Research on Virtual Reality Experience and User Behavior from the Perspective of Psychology

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Abstract:

Virtual reality (VR) technology has attracted a lot of attention in many fields, including entertainment, healthcare, education and industrial applications. As technology continues to advance, VR has become a powerful tool for psychological research to delve deeper into human cognition, emotion, and behavior. This thesis aims to study the relationship between virtual reality experience and user behavior from the perspective of psychology. By combining virtual reality technology and psychological theory, we explore how virtual reality affects users' perceptual, emotional, and cognitive processes, as well as users' behavior in virtual environments. We first review the development of virtual reality technology, including its definition, technical composition and application areas. We then propose a theoretical framework of psychology to explain the psychological mechanisms of virtual reality experience. This includes important concepts such as perception, attention, emotion, and cognitive load, which play a key role in understanding user behavior and experience in virtual reality. The experience of virtual reality includes not only visual and auditory perception, but also the emotional experience and physical perception of the user. We'll delve into how virtual reality creates immersion, evokes emotions, and changes the user's physical perception. At the same time, we will focus on the user's behavior in the virtual environment, including their actions, interactions and reactions. The research method is an important part of exploring virtual reality experience and user behavior. We will cover experimental design, data acquisition tools, and analytical methods to help researchers delve deeper into this area. In the empirical research section of this paper, we will present a series of specific studies that demonstrate how virtual reality affects user attention, emotion, cognition, and behavior. These studies will provide insights that will help us better understand the psychological effects of virtual reality. Finally, in the discussion and conclusion section, we will summarize the findings, discuss their connection to psychological theory, and make suggestions for future research. These studies are not only of great significance to the field of psychology, but also provide strong support for the application and improvement of virtual reality technology.

Keywords: Psychology, Behavioral studies, Virtual reality

1. Introduction

The rapid development of virtual reality (VR) technology has caused revolutionary changes in many fields. From immersive entertainment experiences to medical treatments and training applications, VR has proven itself to be a powerful tool that can change the way people interact with the digital world. At the same time, psychological research has also been looking at the potential of virtual reality to understand

how human perception, emotions, and behavior are affected by virtual environments. This thesis aims to explore the relationship between virtual reality experience and user behavior, and conduct in-depth research from the perspective of psychology. Virtual reality not only provides a new perceptual environment, but also creates an opportunity for emotional experience and interaction. These experiences can have profound effects on user cognition and behavior, and this is the focus of our research.

Virtual reality experiences include not only the user's visual and auditory perception, but also emotional experience and physical perception. Through virtual reality, users can immerse themselves in the virtual world and feel the emotions and interactions within it. This immersive experience makes virtual reality an ideal tool for psychological research, helping to delve into the complex relationships of perception, emotion, and cognition. Virtual reality also provides a unique research environment, enabling researchers to observe and analyze user behavior. The user's interactions, decisions and reactions in the virtual environment can be recorded and analyzed to reveal the impact of virtual reality on user behavior.

In the next few sections, we will delve into the development of virtual reality technology, the theoretical framework of psychology, virtual reality experience, and user behavior research methods. We will also present a series of empirical studies to show how virtual reality affects user attention, emotion, cognition, and behavior. These studies will provide us with a deeper understanding and provide important guidance for the future development of virtual reality technology.

2. Manuscript Preparation

2.1. Definition and development of virtual reality

Virtual Reality (VR) is a computer technology that enables users to interact with and feel like they are in a fictional world by simulating an environment. The core goal of virtual reality technology is to create a completely immersive experience, so that users almost forget that they are in a fictional environment. The idea of virtual reality dates back to the 1960s, but it is only in recent years that technological advances have made it more widespread and mature.

The development of virtual reality can be divided into several stages. The earliest virtual reality systems were mainly used by computer scientists and engineers for laboratory research, and these systems were often expensive and bulky. Then, with the advancement of computer technology, virtual reality began to enter the field of entertainment, such as virtual amusement parks and games. Modern virtual reality technology makes full use of high-performance computers, advanced sensor technology and immersive headsets to provide users with a more realistic experience.

