

A VR game design research project dedicated to helping children with autism to repair emotions and enhance social expression

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ABSTRACT

My project, **Magic Adventure**, is an innovative virtual reality (VR) game project specifically designed to meet the needs of children with autism: harnessing the immersive power of VR technology, the game aims to provide an engaging and inclusive Experiences that **promote cognitive, emotional, and social development** while considering the unique characteristics and challenges of children on the autism spectrum.

BACKGROUND

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by widespread difficulties with social interaction and communication, and stereotypically repetitive behaviors and interests. The behavioral characteristics and needs of children with autism vary from individual to individual. These characteristics have a major impact on children's **learning, social and emotional development**. Although many interventions and aids are available, some of them may be too abstract or difficult to hold the attention of children with autism.

Through **literature review**, I found that virtual reality technology as an innovative educational and entertainment tool provides new opportunities to meet the needs of children with autism. By creating an immersive virtual environment, VR games can help children experience different situations and social interactions, thereby promoting their learning and emotional development.

RESEARCH METHODS



LITERATURE RESEARCH

A total of 54 academic papers related to VR games designed for children with autism were comprehensively investigated and analyzed.



QUESTIONNAIRE

A total of 257 questionnaire responses from the general public were collected. And 73 questionnaire responses from relatives and physicians of autistic children from different regions .



INTERVIEW

A total of 4 autistic children (aged 6 to 12 years), 6 relatives, and 5 physicians were invited to participate in the interviews. Participants were diverse in age, gender, clinical characteristics, and more.



GAME USABILITY TESTING

A total of 8 children with autism(aged 6 to 10 years), were recruited to participate in the game usability test, and they were randomly divided into experimental group and control group.

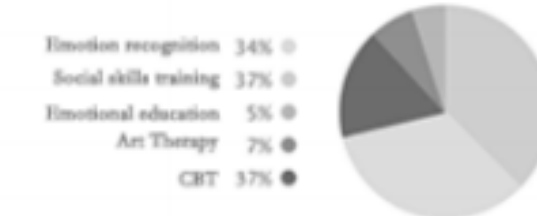
EVALUATION

ANALYSIS OF QUESTIONNAIRE AND INTERVIEW DATA

- 92% of participants felt that children with autism had challenges expressing emotions.
- 82.7% said they thought emotional problems could affect social interactions in children with autism.
- 63.1% believe that emotional training and education may help alleviate emotional problems.

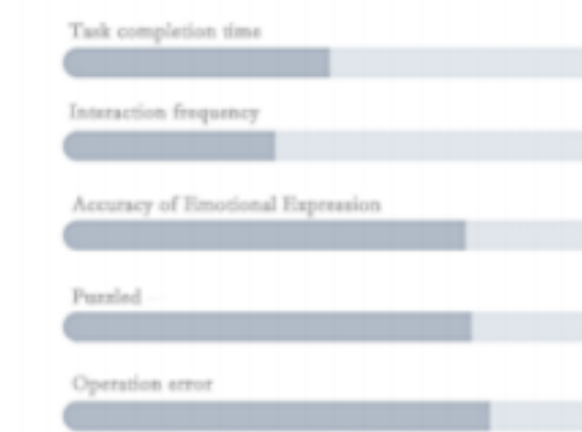
what treatment did they do?

What is their emotional rating?



USABILITY TESTING ANALYSIS

Game task completion



Participants and parents generally found the game interface to be easy to understand and the game style to be attractive.

Most participants expressed positive emotions, showing more expressions and gestures when interacting with NPCs.

However, some participants mentioned feeling challenged and needing more guidance when solving the puzzles, and felt that the task difficulty should be graded.

GAME DESIGN PROCESS

Provide a **safe and relaxing** game environment based on the **natural environment** (forest, river, sea of flowers, etc.), so that children can freely explore and communicate in the virtual world without external pressure and restrictions.

