor, directly impairing synchronization and entrainment (14/15).

"Both of you are technically listening to delayed music and seeing delayed movements. While it's not a lot. It is there, which adds to the making it hard to stay in sync... So there's a delay between when you move, they see the movement, then react to that movement and it gets back to you" (Participant 10).

Additional challenges included avatar optimization problems (10/15), tracking instability (9/15), audio desynchronization (7/15), high entry costs (6/15), hardware weight (4/15). These constraints frequently limited the feasibility of partner and group dancing.

4.4 Tricks and Skills to Obtain Better Synchronization in SVR Dance (RQ4)

Participants actively developed strategies to cope with technological limitations. Common approaches to obtain better synchronization included anticipating musical beats (7/15), adjusting tracker placement (6/15), optimizing physical play spaces (6/15), and using external audio streaming solutions to improve synchronization (6/15).

"You listen to the track together on Discord... because that's better, synchronized, so the probability is much higher that you're on the same beat than when you're in VRChat." (Participant 7).

Four of fifteen participants described relearning how to dance specifically for SVR, developing movement styles that accommodate latency and tracking constraints. These practices illustrate how user expertise and adaptation play a central role in sustaining immersive dance experiences despite technical shortcomings.

5 DISCUSSION AND CONCLUSION

The findings illustrate that SVR dance constitutes a form of embodied social interaction that is both enabled and constrained by technology. While users derive substantial psychosocial and physical benefits, they must actively compensate for technical limitations. Designing for reduced latency, improved tracking robustness, synchronized audio delivery, and expressive avatar embodiment is critical for supporting entrainment and social coordination.

SUPPLEMENTAL MATERIALS

All supplemental materials are available on OSF at <https://osf.io/84et2/>. In particular, they include (1) Table S1 containing the Sociodemographic Characteristics and Dance Experiences of the Participants, (2) Table S2 containing the interview guideline, (3) Table S3 containing the codebook for analyzing the interviews, and (4) Figure images in high resolution.

FIGURE CREDITS

Figure 1 image credit: created by the author from personal photos and a screenshot taken in VRChat, August 12, 2025

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