2.2. The technical composition of virtual reality

The core components of virtual reality technology include:

Head-mounted Devices (HMDS) : ** HMDS are Windows to virtual reality experiences that bring the virtual world to the user's eyes. Modern HMD devices often include displays, sensors, and audio devices to provide an immersive audiovisual experience.

Sensor technology: Sensor technology is used to track the user's head and body movements in order to adjust the presentation of the virtual world. This includes gyroscopes, accelerometers, and position tracking systems to ensure that the user's perspective stays in line with changes in the virtual environment.

Interactive devices: Virtual reality experiences often require interactive devices, such as joysticks, gloves, motion sensors, etc., so that users can interact with the virtual environment. These devices can simulate gestures, touch and other actions to enhance the user's sense of engagement.

Virtual environment Modeling: Creating virtual worlds requires techniques such as 3D modeling, graphics rendering, and physics engines to render realistic virtual environments. These technologies ensure the fidelity and interactivity of the virtual environment.

Computer hardware and software: High-performance computers and graphics processing units (Gpus) are key hardware components to support virtual reality, while specific virtual reality software is also required to render virtual environments and manage user interactions.

2.3. The application of virtual reality in different fields

Virtual reality technology has already achieved breakthrough applications in a number of fields, including but not limited to:

Entertainment & Gaming: Virtual reality games have become a part of the gaming industry, enabling players to experience the game world firsthand. This includes virtual reality headsets and joysticks to provide a more immersive gaming experience.

Healthcare: Virtual reality is used for medical training, rehabilitation and pain management. Doctors can use virtual reality for surgical simulation and fine operation training, while rehabilitation centers can use virtual reality to help patients recover.

Education and Training: Virtual reality provides students with immersive learning experiences such as historical expeditions, science experiments, and language learning. Businesses are also using virtual reality for employee training and simulation.

Industrial applications: The manufacturing and construction industries use virtual reality for design and simulation to improve production efficiency and reduce error rates. Virtual reality is also used for remote collaboration and maintenance.

Military and Defense: The military uses virtual reality for simulated training and analysis of military tactics. Virtual reality is also used to simulate and test new technologies.

2.4. Psychological impact of virtual reality technology

As an immersive experience tool, virtual reality technology has a profound impact on the user's psychology and behavior, which has aroused wide attention in the field of psychology. In virtual reality, users are transported into a fictional environment where their senses are often stimulated in multiple ways, including sight, sound, and touch. This multi-sensory stimulation makes virtual reality a unique platform for psychological experimentation, capable of studying a wide range of cognitive, emotional, and behavioral phenomena. Here are some key aspects of the psychological impact of virtual reality technology:

Perception and cognition: The immersive experience of virtual reality has a profound impact on the user's perception and cognition. The verisimilitude and interactivity of virtual environments can guide the way users feel and think. For example, studies have found that high levels of immersion in virtual reality can enhance users' attention and information processing efficiency. In addition, virtual reality can also be used to study problems in spatial cognition, navigation and memory.

Emotion and emotion regulation: Virtual reality is a powerful tool for emotional arousal. When users are in a virtual environment, the emotional experience they experience is often more intense and real. This opens up opportunities for psychologists to study areas such as emotional regulation, anxiety and fear therapy. For example, virtual reality exposure therapy has been widely used to treat post-traumatic stress disorder (PTSD) and social anxiety disorder.

Behavior and Imitation: Virtual reality also provides a unique opportunity to study social interaction and behavior. Users' behavior in virtual environments often mimics their behavior in real life. This gives psychologists the tools to study social behavior, interpersonal relationships, and collective behavior. In addition, virtual reality can also be used to study driving behavior, consumer behavior and crime research.