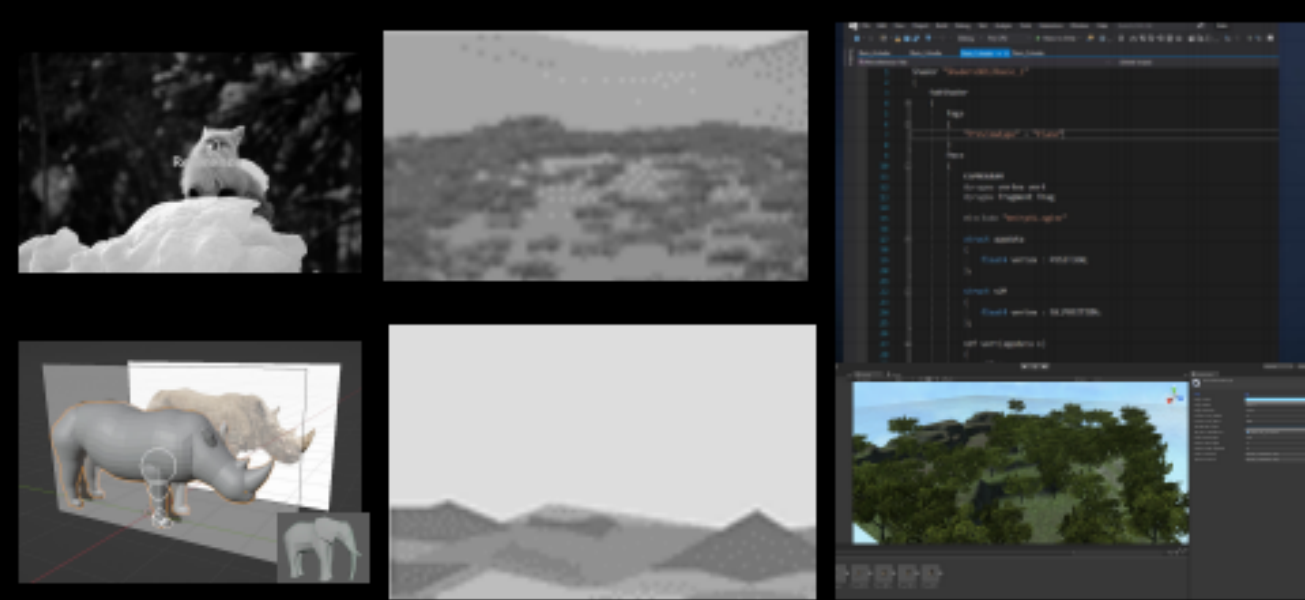
Emphasize **positive feedback** and reward mechanisms to motivate children to complete tasks, interact with flower and plant fairy NPCs, give gifts, and communicate. Bring children a happy and pleasant psychological experience, and relieve anxiety and depression caused by stereotyped behavior therapy.



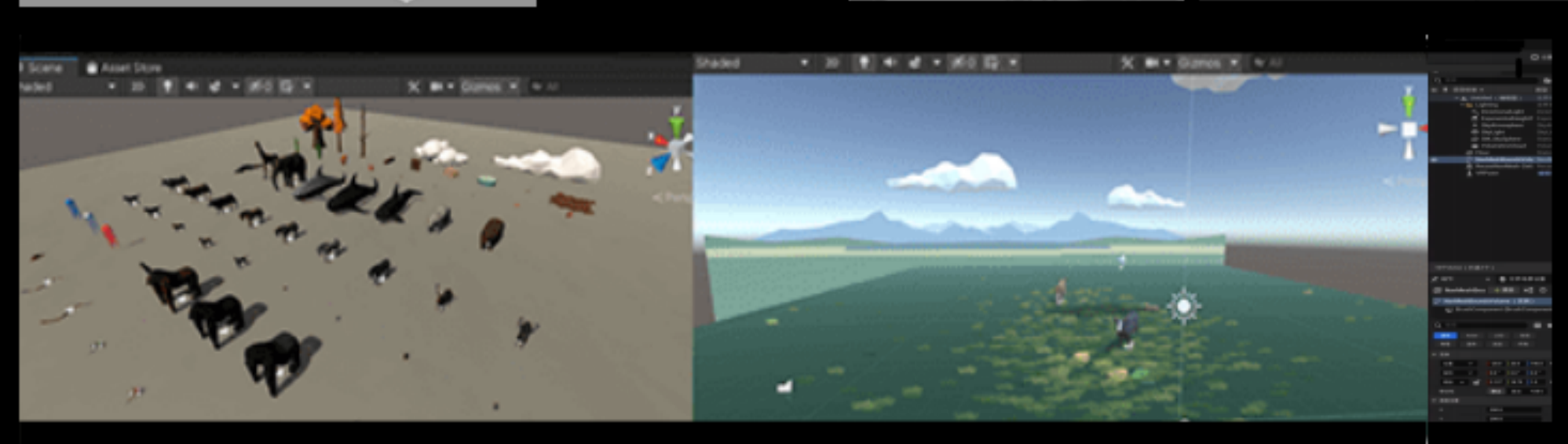
USER TESTING



OBJECT AND SCENE DESIGN



BUILDING AND RENDERING



FINAL

CONCLUSIONS & FUTURE WORK

VR game design incorporates psychological theory and design theory. Through the combination with modern technology, the traditional tedious, time-consuming and labor-intensive psychotherapy methods have been changed, and a **new, rich, humanistic and emotional experience** form has been provided. At the same time, the art therapy approach of immersive games can expand the audience of psychotherapy. Its form is novel, interactive and interesting. It is not only suitable for treating mental illness in children, but also as a **way of relieving daily life to relieve psychological stress**. This will help more people with underlying psychological problems.

But for my game design, there are still many deficiencies, such as the problem of grading the difficulty of game tasks, the problem of situational understanding, and the problem of personalization. This is also the direction I need to continue to explore in the future.