Evaluating the Effects of Experiencing Mixed Reality Simulations of Symptoms of Schizophrenia on Empathy in Medical Students

Master Thesis

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Abstract

Abstract (max. 1 page)
Name of the Supervisor, Group, Institute, University, Supervisor
Name of the Assistant, Group, Institute, University, Assistant

Contents

1 Introduction

Short abstract to the chapter (a quick summary of all the sections)

- Describe the topic of the thesis with a simple language (no equations)
- Provide a motivation for working on this topic (or solving this problem). What is the impact? How important is it?
- Provide the challenges: What is hard about this topic/problem? What must be addressed?
- Provide a summary of the key ideas in this thesis
- (optional) Provide a summary and a brief intro to the chapters

2
Background

Short abstract to the chapter (a quick summary of all the sections)

2.1 Immersive Schizophrenia Simulations

Schizophrenia is a complex mental disorder, characterized by symptoms such as auditory and visual hallucinations [12]. In recent years, immersive technologies such as Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) have emerged as powerful tools to provide first-person, interactive simulations of schizophrenia symptoms. Important to note is, that out of these three methods, VR is the most popular and most researched tool [7] indicating that there exists a research gap concerning the other two methods. These simulations aim to enhance empathy, reduce stigma, and improve clinical understanding by offering users a direct, experiential perspective. This section explores the background of immersive schizophrenia simulations and their impact on medical education and public awareness.

A lot of the research in this area has focused on the use of VR to simulate schizophrenia symptoms. For example, [7] conducted a study where they used VR to simulate auditory hallucinations in medical students. They found that the experience increased empathy and understanding of the condition. Similarly, [12] used VR to simulate visual hallucinations in a group of laypeople and found that it reduced stigma towards people with schizophrenia. These studies suggest that immersive simulations can be an effective tool for educating people about schizophrenia and reducing stigma. However, there is still much to learn about the potential benefits and limitations of these simulations and how they can be used most effectively.

Marques et al. (2022) conducted a quasi-experimental study to examine the impact of a VR simulation on empathy, knowledge, and attitudes towards people with schizophrenia. The study involved 102 health students who were divided into two groups: one using VR and the other watching a 2D video. The VR simulation aimed to reproduce the experience of psychotic symptoms while performing a cognitive task. The results indicated that VR simulations could enhance cognitive empathy and improve attitudes towards individuals with schizophrenia. However, the physiological responses, particularly electrodermal activity, did not align as expected, warranting further exploration [9].

Despite the promising results, the study by Marques et al. (2022) had several limitations. One significant limitation was the sample imbalance, as the study had more women than men, which may have influenced the results due to gender differences in empathy levels. Additionally, the absence of a

control group without any exposure prevents a full assessment of VR's effectiveness compared to other methods. The brief exposure duration might have also limited the potential for significant changes in empathy and attitudes. Participants' unfamiliarity with VR technology may have affected their ability to fully engage with the simulation, potentially impacting the results. Furthermore, the unexpected findings in electrodermal activity suggest that further research is needed to understand the physiological impact of VR simulations. Lastly, the study did not assess the immersive quality of the VR experience, which could have influenced the outcomes. Future studies should address these limitations by including a more balanced sample, a control group without exposure, longer exposure durations, and assessments of VR usability and immersive quality.

2.2 Empathy

3
Prior Work

Here we describe concrete prior work that includes all three sections ¿ immersive learning experiences, schizophrenia simulations, and empathy.

4
Methodology

This chapter can also be split into multiple chapters depending on the case.
Short abstract to the chapter (a quick summary of all the sections)

- Describe the problem to be solved formally and use illustrations to present it
- Describe the ideas of the approach used to solve the problem

5 Experiments

Short abstract to the chapter (a quick summary of all the sections)

- Describe the list of experiments and provide the rationale (what do you want to demonstrate with these experiments?)
- Describe all the settings needed to carry out the experiments (as if you instructed someone else to replicate them)
- Structure the experiments meaningfully: For example, first all synthetic experiments and then all experiments on real data. Another important section is to show Ablation studies, where one can demonstrate the effect of each component in the proposed solution.
- Provide both quantitative (numbers, overall statistics) and qualitative (pictures, some examples) results.
- Provide critical analysis of both quantitative and qualitative experiments: Why did something work or not work? Why better/worse?
- Focus on critical cases: Worst errors/Best performance examples. Discuss them.
- Do the experiments demonstrate achieving the original objective? Is the analysis making conclusions about the original objectives?

6
Conclusions and Future Work

Short abstract to the chapter (a quick summary of all the sections)

- Provide a summary of all the work done: Summarize the aim, the challenges, the proposed solution and the experiments
- Draw conclusions: What has worked and what has not worked? Why?
- Future work: What should be done next? Why?

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ap1

A.1 apsec1

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Erklärung

gemäss Art. 28 Abs. 2 RSL 05

Name/Vorname: .....

Matrikelnummer: .....

Studiengang: ……

Bachelor ☐ Master ☐ Dissertation ☐

Titel der Arbeit: .....

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