She is NOT as Good as Him:
Using Gender Swap in Virtual Reality for Increasing Empathy

CS567-Checkpoint 4

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Outline

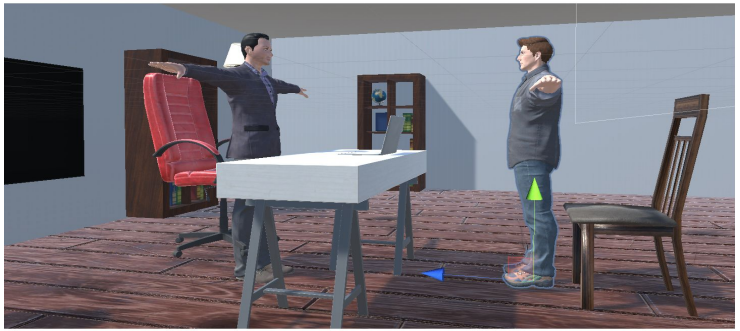
- Problem Statement
- Designing the experiment
- Measurements
- Procedure
- Trial procedure
- Future steps

1. Problem Statement

Can we increase the empathy using avatar gender-swap in a virtual reality environment for an stereotype threat problem?

2. Experimental conditions

Experimental conditions	
FST	Female avatar * Stereotype Threat
MNT	Male avatar * No Threat



3. Designing the experiment

- We use a 2 x 2-factorial design
  a. Two experimental conditions (FST and MNT), Within-subjects
  b. Two different orders (FST first vs. MNT), Between-subjects

  Each participant will conduct the experiment in both conditions (FST and MNT)

- Using a Wizard of Oz for controlling the interviewer avatar
- Using a Wizard of Oz for controlling facial expressions of the interviewee avatar (using controllers/leap motion for controlling general body movements)
- Dependent Variable: Empathy
- Independent variables: Having an experience of stereotype threat in VR

4. Measurements

For this experiment I will measure 3 different variables:

1. Measuring empathy
2. Measuring body embodiment
3. Measuring stereotype awareness

4.1 Measuring Empathy

- For measuring empathy, we will use an interview task under two situations (Threat vs. No threat).
- I will use Empathy formative questionnaire [1]. I have changed and adopt 14 questions that were related to our experiment to assess the feelings empathy in our design.
- Each statement will be scored on a 7 point (-3/3) Likert scale, ranging from -3 for “strongly disagree” to 3 for “strongly agree”.
- The questions that make up each component are listed in next slide. Questions that are framed negatively and therefore reverse scored are designated with ‘(N).’

Empathy Questionnaire Items
Understand others
1. I was able to see things from females' points of view
2. When I don't understand interviewer's point of view about women, I wanted to express disagreement
3. When I disagree with the interviewer, it's hard for me to understand his perspective. (N)
4. I will consider females' circumstances when I'm talking with them.
5. I try to imagine how I would feel if I were a woman.
6. When a woman is upset, I try to be understandable
7. Sometimes I wonder what it would feel like to be in women' situation.

Empathy Questionnaire Items
Communicate Understanding
8. When a woman feels bad about her programming skills, I will try to encourage them
9. I say things like "I can see why you feel that way."
10. I've been known to say “women are not good at programming” when someone is sharing their opinion. (N)
11. I've told my friends things like, "Women should not be a computer scientist" or “ companies should stop hiring female programmers” (N)
12. I've told my friends things like, "We should have more women as a computer scientist" or “ companies should start hiring more female programmers”.
13. When I know one of my female friend is not very confident about programming skill, I try to talk to them about it.
14. When I see someone making stereotype situation, I will express my disagreement

4.2 Measuring Body Ownership

- An embodiment questionnaire will be used to assess the subjective level of body Ownership.
- I selected Kalckert and Ehrsson's questionnaire and adopt 15 questions that were related to our experiment to assess the feelings of agency and ownership to our design.
- Each statement will be scored on a 7 point (-3/3) Likert scale, ranging from -3 for "strongly disagree" to 3 for "strongly agree".

Embodiment Questionnaire Item	F-avatar	M-avatar
1. I felt as if the virtual body was my own body		
2. It seems as if I had more than one body.		
3. I felt as if my real body was turning virtual		
4. I felt as if I could cause movements of the virtual body		
5. I felt as if I could control movements of the virtual body		
6. The virtual body was obeying my will and I can make it move just like I want it		
7. I felt as if the virtual body was controlling my will (inverted)		
8. It seemed as if the virtual body had a will of its own (inverted)		
9. I felt as if the virtual body was controlling me (inverted)		

Embodiment Questionnaire Item	F-avatar	M-avatar
10. I felt that I was wearing different clothing to my real clothing		
11. I felt like I controlled the virtual body as if it were my own body		
12. I felt like the body in virtual world was not me.		
13. I liked being able to control the movements of the virtual body		
14. I felt as if the body I saw in the virtual world might be my body.		
15. I felt comfortable with the gender of avatar		

4.3 Measuring Stereotype Awareness

- For measuring stereotype awareness, we will use this question from [2]:
- To What extent you think there is a stereotype in U.S. that women are not as good at programming compare to men ?
- This statement will be scored on a 7 point (-3/3) Likert scale, ranging from -3 for “No stereotype” to 3 for “very strong stereotype”.

