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Does Sense of Presence Affect People's Politeness? Comparing VRChat and Soul App

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Abstract: Mobile social activities are among the most popular forms of socialization today, and has become an integral part of people's daily lives. With advances in technology and the rise of affordable virtual reality devices, VR social interaction through avatar creation and support for advanced body tracking capabilities has the potential to lead the next revolution in the digitization of social activities. However, whether in VR or on mobile phones, user politeness and friendliness are always crucial factors influencing the user experience of social applications. While past research has examined online politeness, less attention has been paid to comparing politeness perceptions between social VR and mobile applications. In the meantime, given that the core characteristics of VR socializing is its heightened sense of presence, research by many scholars in the relevant field also indicates that presence often positively correlates with positive emotions. Therefore, this study will explore how people perceive and express verbal and non-verbal politeness behaviors in different social applications (VR chat, Soul app), as well as investigate how the sense of presence provided by the devices influences people's expression of politeness. The study's results identified the polite and impolite behaviors that people had perceived in VR and the mobile App. Lastly, the study also reported that VR applications that offer a heightened sense of presence can better facilitate politeness.

Keywords: VR social, Mobile Social, Politeness, Presence.

1. Introduction

Establishing social connections is a basic human need [1]. Currently, people are relying more and more on technology for social interaction. Mobile social activities are among the most popular forms of socialization today, and has become an integral part of people's daily lives. With advances in technology and the rise of affordable virtual reality devices, VR social interaction through avatar creation and support for advanced body tracking capabilities has the potential to lead the next revolution in the digitization of social activities. The key property that distinguished VR from all previous media types is “presence”[2]. Presence refers to the psychological feeling of "being there", truly immersed and enveloped by the environment [2]. Virtual reality technology with its wide range of communication modes provides users with a sense of presence that will go beyond the traditional cell phone interaction to create a more vivid interactive experience. In the experience of digital social software, We believe that user experience design for social software should not be limited solely to

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the design of the interface and functionalities. The process of communicating with others during social Apps can also significantly influence users' experiences and feelings (e.g. being verbally abused in online chats can deeply affect one's experience). Therefore, this study aims to further explore how different technology products shaped people's social experiences. This study will focus on users' expressions of politeness in VR social and mobile social, understanding how people perceive politeness in different devices (VR chat and Soul App). Simultaneously, this research will delve into 'presence', the most distinguishing feature between VR and other media devices, to explore the relationship between the sense of presence in different devices (VR chat and Soul App) and expressions of politeness. The research can assist people in gaining a deeper insight into how various social devices influence polite expressions. This will help provide inspiration for social platforms to promote friendly community building and thereby enhance trust and happiness among people.

2. Background

2.1. Social VR

VR social applications that enable geographically separated users to interact in shared virtual space [3]. VRChat is a highly popular VR social application where users can embody their own avatars, explore various virtual landscapes, and interact with others [4]. VRChat is typically accessed using a VR headset (HMD), and through motion tracking and stereoscopic visuals, it provides an immersive environment that responds naturalistically to users' actions [4,5]. Unlike other media, social VR offers a very real sense of presence, enabling people can briefly establish a sense of ownership over their avatar's body, allowing to perceive virtual identity as an extension of their real self [4]. This way also affect social interaction and psychological feeling, as "our avatars change how we interact with others" [6]. Furthermore, virtual environments' close physical proximity also fosters a sense of closeness among people [4].

2.2. Mobile social media App

In today's society, people extensively use mobile social apps to fulfill needs for communication, sharing, and establishing social connections. Currently, The Soul, a Chinese mobile social app that focuses on providing anonymous virtual space for self-expression and communication, along with an algorithmic recommendation system to match users with like-minded individuals, has become one of China's most popular social platforms [7].

Back to the sense of presence of mobile social App. Mobile social activities were conducted via text-based interactions [8]. Researchers believe that such social form limits the "bandwidth" of communication, compared to traditional face-to-face communication settings [9]. Because text-based social activities was the inability to convey and interpret rich social cues (e.g. gestures, eyes, and voice intonation) [10]. In the meantime, due to the reduction of available social cues, it also results in a greater sense or feeling of anonymity [9]. This in turn is said to have a deindividuating effect on the individuals involved, producing behavior that is more self-centered and less socially regulated than usual [9].

