Feeling the Love in 360°: The Rise of Social Support in VR

Leiden University, Media Technology MSc
Research Fundamentals

Nikki Rademaker (s2641887)

October 1, 2023

1 Closeness and Emotions Within VR

Virtual Reality (VR) is a digital immersive environment that users can interact with. The popularity of VR has been increasing over the past couple of years. It allows for the creation of immersive and realistic (social) environments. These environments can be used to study social behavior and develop interventions for social and psychological well-being. Unlike in real life, in VR, researchers can manipulate social situations and interactions within the environment [TSC18].

A study conducted by B. Tarr (University of Oxford), M. Slater (University of Barcelona), and E. Cohen (University of Oxford) aimed to investigate the effects of synchrony on social closeness to another (virtual) person in immersive Virtual Reality. Participants were split into two groups where the digital characters' movements were synchronized with those of the user (synchrony group) or had a delayed response to the user's movements (non-synchrony group). The results of this study showed that users in the synchrony group felt more socially connected than those in the non-synchrony group, suggesting that synchrony in VR environments leads to an increased feeling of social connectedness [TSC18]. Another study, performed by J. Collange and J. Guegan (University of Paris), took inspiration from earlier research implying that VR can be used to induce specific emotions [CG20]. They investigated if social interactions within VR could induce feelings of gratitude in users, and if it could impact social support intentions. Participants were immersed in a VR environment. Within the environment, participants either received help (gratitude condition) or no help (control condition) from a virtual person. Participants in the gratitude condition reported higher levels of positive emotions. In the second study they performed to confirm their findings, the results also showed an increase in willingness of participants to provide support to the virtual person [CG20].

These findings underscore the potential VR could have as a valuable tool to serve in social-cognitive therapies and social support interventions. While its applications in gaming, education, and healthcare have been extensively explored, little research can be found on the potential of social VR in the area of social support.

2 Connecting Through Social Support in VR

Social Virtual Realities are Virtual Reality platforms designed for interacting with other users within the VR environment. Prior qualitative research indicates that the sensation of presence enhances the appeal of social VR platforms for seeking social support from others [BBH23]. M. Barreda-Ángeles and T. Hartmann (University of Amsterdam) address the lack of research concerning the potential psychological benefits related to using social VR. Therefore, in their research on using social VR during the COVID-19 pandemic, they studied the roles of social presence (the feeling of being with others) and spatial presence (the sensation of being inside the virtual environment) in social VR platforms and their impact on psychological outcomes. This study suggests that VR in a social context can lead to psychological benefits in establishing meaningful social interactions, self-expansion, and enjoyment. Social presence seems to strongly influence feelings of relatedness and enjoyment, while spatial presence also leads to self-expansion. This highlights the potential of social VR platforms as a medium for connecting with other users, which for example, can be beneficial in times of social distancing [BH22].

Another significant application of social VR platforms is fostering connections within the LGBTQ+ community for social support [AF21]. Although social VR is becoming more popu-

lar among the LGBTQ+ community, and prior research shows that social VR allows for exploring your gender, little research has been done as to how social VR could contribute to social support within this community. Social support within the LGBTQ+ community is of importance because they should feel supported, feel cared about, and feel like they are part of a social network where they are understood. A research paper by D. Acena and G. Freeman from Clemson University suggests that social VR can provide social support for LGBTQ+ users by allowing them to create and customize avatars that reflect their gender and expression, connect with others who share similar experiences and identities, and by providing a safe space where users can build close interpersonal relationships in a more immersive way than regular social platforms [AF21].

Building on the previous research [AF21] and their own earlier research [BH22], V. van Brakel, M. Barreda-Angeles, and T. Hartmann further investigated these findings by conducting their own study. They aimed to investigate the relationship between feelings of presence and perceived social support in social VR platforms. This is studied to investigate how different types of presence in social VR platforms facilitate social support and how this perception of social support from friends is associated with users' subjective well-being. Their study revealed that in VR, feelings of social presence and self-presence correlate with increased perceived social support, enhancing users' objective well-being [BBH23]. This confirms the findings from D. Acena and G. Freeman [AF21].

These results again highlight social VR's potential as a unique and valuable source of social support for different purposes [BH22] [AF21] [BBH23].

3 Social VR Support Beyond Making Connections

The potential of social VR extends beyond making social connections. For individuals with aphasia, a language impairment disorder, it has been thought that support group therapy has a positive effect on them. However, this kind of therapy might not be accessible to everyone. A study explored using social VR platforms for people with aphasia, aiming to enhance their well-being and language skills. While the results showed potential language improvement, the overall findings were inconclusive, indicating a need for further research [Mar+20].

Social support through VR can also be used for pain modulation. Research suggests that social support can influence pain perception. A study by I. Neumann, I. Kathner, D. Gromer, and P. Pauli (University of Würzburg) subjected participants to heat pain stimuli within a VR environment, with some receiving social support from virtual characters. Those with virtual support reported reduced pain ratings, and their physiological pain responses were lower, emphasizing the potential of VR in pain management. Believing they were interacting with a human-controlled avatar did not influence their physiological pain responses or pain ratings, suggesting that the mere presence of virtual support is already beneficial [Neu+23].

Virtual Reality is not just for entertainment and education anymore. It is emerging as a powerful tool for social support in various contexts, from deepening interpersonal connections and finding a community to applications like offering a comforting virtual hand during painful procedures. While promising, it's crucial to ensure the safety and inclusivity of these virtual spaces. As VR evolves, it reshapes possibilities for social support, promising a future where technology enhances social human connections.

References

[TSC18]   B. Tarr, M. Slater, and E. Cohen. "Synchrony and social connection in immersive Virtual Reality". In: *Scientific reports* 8 (2018), p. 3693. DOI: doi:10.1038/s41598-018-21765-4.

[CG20]   J. Collange and J. Guegan. "Using virtual reality to induce gratitude through virtual social interaction". In: *Computers in Human Behavior* 113 (2020), p. 106473. ISSN: 0747-5632. DOI: https://doi.org/10.1016/j.chb.2020.106473.

[BBH23]   V. van Brakel, M. Barreda-Ángeles, and T. Hartmann. "Feelings of presence and perceived social support in social virtual reality platforms". In: *Computers in Human Behavior* 139 (2023), p. 107523. ISSN: 0747-5632. DOI: https://doi.org/10.1016/j.chb.2022.107523.

[BH22]   M. Barreda-Ángeles and T. Hartmann. "Psychological benefits of using social virtual reality platforms during the covid-19 pandemic: The role of social and spatial presence". In: *Computers in Human Behavior* 127 (2022), p. 107047. ISSN: 0747-5632. DOI: https://doi.org/10.1016/j.chb.2021.107047.

[AF21]   D. Acena and G. Freeman. ""In My Safe Space": Social Support for LGBTQ Users in Social Virtual Reality". In: *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. CHI EA '21. 2021. ISBN: 9781450380959. DOI: 10.1145/3411763.3451673.

[Mar+20] J. Marshall et al. "A randomised trial of social support group intervention for people with aphasia: A Novel application of virtual reality". In: *PloS one* 15(9) (2020), e0239715. DOI: https://doi.org/10.1371/journal.pone.0239715.

[Neu+23] I. Neumann et al. "Impact of perceived social support on pain perception in virtual reality". In: *Computers in Human Behavior* 139 (2023), p. 107490. ISSN: 0747-5632. DOI: https://doi.org/10.1016/j.chb.2022.107490.