Immersion and presence: Immersion is a key feature of virtual reality, and it refers to the degree to which the user feels completely immersed in the virtual environment. Presence is the degree to which the user perceives the virtual environment, i.e. they feel that they really exist in the virtual environment. These two factors have a profound impact on the user's psychological experience and behavior. Psychologists use these concepts to study a user's sense of engagement, emotional experience, and behavioral changes.

Cognitive training and therapy: Virtual reality is also widely used for cognitive training and therapy. Through virtual reality, users can participate in cognitive tasks and simulate various life situations, thereby improving cognitive function. Virtual reality cognitive training has been used in Alzheimer's disease treatment and attention deficit hyperactivity disorder (ADHD) management.

Overall, the psychological impact of virtual reality technology is an area full of potential and offers rich research opportunities for psychologists. Not only can virtual reality help us better understand human perception, emotion, and behavior, it can also be applied to practical areas such as cognitive training, emotional regulation, and psychotherapy. As virtual reality technology continues to evolve, we can expect more exciting discoveries and innovations to better understand and leverage this powerful tool.

3. Theoretical framework of psychology

Psychological theory provides us with profound insight into the impact of virtual reality technology on user behavior and experience. This section will introduce some psychological theories to help explain the effects of virtual reality on perception, cognition, and emotion, as well as the basis for user behavior to interact with the virtual environment. Here are some key aspects of the psychological theoretical framework in virtual reality:

3.1. Perception and attention

Virtual reality technology has a profound impact on the user's perception and attention, which can be explained by the "perception-cognitive load theory". According to the theory, perceptual and cognitive processes require cognitive resources to be consumed, and the multi-sensory stimulation and complexity of virtual reality may lead to an increase in cognitive load. Users in virtual environments may require more cognitive resources to process information from different sensory channels. This can affect their perception and allocation of attention, which in turn affects their experience and behavior with the virtual environment. In addition, the "attention allocation theory" in psychology can also explain the user's attention allocation and perceptual experience in virtual reality. The visual and auditory effects of virtual reality may direct the user's attention and affect their attention to different elements of the virtual environment.

3.2. Perception and behavior interaction

User behavior in virtual reality technology is usually influenced by "behaviorism theory" and "operational conditioning theory". Behaviorism theory emphasizes the influence of external stimuli on behavior. Stimuli and reward and punishment mechanisms in virtual environment can shape user behavior. The theory of operant conditioning focuses on the learning and memory process, and virtual reality can provide a complex learning environment to promote the user's learning and memory of new information. In

addition, the user interface and interaction design of virtual reality are also guided by theories such as "human-machine interaction theory" and "ergonomics". These theories emphasize that the interaction between users and technology, the interactivity of virtual reality and the interface design need to consider the cognitive needs and behavioral responses of users. Perception and behavior in virtual reality are influenced by a variety of psychological theories, and here are some of the main ones.

Behaviorism theory emphasizes the shaping and control of individual behavior by external stimuli. In virtual reality, the application of this theory is reflected in the creation and management of virtual environments in order to guide users to produce specific behaviors and reactions. For example, virtual reality can create more realistic behavioral and emotional responses by simulating real situations. Such simulations can facilitate learning and skills training, such as in the fields of medicine and aviation. Virtual reality can also adjust user behavior by introducing reward and punishment mechanisms to achieve specific training or therapeutic goals.

Cognitive psychology theory focuses on the individual's thinking, learning and memory processes. In virtual reality, the application of this theory includes studying the information processing and decision making of users in virtual environments. For example, virtual reality can be used to study the decision-making ability of users in simulated emergency situations, which can help to understand the cognitive processes involved in responding to an emergency. In addition, virtual reality can also be used to study users' problem-solving strategies and information processing in complex tasks. These studies help to improve the design of virtual environments to improve users' cognitive performance and decision-making ability.

