# Introduction to this document

*Text in Italics are things that are said out loud to the participant.* These can be questions or explanations. These are the questions that have to be asked and the things that must be explained. More might be explained if the participant has questions or needs more help. More might be asked depending on the participant’s answers.

# Events and activities during the experiment

One test participant and two interviewers per session.

One interviewer writes, while the other talks.

- consent form

- questionnaire 1

- general information

- previous VR experience

- general museum interest

- general art interest

- previous VR museum experience

- pre-hallway to setup headset

- tutorial

- tutorial instructions (spoken)

none -> stylized -> extending

none -> extending -> stylized

- empty hallway, take off headset

- informal interview 1

- opinion on the illusions

- general (VR) museum interest

- real test

- explore instructions

- questionnaire 2 and informal interview 2.1

- panas-variant on paper about the styles

- informal interview on results of panas-variant

- informal interview 2.2

- opinion on the illusions

- general (VR) museum interest

- general art interest

- questionnaire 3 & 4

- enjoyment (likert scale)

- memory test

# Consent form

Experiment: Virtual Reality Museum 1

Experimenters: Bibi de Boer, Wouter Florijn, Xhi Jia Tan

Affiliation: Utrecht University

You are invited to participate in a research study that tests a Virtual Museum setup. In the experiment, you will be wearing a head-mounted display. You will explore a Virtual Museum. We use the capabilities of VR to add modifications to the museum.

Risks: The head-mounted display may cause temporary nausea and temporary dizziness in some users. The procedure will be stopped immediately when you indicate you are experiencing these or any other type of discomfort.

Participant’s Rights: If you have read this form and have decided to participate in this experiment, please understand your participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. You have the right to refuse to answer particular questions. Your individual privacy will be maintained in all published and written data resulting from the study.

If you agree with the above-stated conditions and are willing to participate in the experiment, please sign below. By signing the form, you confirm that you meet the following conditions:

- You have read the above consent form, understood it and you agree to it.

- You want to participate in the above-mentioned experiment.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Questionnaire 1

**Pre-experiment questionnaire**

The goal of this survey is to acquire information about the participants. Additionally, it will be used to measure their initial interest in art and VR museum apps.

1. **Name:**
2. **Age:**
3. **Gender:**     M / F / Other
4. **Do you have any previous experience with virtual reality (VR)?**

None OOOOO A Lot

1. **If you have any experience, with which VR devices?**
2. **How often did you visit a museum to look at paintings in the past year?**

\_\_\_ times

1. **Please rate your level of interest in art.**

Not interested OOOOO Very interested

1. **Please rate your level of interest in paintings.**

Not interested OOOOO Very interested

1. **What would you say (if anything) do you like about viewing art?**
2. **Do you have any previous experience with VR museum apps?**

O Yes O No

# First part instructions

* *You are going to visit a Virtual Reality museum. You are first going to visit an empty room to setup the headset. Afterwards, you are going to enter an introductory floor. On the introductory floor, there are three doors leading to three rooms. Each room has one painting in it, and two of the rooms have a special modification.*
* Show the three icons on paper. *The doors have different icons on them. Each icon corresponds with a different type of room.*
* Show headset. Explain sliders. Put on headset. *You are in a hallway. Move the lenses until you can see clearly.*
* *Turn your chair around. You can look around the entire room in this way. Do you see the elevator behind you? You can go to the next floor with it by looking at it for a few seconds.*
* *You can now see the three doors with the icons on them. Please enter the room with a <No effect icon> first.*
* *You can look at the painting. If you are done, the door back to the hallway is behind you. Tell me when you are back in the hallway.*
* ­­­­*×2: You are going to enter the room with the <First/second effect icon>.* 
  + For the Extended illusion: *If you want to see the animation again, you can use the button on the floor, but you don’t have to. If you want to, you can just look at the result.*
    - *This illusion is based on an algorithm called inpainting that extends the painting.*
  + For the Stylized illusion: *The animation for this effect loops. (*IF SECOND*: In this room there is no button you can use to repeat the animation).*
    - *This illusion is based on an algorithm called neural style that extracts the style from a painting and applies it to a picture.*
* *After visiting all rooms, you can use the elevator to go to the next floor.*
* *Take off your headset. We are going to talk about what you saw.*

# Informal interview 1 after first part of the experiment

Ask the following questions, skip a question if they already made a specific statement about it.

A picture of the icons is visible in the lab room at all times. (on the table/on the wall).

