Experimental programme

Research Question

Could virtual environments improve human positivity for movement in confined spaces?

1 Introduction

With the development of technology and the beginning of covid-19, telecommuting and online entertainment started to increase. Some people may lack sufficient exercise and appear anxious. They try to watch videos and play VR games to alleviate this situation. But can these virtual devices increase people's positivity to move or alleviate negative emotions? We present an experiment to verify whether certain virtual environments can have a real positive effect on people.

2 Method

2.1 Apparatus

15 confined rooms with nothing (called room1), 15 confined rooms with screens on all sides (called room2) (other things in the two kinds of rooms are the same), 30 motion capture rigs, 15 videos (5 * 3 scenes), 60 gloves with silver balls on

2.2 Conditions

Confined space with or without screens

2.3 Measures

Location of participants' hands based on motion capture gloves

2.4 Procedure

30 different participants will be in the two confined rooms for about 50 mins (the length of the 5 videos)

15 people are randomly assigned to Room 1 and another 15 to Room 2. They will all be wearing gloves at all times for 3 consecutive Friday nights. Each night will randomly play five videos from one scene only. Participants could sit, stand, exercise, etc.

2.5 Participants

Participants will be recruited by putting up posters at the entrance to the VR exhibition hall. We will recruit participants from different age groups. Participants will be required to be of the same gender split in each age group. If the number of participants exceeds the maximum number, we will run the next experimental event.

We will record the age of participants, their professions, gender, lifestyle habits, and which scenes they like to watch.

3 Results

3.1 Hypothesis

- There will be a significant difference between the time participants spent on movements in Room 1 and Room 2.

- There will be significant differences between the time participants spent on movements in different scenarios in Room 2.

3.2 Plots and statistical tests

We will use motion capture data to determine how long each person's gloves move.

4 Analysis

We will use the motion capture data to determine how long each person's glove moved.

- A T-Test will be used to examine the p-value. We will also collect the standard deviation of each hand over a 10-second period.
- Then we will calculate the error based on the standard deviation of each group, also factoring in the number of samples in each group.
- We can draw the errors on our chart.

4 Discussion

4.1 confounding variables and experimental errors

- Participants' attitudes toward the virtual environment
- Participants' preference for different virtual environments
- Some participants may not use movement to express positivity
- Some participants may have Claustrophobia

5 Reflect

5.1 internal and external validity

A single variable was controlled during the experiment. The responses of participants in Room 1 and Room 2 were measured separately in the same scene. The responses of participants in different scenes who stay in Room 2.
The experiment was also considered to be more generalisable and required different gender and age groups as participants.
The same experiment will be added at different times.

5.2 Ethical issues

- We will require cameras to record the experiment.
- This experiment may cause harm to traumatised people.

5.3 Ethical issues—solutions

- Consent will be obtained from all participants before the experiment and recorded data will be kept carefully.
- Participants who suffered from trauma were provided with a psychological assessment and the experiment could be interrupted at any time during the experiment.