Empathy in Virtual Reality Environments

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Contributor: Jorge Bacca-Acosta , Cecilia Avila-Garzon , Myriam Sierra-Puentes

The effectiveness of virtual reality (VR) in eliciting empathy lies in the fact that VR offers possibilities for situating people in a specific context and in the shoes of others. Previous research has investigated the benefits of VR in eliciting empathy and has compared VR with other technologies.

emotional empathy cognitive empathy virtual reality

1. Introduction

Empathy is a construct that represents an “emotional response to other’s distress, suffering or pain” [1]. The origin of the term empathy dates back to 1873, when the philosopher Robert Vischer used the German term “Einfühlung” (feeling into) as an expression in art appreciation. Later, in 1909, Edward Bradford translated the German expression into the English term “empathy” [2]. Empathy is usually divided into emotional empathy and cognitive empathy. On the one hand, emotional empathy means that a person is emotionally moved by a situation. On the other hand, cognitive empathy involves understanding the thoughts and emotions of others, and this has been regarded as perspective taking. In short, the difference between the two concepts is that perspective taking (cognitive empathy) involves the experience of how the other person feels or views a particular situation, while emotional empathy is related to being emotionally moved by a situation that another person experiences.

Virtual reality (VR) is a medium for immersion in a virtual environment generated by a computer. VR is a collection of hardware that includes computers, head-mounted displays (HMDs), and sensors, and it allows one to experience telepresence [3]. Virtual reality (VR) has been used as a technology for perspective taking, and some VR applications have been used for developing empathy in different contexts [4]. Recent research has shown that perspective-taking experiences might have transferable effects on real life [5]. The effectiveness of VR for perspective taking lies in the fact that VR is useful for situating a person in a specific focused context, which reduces the cognitive load needed to imagine the situation, and then allowing them to understand the views and feelings of others [6]. However, there is a lack of research on the factors that influence empathy when VR is used as a medium to elicit empathy [7]. Recent research suggests that more studies need to be conducted to understand the intricacies of some factors that contribute to eliciting empathy in a VR experience, such as presence, immersion, and engagement [8]. Moreover, recent research on the effect of VR in eliciting empathy has shown mixed results [9]. There is also a lack of research on how empathy should be considered in strategies for communication about migration [10].

2. Virtual Reality and Empathy

The research on VR and empathy has focused on different aspects. One of these aspects has been the investigation of whether VR is more effective in eliciting empathy than other technologies. In this line of research, for instance, Rodríguez and Rozo [11] found that a videogame is more effective in eliciting empathy toward migration processes than a documentary on the same topic. Cohen et al. [7] found that 360° videos are more effective in creating empathy than 2D videos. However, other researchers have not found differences in empathy change and the sense of presence between 360° videos in VR and traditional videos [12]. Sundar et al. [13] found that a narrative in a 360° video is more effective in terms of the sense of presence, credibility, and feelings of empathy than reading the story in text with images.

Recent research has investigated some of the factors of VR experiences that are effective in creating empathy. For instance, Cohen et al. [7] found that the sense of social presence is a factor that mediates the benefits of 360° videos presented in VR and the levels of empathy. Cummings et al. [9] found that some dimensions of presence, such as self-location, co-presence, and social realism, mediate the effect of immersion on empathy in VR. In particular, co-presence influences cognitive empathy, while self-location and co-presence influence associative empathy. Similarly, Lee and Li [8] found that presence mediates the relationship between immersion and empathy in VR environments. However, further research is needed to identify how some aspects such as immersion and presence lead to increased empathy [8]. Overall, previous research has focused on presence and immersion and their effects on empathy. However, other factors such as attitudes and compassion deserve the attention of researchers to uncover the aspects of a VR experience that affect empathy.

3. Virtual Reality and Migration

To investigate the predictors of empathy, researchers focused on empathy for migrants using immersive VR (a higher level of immersion) because it is a relatively underexplored field. Immersive VR refers to the use of a head-mounted display (HMD), in which the user is completely immersed in a computer-generated environment and can move in six degrees of freedom (6 DoFs) in the VR environment. In this regard, this research differs from other approaches that have been used to investigate the effect of VR on empathy, such as 360° videos (in which the user is a passive agent), and some examples of this approach can be seen in Hollick et al. [14] and Schutte and Stilinović [15]. Another approach that can be used is non-immersive VR (using a traditional computer monitor showing a VR environment) in which the level of immersion experienced by the user is very limited. However, to the best of the knowledge, no studies have been conducted using the latter approach. Although some studies have been conducted, the field is still in its infancy. Researchers describe previous studies in the field of VR that have attempted to create empathy for migrants.

In previous studies, 360° videos were used because they could provide higher levels of empathy, as they achieved higher levels of presence [14]. Among these research papers, the study by Jones and Sommer [16] can be mentioned, as it compared a virtual reality immigration environment at the US–Mexico border to reading an article on the same topic. However, the results did not show significant differences between the use of virtual reality and a printed text on the subject.

Schutte and Stilinović [15] concluded that a 360° video showing the documentary “Clouds Over Sidra” through virtual reality generated higher levels of empathy than a traditional video (different from 360°). Similarly, Martingano et al. [17] concluded that 360° virtual reality videos had a positive short-term effect on emotional empathy when compared to control conditions, which consisted of reading stories similar to those shown in the 360° video only through text. However, the authors did not find a significant effect on cognitive empathy. Gitau et al. [18] developed a virtual reality environment called EmbodiMap, where a group of refugees can register their feelings and emotions in a creative and innovative way. Documentaries have also been used as a medium to create empathy for migrants, with promising results [19].

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