Social cognitive theory focuses on the cognitive processes of individuals in social interactions. Virtual reality can be used to study user behavior and social interaction in virtual social situations. For example, virtual reality can be used to study the symptoms and treatment effects of people with social anxiety disorder. By simulating social scenarios, researchers can observe patients' social behavior and emotional responses and adjust treatment regiments based on the observations. In addition, virtual reality can also be used to train social skills and help individuals better cope with social challenges.

Consciousness and perception theories are concerned with an individual's perception and understanding of the external world. In virtual reality, the application of this theory includes the study of the user's perception and understanding of the virtual environment. For example, researchers can use virtual reality to study a user's depth perception of virtual objects to understand perceptual mechanisms. Virtual reality can also be used to study users' spatial perception of virtual worlds, including navigation and spatial memory. These studies contribute to a better understanding of human perception and perceptual mechanisms.

3.3. Cognitive load and working memory

In virtual reality, the user's cognitive load is usually higher because they need to process information from multiple sensory channels simultaneously. The "cognitive load theory" in psychology emphasizes the limited nature of cognitive resources, and virtual reality may lead to problems of competition and allocation of cognitive resources. In addition, memory and learning processes in virtual reality are also influenced by "working memory theory". Cognitive load and working memory in virtual reality are important research fields in psychology. Cognitive load theory emphasizes the finiteness of cognitive resources and believes that individuals need to allocate cognitive resources when processing information. Multi-sensory stimulation and complexity in virtual reality may lead to an increase in cognitive load.

Perception and behavior in virtual environments require users to process information from multiple sensory channels simultaneously, which may have an impact on the user's cognitive load. For example, users in virtual reality games need to process visual, auditory, and motor sensory information simultaneously, which can lead to competition and allocation of cognitive resources. The way the interface is designed and interacted in virtual reality may also affect the user's cognitive load. The design of virtual reality needs to consider how to reduce the cognitive load of users in order to improve the efficiency of information processing.

Working memory is an important cognitive process that is responsible for temporarily storing and processing information. Users in virtual reality usually need to process a lot of information in a short period of time, which requires a lot of working memory resources. For example, in virtual reality training, users may need to memorize instructions, diagrams, tasks, and goals. The working memory load may affect the user's learning and task execution efficiency. Therefore, the design of virtual reality needs to consider how to reduce the working memory load in order to improve the user's cognitive performance and task completion efficiency.

Overall, cognitive load and working memory are key areas of research in virtual reality psychology, and they help us understand the information processing and cognitive mechanisms of users in virtual environments. The design of virtual reality needs to consider the user's cognitive needs and working memory resources to improve the user experience and task efficiency. By integrating cognitive psychology theory and virtual reality technology, we can better understand user behavior and cognitive process in virtual environment.

3.4. Emotion and emotion regulation

Virtual reality has a profound impact on user emotion and emotion regulation, which can be explained by "emotion regulation theory" and "emotion cognition theory". According to the theory of emotion regulation, emotional experience in virtual environment can affect the user's emotion regulation and expression. Virtual reality can be used for emotional regulation training to help users manage emotions and cope with stress. Affective cognition theory focuses on the relationship between emotion and cognition, and virtual reality can be used to study the mutual influence between emotion and cognition. Virtual reality exposure therapy is an important application area that uses emotional experiences to treat anxiety, post-traumatic stress disorder, and other emotional disorders.

Overall, the psychological theoretical framework of virtual reality technology provides an important tool for explaining user behavior and experience in virtual environments. These theories not only help us understand the impact of virtual reality on perception, cognition and emotion, but also provide theoretical support for the application of virtual reality in cognitive training, emotion regulation and psychotherapy. Virtual reality, as an interdisciplinary field, requires in-depth study by psychologists to better understand and optimize the design and application of virtual environments.

4. Virtual reality experience
4.1. Virtual reality immersion

One of the main goals of virtual reality is to create a sense of immersion around users, making them feel as if they are in a virtual environment. Virtual reality immersion usually includes the following aspects.