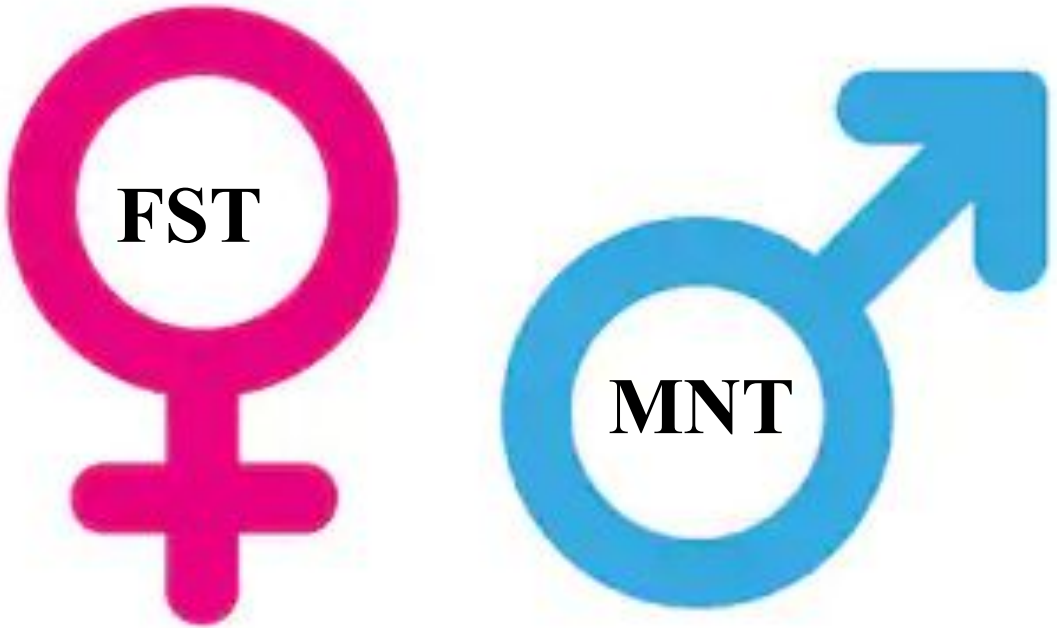
5. Procedure

- Greeting with the participant
- Participant signs an informed consent from
- Participant fills in a pre-questionnaire to collect demographic information before taking part in the experiment.
- In the pre-questionnaire all participants are asked about the level of their familiarity with virtual reality.
- Experimenter shows the participant how to wear and adjust head mounted display.
- Participant is instructed to sit comfortably on a chair that represents the virtual chair and table in the room

5. Procedure(cont.)

- Participant is instructed to move their hand and the body and look at the mirror to get familiar with his avatar.
- The order of conducting the experimental conditions is randomly chosen.
- Participant performs the first experiment
- Participant fills the empathy questionnaire for corresponding avatar gender
- Participant takes a 2 mins break
- Participant performs the second experiment
- Participant fills the empathy questionnaire for corresponding avatar gender
- Participant takes a 2 mins break
- Participant fill embodiment and stereotype awareness questionnaires
- Participant will be thanked and compensated for participation

6. Scenarios



6.1 Senario (FST)

1. Interviewer enters the room.
2. Interviewer asks the participant to introduce herself.
3. Interviewer asks these questions in a threat situation:
    a. As you know this is a hard job for women, why should I employ you instead of a male employee?
    b. Are you good at coding ? Really? (with a humiliating face)
    c. Can you do both your housing tasks and the job?
    d. Do you really like this job? That doesn't make sense for women.
    e. Most of our programmers are men. Are you OK with that?

4. Interviewer thanks the interviewee and tell her they will let her know about the results

6.2 Senario (MNT)

1. Interviewer enters the room.
2. Interviewer asks the participant to introduce herself.
3. Interviewer asks these questions in a no threat situation:
    a. I am happy to see you here! You look like a good programmer.
    b. Are you good at coding ?
    c. It seems you can work more when we have a deadline
    d. I think you will like this job. Right?
    e. We have a very friendly environment

4. Interviewer thanks the interviewee and tell him they will let him know about the results

7. Future Steps

1. Attaching the interviewee avatar to a first person avatar
2. Recruiting participants
3. Designing a survey for facial expressions
4. Conducting the experiment