2.3. Presence

The subjective experience of "being there" in a virtual scene is referred to as "presence" (Pan & Hamilton, 2018). Telepresence, self-presence, and social presence are three subcategories of presence [11].

Telepresence relates strongly to how vividly the user experiences the spatial properties of the mediated environment [12]. Self-presence is the degree that the "virtual self is experienced as the

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actual self" [13]. Finally, "social presence", refers to the "sense of being with another" [14]. Intimacy and immediacy are its two important components [12]. Intimacy means the sense of connection between communicators during interaction, while immediacy refers to the psychological distance between them [12]. Both intimacy and immediacy can be influenced by various verbal and nonverbal clues (etc. facial emotions, voice, gestures, and appearance) [15]. Therefore, VR with its ability to reproduce rich social information provides a higher level of social presence. However, social presence also can be influenced by the interactors themselves [12]. People's communication strategies and individual traits also influence social presence [12]. For example, Research has found that text-based communication can also produce equal levels of intimacy as face-to-face interactions, but it may take more time [12].

2.4. Politeness

Politeness is fundamentally about considering other people's feelings about how they want to be treated in interactions, which includes acting in a way that shows respect for their social status and relationships [16]. Also, as part of the communication, By using polite language, showing kindness, individuals can enhance positive emotions and build trust in social interactions [17]. Meanwhile, nonverbal behavior such as Interpersonal distance and eye contact also has a significant impact on polite interaction [18]. Depending on the different contexts and the intimacy of the relationship, people tend to choose the social distance that makes them comfortable. Regarding eye contact, relevant research has shown that eye contact can help facilitate interactions and increase affection [19]. Similarly, in VR environment, past research indicated that people are more inclined to maintain interpersonal distance and make positive eye contact with others like in a real-life social interactions [6,20].

3. Method

3.1. Participants

Seven participants (5 females and 2 males) were recruited in the interview. We selected two Apps (VRChat and Soul) that towards social with strangers to overcome the impact of intimacy between friends. All participants have experience using these apps. Additionally, Considering the impact of culture on politeness, this study will focus on Chinese users. All participants have received higher education.

3.2. Procedure

The study was approved by our ethics board. We employed qualitative semi-structured approach. Because the topic of polite expression involves people's inner psyche and feelings. Semi-structured interviews are particularly suitable for studying human behavior, feelings and experiences, making them an ideal choice for current research. Before the interviews, we gave participants a basic survey on demographics, including gender, age, education, and location. The interviews based on a list of pre-prepared questions. The first question surrounded recent VRChat and Soul App social experiences and feelings, in order to elicit discussion and obtain information about participants' overall feelings. The second question focuses on individuals' perceptions of politeness and impoliteness expressions in two applications. The third questions focuses on the similarities and differences between VR and mobile social interactions [20]. This allows participants to discuss further how different technologies affect their social behaviors and emotional feelings. The final question is about which social Apps (VRChat or Soul) makes participants feel more polite. Additionally, semi-structured interviews also allow researchers the flexibility to pose new questions

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relevant to the research topic. The content and structure of the interview can be adjusted flexibly based on the responses and attitudes of the participants, helping researcher obtain information that might be overlooked or unrecognized. Subsequently, All interviews data will be recorded, transcribed and subjected to thematic analysis.

Theme analysis is a method of identifying, analyzing, and generating patterns within data [21]. It allowed the researcher to identify the main understandings expressed by the people and their positive and negative feelings [22]. To avoid confirmation bias when formulating analysis [23], the study set a coding and theme-generation process consisting of five stages [24]. In the first stage, the interview script is reviewed several times to familiarize the interviewee's perspectives and thoughts [25]. In the second stage, the data encoding work will be executed. Researcher use phrases to highlight parts of text and create codes that summarize the content [23]. In the third stage, The researcher examines and reflects on the codes developed, identifies regularities and patterns among them, and generates corresponding themes and subthemes [23]. In the fourth stage, the researcher review and inspect the themes and subthemes in order to accurately representations of the data [23]. The problematic parts will be split up, combined, discarded, and updated [23]. In the final stage, the themes will be defined and named.