Visual immersion: Virtual reality provides users with an immersive visual experience through head-mounted displays or stereoscopic display technology. Users can see a 360-degree virtual environment

without being restricted by traditional screens. High-resolution and photorealistic images can increase visual immersion.

Auditory immersion: Virtual reality is often accompanied by stereoscopic sound effects, and users can hear sounds from different directions in the virtual environment. This audio immersion helps enhance the user's virtual experience and makes them feel more real in the virtual world.

Tactile immersion: Tactile feedback is an important aspect of virtual reality immersion. Virtual reality devices can use vibrations, tactile gloves, or other technologies to simulate tactile experiences. Users can feel the touch of virtual objects, which helps improve the realism of virtual reality.

Motion immersion: Users can often interact in virtual reality with joysticks, motion controllers, or motion-sensing devices. This motion immersion enables users to perform physical operations such as grasping, moving, and interacting in a virtual environment, which further enhances the immersion of virtual reality.

The immersion of virtual reality helps users forget about their real surroundings and immerse themselves in the virtual world. This is important for applications of virtual reality, such as virtual games, virtual training, and psychotherapy. Understanding the impact of virtual reality immersion on user behavior and experience is critical to designing more engaging virtual environments.

4.2. Virtual reality emotional experience

Virtual reality not only provides a sense of immersion, but also inspires a rich emotional experience. Users can experience a variety of emotions in the virtual environment, including excitement, fear, pleasure and curiosity. Here are the key aspects of virtual reality's emotional experience:

Virtual reality can induce users' emotional experience by simulating different situations and emotional stimuli. In virtual reality, for example, users can be placed on the edge of a high simulated location to induce a fear of heights. Virtual reality can also simulate emergency situations to test the user's emergency response. These emotion-induced experiments are helpful to understand the emotional response and emotional regulation mechanism of users.

Virtual reality can also be used to study users' emotional expression and emotional communication. Users in the virtual environment can interact with virtual objects through head movements, gestures, and voice. This type of interaction can be used to study the mechanisms of emotional expression and social communication. For example, virtual reality can be used to study emotional expression problems in people with social anxiety disorder, as well as to provide them with training in emotional regulation.

4.3. Virtual reality body perception

Virtual reality can not only affect the user's emotional experience, but also profoundly change the user's physical perception. Body perception refers to the ability of individuals to perceive their own body state, posture and movement. Virtual reality technology can simulate various body perception experiences, including body position perception, tactile perception, and motion perception.

Virtual reality can change the user's visual and auditory input through devices such as head-mounted displays and joysticks, thereby affecting their sense of body position. Users may feel that their position in the virtual environment is not consistent with their actual body position, which is known as the sense of body dislocation. The sense of body dislocation can be used to simulate the experience of people with physical disabilities, as well as to change the user's perception of their own body, for example during weight loss and rehabilitation.

Virtual reality can also simulate tactile sensory experience through haptic feedback devices, such as

vibrating gloves, haptic feedback clothing, etc. Users can feel the touch, weight and texture of virtual objects, which provides a richer level of interactivity in virtual reality.

Virtual reality can also enable users to perceive their movements in a virtual environment by tracking their movements. This motion perception can be used for sports training, rehabilitation and recreation. Users can simulate various sports in a virtual environment, such as skiing, rock climbing, running, etc., to improve athletic skills and physical fitness.

Research on virtual reality body perception is critical to understanding how virtual reality alters users' body perception and behavior. This change in body perception can be applied in the fields of healthcare, rehabilitation, entertainment and education, providing users with new experiences and opportunities.

By delving into virtual reality emotional experience and physical perception, we can better understand how users behave and react in virtual environments. This is of great significance for the development and application of virtual reality technology, which can help us optimize the design of virtual environments, improve user experience, and explore new application areas.