1. ***What did you think of the different types of rooms?***
2. ***Which room did you like the most/least? Why?*** 
   1. ***What did you like most about it?***
   2. ***What did you dislike?***
3. ***If you have to rate each room on a scale from 1 to 5, how would you rate each type of room?***

Make sure they have made some statements about each illusion.

1. **If VR museum experience (questionnaire 1): *I see you have visited a VR museums before, can you tell me about the experience?***
   1. ***Compared to your previous experience, what did you like in this setup?***
   2. ***Compared to your previous experience, what did you dislike in this setup?***
2. ***Now that you have seen this setup, what do you think of the idea of VR museums?***
3. ***Would you like to use VR museum apps like this one? Why?***
   1. ***Would you like to visit VR museum apps if they did not have visual effects like the ones you just saw? Why?***

# Explore instructions before second part of the experiment

*You are now going to visit a museum with three floors. Each floor contains three rooms. After you have visited each room, you can use the elevator to go to the next floor. You can explore the rooms in any order you want, and visit each room as often as you'd like. You can only visit each floor once. The elevator does not go down.*

*You are now going to explore the museum on your own. You can take as much time as you’d like. We will not give you any further instructions, but you can ask us if you have any questions.*

# Questionnaire 2

## Enjoyment questionnaire

1. **I liked the experience**

Disagree OOOOO Agree

1. **The experience was relaxing**

Disagree OOOOO Agree

1. **I was bored during the experience**

Disagree OOOOO Agree

1. **I don't want to experience this ever again**

Disagree OOOOO Agree

1. **I enjoyed the experience**

Disagree OOOOO Agree

## Panas variant Questionnaire

Please indicate to what extent you have felt during the test for each type or room.

**Extremely -> Very much**

**Not at all -> very slightly or not at all**

**Tables below each other (same order)**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **C:\Users\XJ\AppData\Roaming\Skype\strong_lulu\media_messaging\media_cache_v2\^749AD94045BE04D590ED25EA14411079A4BFAF0E4590E98CD6^pimgpsh_fullsize_distr.png** | *C:\Users\XJ\AppData\Roaming\Skype\strong_lulu\media_messaging\media_cache_v2\^E3FDDE3C7EC9B2C655E837769CC664BBED6CB04BC660C49536^pimgpsh_fullsize_distr.png* | *C:\Users\XJ\AppData\Roaming\Skype\strong_lulu\media_messaging\media_cache_v2\^24D7E9082A69ED553AFDDB2F9221AD14084F63891BAF78A679^pimgpsh_fullsize_distr.png* |
| Enthusiastic | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Distressed | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Bored | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| At ease | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Irritated | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Joyful | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Sleepy | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |
| Amazed | Not at all OOOOO Extremely | Not at all OOOOO Extremely | Not at all OOOOO Extremely |

Positive words:

1. Enthusiastic
2. At ease
3. Joyful
4. Amazed

Negative words:

1. Bored
2. Distressed
3. Irritated
4. Sleepy

In the ideal case, the user will assign high values to the positive words and low values to the negative words. After they have filled in the form, their answers will be checked to see if he has indeed rated the words in that way. Also, we will check for the cases where the rating is (almost) the total opposite of the ideal case. In these scenarios, we will ask the user to elaborate on his decision to find out what has caused that rating.

# Informal interview 2 after second part of the experiment

Ask the following questions, skip a question if they already made a specific statement about it.

1. ***Which rooms did you like the most? Why?*Here we use the answers from the enjoyment and panas questionnaires.**
   1. ***What did you like most about it?***
   2. ***What did you dislike?***
2. ***If you have to rate each room on a scale from 1 to 5 again, how would you rate each type of room now?***

Make sure they have made some statements about each illusion.

1. ***What do you think of VR museums after seeing this more elaborate setup?***
2. ***Would you like to use VR museum apps like this one now? Why?***
   1. ***Would you like to use VR museum apps if they did not have visual effects like the ones you just saw? Why?***
3. ***Would you like to visit real museums if they added effects like these? Why?***
4. ***Do you have a different view about art now?***
   1. ***What do you like about viewing art now?***

# Questionnaire 3

## Memory test

Setup concept:

Paintings depend on experiment setup paintings.

Four paintings in each row: at least one that was in the museum, one of the same painter, one of the same subject, and one of the same subject as the other painting of the same painter.

# Final remarks

Please don’t tell anyone about the memory test.