4. Results and Discussion

The thematic analysis generated 4 main themes: VRChat and Soul's behavior, Virtual environment, Feelings about self, Feelings about others.

4.1. VRChat and Soul's behavior

In VR Chat's social interaction, participants can have a variety of interaction forms(non-verbal and verbal behavior), the ways people interact are also closer to real life. They rely on some social norms from the real world:

"...VR present more forms of expression, such as facial expressions and body movements...."[Participant #1]

"...people can move around freely. Our communication is not static but in constant motion..."[Participant #1]

"...we would naturally move a bit closer to each other, as social distancing is equally important in VR. People silently adhere to such implicit rules..."[Participant #3]

In mobile social interactions, participants mainly communicate by typing and frequently use emojis to convey emotions. Some participants pay attention to punctuation and use platform-provided quick greetings when interacting with strangers. However, all participants reported facing "no-reply" problems during interaction:

"When typing to chat, I like to use emojis and humorous pictures, I also enjoy saving some interesting emojis for communication."[Participant #3]

"...the platform will automatically suggest greeting phrases. I just need to tap these greetings icons with my fingers."[Participant #3]

"...When typing, I pay attention to using more punctuation marks..."[Participant #7]

"On mobile phones, we are more likely to not respond to others. If someone sends you a text and you don't want to reply, you can directly ignore them."[Participant #6]

The first theme reported behaviors by participants in VRChat and Soul. By comparing the user behaviors of the two applications, we can find that VRChat includes more communication forms, such as visual actions and voice. People are also more compliant with real-life social norms. In contrast, Soul App predominantly rely on typing and emojis.

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4.2. Virtual Environment

Both VRChat and Soul provide virtual environments in social activities. However, In the participants' reports, most of the responses were about VRChat's virtual environment, and only one participant mentioned the virtual environment on the Soul. In VR environment, participants indicated that they can choose the different virtual scene according to preferences. Meanwhile, the virtual environment can also contribute to people's participation and emotional response:

"...VR provides different scenarios. If I want have an emotional exchange with someone, I might choose a seaside background, this setting itself can influence my feelings. I'll be more likely to feel a good emotion, and more easily blend into the environment and have a greater desire to express..."[Participant #1]

One participant mentioned the virtual environment on Soul. The Soul offers a chat window for people to socialize. In addition, Soul can help find like-minded friends through intelligent recommendations based on people's personalities:

"The recommendation system in Soul can be more diverse. For example, it can recommend friends near your location or suggest friends who may share similar interests." [Participant #7]

Many participants overlook virtual environments on mobile devices due to the lack of immersive experience. Meanwhile, this study found that the virtual scenes of VR can enhance people's participation and emotional responses. People can choose scenes and avatars based on preferences, making it easier to generate positive emotions. However, because the using frequency of Soul is far higher than VRChat and Soul's repetitive interface. This makes VR more likely to generate a "wow-effect" to influence people's sense of engagement("wow-effect" defined as "a temporary state of awe triggered in the individual when surprised by something wonderful") [22]. In Soul's virtual environment. By connecting people with similar interests, recommendation systems bridge the psychological distance between individuals, promoting social presence and fostering emotional connection in communication. This is consistent with past research that individual traits and communication strategies can influence social presence [12].

4.3. Feelings about VRChat

Through VR, people can perceive more information about others' reactions and dynamics, making them care more and consider others' feelings. Most participants expressed that they treat others as real individuals in VR. Some participants may feel nervous, but this feeling can also encourage politeness expressions and restrain rudeness:

"VR makes me more nervous sometimes, because I can see others, so I'm more likely to treat them as real people. Therefore, my behavior will more restrained and show more kindness."[Participant #4]

"in VR, when I see real movements, voice, and avatars, I might pay more attention to them. So I would care more about their feelings."[Participant #6]

In perceiving others' politeness. All participants indicated that they can experience more forms of politeness in VR due to its ability to convey rich social cues. Meanwhile, the combination of voices, movements, gestures, and facial expressions made participants feel that the level of in VR was stronger than on the phone:

"...the forms of politeness in VR are more diverse, including physical and voice, I feel a stronger sense of politeness in VR than on the phone..."[Participant #3]

VR can also provide a more real-time and continuous experience. Participants reported that this real-time experience enabled them to feel politeness from others more frequently:

"...VR can see the others in real-time, which facilitates more continuous communication.This form allows me to detect more politeness and friendliness..." [Participant #1]

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However, some participants also reported that prolonged VR use can cause dizziness and greatly affect social participation and presence:

"I feel a bit dizzy when I wear it for too long. So, I have to stop first."[Participant #5]

In VRChat, avatars powered by full-body tracking and visual presentation allow people to experience real-time, three-dimensional interactions similar to face-to-face communication [10]. The presentation of rich verbal and nonverbal behaviours in avatars also allows people to pay more attention to and consider others [26]. The different technological features provided by the VR collectively promote a higher sense of presence [12] and causes people to feel a stronger level of politeness. Meanwhile, behavior from continuous voices and actions (e.g. body movements, facial expressions, voice intonation,eye contact and adherence to social norms)are more frequently recognized by people, and more tend to be identified as politeness. This finding also aligns with related research, stating that "VR users generally viewed non-verbal behaviors as positive because they were more natural, immersive, and natural means of communication" [26].

4.4. Feelings about Soul

Many participants expressed boredom in Soul, possibly because only text expressions make people feel disinterested. Meanwhile, this boredom can also lead to a sense of perfunctoriness.

"...Typing can be boring, and sometimes there's nothing interesting to talk about..."[Participant #2]

"...When I feel bored,I frequently get distracted by other content like videos and games. As a result, my responses often seem perfunctory..."[Participant #2]

Many participants feel that the sense of politeness in Soul is not as strong as in VRChat due to the fewer social cues perceived. Furthermore, interruptions and disconnections during the interaction also lead to people experiencing relatively less politeness:

"I am less likely to feel politeness and sincerity in typing; Perhaps text makes me feel somewhat superficial and surface."[Participant #2]

"Notifications from other apps often distract me, making me feel less courteous."[Participant #6]

Some participants also mentioned rudeness and self-centered from others:

"Typing on the phone makes it easier to be self-centered, people might not care so much about the other person's feelings."[Participant #5]

The perceived politeness of the Soul mainly involves using courteous language, like friendly greetings. Meanwhile, Non-verbal behaviors such as sending friendly emojis can make people feel they are being treated politely. However, due to text-based nature, Soul only offered limited social cues, reducing the sense of presence. This limited cues make people more prone to feeling bored and self-centered. Because reducing communication cues will give users a stronger sense of anonymity and depersonalization effect, further reinforcing self-centered behavior [9]. Furthermore, boredom also makes people turn their attention to other interesting phone content, resulting in behaviors like perfunctory or not responding. All these behaviors are identified by participants as impolite[27]. Finally, participants also mentioned that being careful with punctuation makes them feel polite, but misunderstanding others during communication might make them feel impolite. However, recipients don't necessarily feel these actions are polite or impolite.

5. Conclusion

Our research found that VR engaging multiple physical senses and offering heightened sense of presence can better facilitate polite expressions. People will experience higher frequency and stronger levels of politeness interactions in VRchat. Returning to the mobile app Soul. Because the sense of presence provided by mobile phones is relatively low, and since mobile social interactions are primarily in the form of text, people's recognition of politeness will be more confined to the text itself.

The study has some limitations. Because the population studied is mainly Chinese, the research results cannot be generalized to groups with different cultural backgrounds. Moreover, although participants have experienced social activities on VRChat, their usage frequency is relatively low. Therefore, the feedback from these participants might differ from those who use it long-term or more frequently, as they might lack a broader or daily experience. In the future, we plan to include diverse cultural groups in our research and conduct follow-up interviews to track participants' experiences and emotions over time [28]. Lastly, the research doesn't explore the issues of impoliteness in social interactions within VR[29]. While VR can amplify the sense of politeness, it might also lead to intensified impolite behaviors, like more severe insults. In future studies, we also aim to explore rude behavior within VR environments.

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