

Design and Implementation Plan

Group 7

Method and Design

The experiment will involve a control group of up to 5 people, all of which would have had previous experience with both 2D and 3D media. They would be participating as volunteers and would not be offered monetary reward for their contribution. Prior to the experimental stage, participants will be given an overview of the experiment and its purpose and consent will be required for data collection purposes. Participants' safety and comfort will be an utmost priority and Covid-19 safety guidelines will be followed.

Steps

1. Sanitation
2. Overview of the experiment
 - Inform participants they can withdraw their responses at any time
 - Inform participants they can quit, if they feel uncomfortable
3. Collect information about users general experiences
 - Have they experienced nausea/or other discomfort due to VR exposure before?
4. Participants are shown 2d/3d version of the media of choice
5. Re-sanitize headset between participants
6. SAM questionnaire (Figure 1)
7. Additional questionnaire
 - Feedback on the participants' experience during the experiment
 - Reported sense of presence and comfort/discomfort
8. Sanitize everything after the conclusion of the experiment

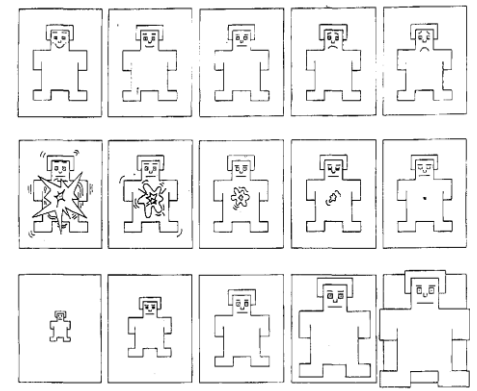


Figure 1 - Self-Assessment Manikin (SAM)¹

Software and Hardware

2D testing environment will be a 360° YouTube roller coaster ride video presented on an ordinary desktop computer screen. Users will be able to interact with the video through mouse input.

For the 3D testing environment, a roller coaster game was selected from the Oculus store. Participants will interact with the game using an Oculus headset.

Data Analysis Plan

Dependent variable in the context of this experiment is the type of media presented, and independent variables would be the reported feelings of valence, arousal and dominance. Paired-samples t-test will be used to gain insight on the subjective user experiences. The data collected through the SAM questionnaire will be put into table format and bar chart format for visualization purposes. The mean scores of the group's reported sense of valence, arousal and dominance from their exposure to the 2D setting will be compared to the mean scores of the same variables from their 3D experience. For the purpose of this study, strength of emotional response will be evaluated based on the reported feelings of valence and arousal. A scatter plot will then be used to visualize the relation between the reported sense of presence from the third questionnaire and the reported strength of emotional response. Data will be collected at two different stages, using three separate questionnaires with the aim to minimize Type I and Type II errors. To ensure results are an accurate representation of users' experiences, the sequence of presentation of the 2D and 3D content will be altered for half the control group.

1. Bradley M. M. & Lang, P. J. (1994) Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry*, 25, 51. Available online: <https://www.sciencedirect.com/science/article/pii/0005791694900639> [Accessed 13/11/2021].