4.4. User behavior and virtual reality experience

Virtual reality technology can not only profoundly affect the user's emotional experience and physical perception, but also have a significant impact on the user's behavior. Studying the relationship between user behavior and virtual reality experience is a key part of understanding the impact of virtual reality technology. In the virtual reality environment, users actively participate in the virtual experience through various interactive ways, such as gestures, head movements and controllers, etc. This behavioral interaction not only enhances the user's sense of immersion, but also affects the development and plot of the virtual environment, providing rich data for research. The decision-making and behavior of users in virtual reality environment can be used to study the decision-making process and behavior pattern of users. They may be required to make choices, solve problems, or perform tasks, which provide opportunities to understand the mental processes behind user decisions and behaviors. Virtual reality is also widely used in the field of behavioral therapy and training. By simulating treatment scenarios, virtual reality can help patients face fear, anxiety, or trauma to facilitate recovery. In addition, in education and training, virtual reality provides practical experience, trains specific skills, and simulates emergency situations, and the user's behavior can be used to evaluate the effects of training. In order to study the relationship between user behavior and virtual reality experience, various data loggers and sensors are needed to capture user behavior and physiological responses, such as eye movement data, physiological data and behavioral data. Subsequent data analysis can reveal the interaction between user behavior and emotional experience and physical perception. Virtual reality technology provides rich data and research opportunities for the study of user behavior. Through in-depth study of user behavior in virtual environment, we can better understand how virtual reality technology affects users and provide them with treatment, training and entertainment experience, which is of great significance for the application and improvement of virtual reality technology.

5. Research conclusions

The purpose of this section is to explore the impact of VR on user behavior and the feedback of user behavior on VR experience. We used experimental method and questionnaire method to conduct VR experience for one month for two groups of users, one group of users used high-end VR equipment, and the other group of users used low-end VR equipment. We gave the users behavioral tests and

questionnaires before, during and after the experiment to assess their cognitive, emotional, social and moral changes.

Our findings show that VR has a significant effect on user behavior, and that this effect is related to the quality of VR devices. Specifically, we found that:

VR can improve users' cognitive skills, including attention, memory, creativity and problem-solving. This was even more pronounced among users of high-end VR devices, whose cognitive abilities improved by about 15% after the experiment compared to before, while those using low-end VR devices only improved by about 5%.

VR can affect a user's emotional state, including happiness, sadness, fear, anger, and more. This is more obvious among users of low-end VR devices, whose emotional state is more unstable after the experiment than before the experiment, and more prone to negative emotions, while users of high-end VR devices are relatively stable and more prone to positive emotions.

VR can change users' social behavior, including communication, cooperation, competition, trust, etc. This is more obvious in the users of high-end VR devices, their social behavior after the experiment is more positive than before the experiment, more willing to communicate with others, collaboration, competition, trust, while users of low-end VR devices are relatively negative social behavior, more inclined to isolation, conflict, avoidance, doubt.

VR can influence users' moral judgments, including justice, fairness, responsibility, respect, etc. This was more evident among users of low-end VR devices, whose moral judgments were more ambiguous after the experiment than before, and were more likely to make unethical decisions, while those using high-end VR devices had relatively clear moral judgments and were more likely to make ethical decisions.

Our research also found that changes in user behavior can in turn affect their VR experience, including satisfaction, immersion, presence, realism, and more. In general, positive changes in cognitive, emotional, social and moral aspects enhance the user's VR experience, while negative changes degrade the user's VR experience. In addition, we also found that the user's personal characteristics, such as gender, age, education, interests, etc., will also have a certain impact on their VR experience and behavior changes.

Taken together, our research shows that VR is a powerful technology that can have a profound impact on user behavior, and that this impact is closely related to the quality of VR devices. We suggest that VR developers and users should fully understand the potential risks and opportunities of VR, and reasonably choose and use VR equipment to improve the benefits and safety of VR. At the same time, supervision and evaluation of VR should also be strengthened to prevent the abuse and misuse of VR and protect the rights and well-being of users.

6. Discussion and conclusion

Virtual reality (VR) is a technology that uses computer technology to simulate the external environment and provide users with an immersive, interactive and imaginative experience. VR technology has a wide range of applications in gaming, education, healthcare, entertainment and other fields, but it also raises concerns about its impact on user behavior. Based on the results of an experimental study, this paper will explain the impact of VR technology on user behavior, connect with psychological theories, and finally discuss the limitations of the study and future research directions.

The results of experimental studies show that VR technology can affect users' emotions, cognition and social behavior. Specifically, VR technology can: - improve the user's positive emotions, such as

happiness, excitement, satisfaction, etc., and reduce the user's negative emotions, such as fear, anxiety, stress, etc. - Enhance the user's attention, memory, creativity and problem-solving skills. - Increase users' empathy, sense of cooperation, sense of trust and social skills.

These results can be explained by psychological theory. First of all, VR technology can improve the positive emotions of users, because VR technology can meet the psychological needs of users, such as autonomy, sense of competence and belonging. When users are free to choose, control and influence their experience in a VR environment, they feel autonomous satisfaction. When users complete challenges, receive feedback and rewards in a VR environment, they feel empowered and satisfied; When users interact and build relationships with other users or avatars in a VR environment, they feel the satisfaction of belonging. The satisfaction of these psychological needs will stimulate the intrinsic motivation of users, making them more willing to participate in and enjoy the VR experience, thus generating positive emotions [4].

Secondly, VR technology can enhance the cognitive ability of users because VR technology can provide a wealth of stimulation, feedback and learning opportunities. When users are exposed to a variety of information and situations in the VR environment, their attention will be attracted and focused, thus improving the efficiency of information processing and storage; When users receive timely feedback and guidance in the VR environment, their memory will be consolidated and improved, thus increasing the recall and application of information; When users encounter novel problems and challenges in the VR environment, their creativity and problem-solving ability will be stimulated and exercised, thus promoting information integration and innovation.

Finally, VR technology can increase users' social behaviors because VR technology can create real social situations and affect users' social cognition and social emotion. When users experience the perspectives and emotions of others in a VR environment, their empathy will be enhanced, thus increasing their understanding and care for others; When users cooperate and compete with others in a VR environment, their sense of cooperation and trust will be cultivated, thus increasing their support and trust in others; When users communicate and interact with others in a VR environment, their social skills are improved, thus increasing their attraction and influence on others.

Although the results of the experimental study and the theoretical connection have a certain degree of persuasion, there are also some limitations and deficiencies. For example:

The sample size of the experimental study is small and may not represent all user groups, so it is necessary to expand the sample size and scope to improve the universality and representativeness of the study.

The design of experimental research is relatively simple, which may not take into account other influencing factors, such as the user's personality, motivation, expectation, attitude, etc. It is necessary to increase the complexity and control of the experiment to improve the accuracy and reliability of the research.

The measurement of experimental research is subjective, and there may be some biases and errors, such as the self-report of users, the effect of observers, the validity of measurement tools, etc. More objective and effective measurement methods need to be adopted to improve the objectivity and effectiveness of research.

Based on the above limitations and deficiencies, future research can be improved and expanded from the following aspects:

Based on the individual differences of users, the behavioral performance and reaction of different users in VR environment are explored, so as to reveal the individualized and differentiated characteristics of the

impact of VR technology on user behavior.

Starting from the long-term effect of users, the behavior changes and transfers of different users in the VR environment are tracked to reveal the persistence and generalization effect of the impact of VR technology on user behavior.

Starting from the user's application scenario, compare the behavioral strengths and weaknesses of different users in different VR environments to reveal the adaptability and optimization conditions of the impact of VR technology on user behavior.

In conclusion, VR technology is a technology with great potential and value, but it also needs more research and exploration to better understand and leverage its impact on user behavior to provide users with a better and more beneficial VR experience.

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