Exploring Virtual Sensory Rooms: Co-designing Personalised Spaces for Autistic Adults.

Contents.

Who are the research team?

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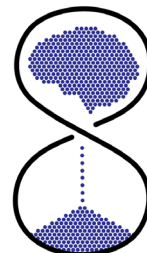Name: A/Prof Caroline Ellison
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Position: Supervisor

About the research project.

What is aim of the research?

The aim of this research is to co-design a high-fidelity, fully-customizable virtual reality (VR) sensory room prototype that is specifically designed to meet the needs and preferences of autistic adults.

How will this aim be achieved?

We intended on recruiting 5-10 autistic adults to participate in this iterative prototyping and co-design study. The participants will first be asked to participate in an "empathy interview". This is a semi-structured conversation with one of the researchers whereby additional "personas" will be created that can be referred to throughout the development process. This will aid the developers in seeing things from the participants perspectives.

The participants will then engage in several testing sessions, totaling three across an estimated period of six weeks. During these sessions, the participants will first be introduced to the VR headsets, this is to ensure they are comfortable with using the technology and to adjust any comfort settings as necessary. The participants will then be given 5-10 minutes of assisted time using the app, where they can ask any questions, followed by 5-10 minutes of unassisted use. The researcher will still be present during the unassisted session however, the purpose of the unassisted session is to test the apps usability.

During these testing sessions, we will record everything the participant can see within the headset and everything they say. We will also conduct semi-structured interviews with the participants following each testing session. These session are estimated to last 30 minutes to an hour. This data will then be transcribed, analyzed, and then utilized to inform further development of the VR sensory room.

An extensive list of all measures and questions can be found in the "Research materials" document.

Why is this important?

Studies estimate that around 90% of autistic individuals experience sensory processing difficulties which can occasionally lead to sensory overload (1, 2). This can negatively impact aspects of life, such as social abilities, executive functioning, and attention (3–5). A common way to support individuals in managing their sensory differences can be through sensory supports. Sensory supports are therapeutic approaches that aim to help individuals develop coping strategies for dealing with adverse levels of sensory stimulation (6). Sensory supports often work by providing sensory stimulation to a range of sensory modalities in a controlled setting (6).

Sensory rooms are designed to stimulate and develop an individual's senses by providing stimulation to various sensory modalities (7). While these rooms have been reported to provide benefits such as reducing aggression, increasing emotional regulation, and improving attention, there have also been mixed findings regarding their effectiveness (8,9). One explanation is that sensory rooms are often not targeted towards the users specific needs and sensory preferences (9). Support for this explanation can be found in a study by Unwin et al (2021). They found that control over sensory equipment can increase the room's effectiveness. However, the choice of equipment for participants to engage with was still limited.

Virtual reality (VR) could offer a customizable and portable solution. Early research indicates VR sensory rooms can reduce anxiety, depression, and improve sensory processing (10), but no study has provided users with control and customization.
This research aims to co-design a VR sensory space prototype tailored for the autistic community that prioritizes usability, customization, and accessibility.

About participating in the research project.

Who can participate in the research?

We aim to recruit young autistic adults (age 18-25) who experience some form of sensory processing difficulties. No previous experience of using virtual reality headsets is required.

To ensure the safety of participants, we have opted to exclude anyone who has a history of epilepsy, and/or anyone who is prone to experiencing cybersickness. Additionally, as this study relies heavily on verbal communication, we have also made the decision to exclude participants with intellectual disability at this stage. Individuals with severe sight or hearing impairment will also be unable to participate in the study.

Are there any benefits of participation?

The participants may experience feeling of relaxation whilst using the virtual sensory room and will be given the opportunity to customize the room to their own sensory needs and preferences. Additionally, the participants will not just be testing the prototype, but will be instrumental in informing the design and features of future iterations. The participants will also have the option to provide us with contact information so that we can share the finalized build of the application with them if they desire.

The participants will also be reimbursed for their time at a rate of $30 (AUD) per hour.

What have previous participants said about our research?

To inform the initial design of the VR sensory room prototype, we conducted a large-scale survey with 96 autistic adults where we asked them questions regarding sensory experiences, preferences and how these can affect relaxation. The final question we asked the participants was optional and asked them if they had anything they wished to feedback, we've given some examples of the responses below.

"I love that this research is being done, and hope it can be used to better as many lives as possible. Thank you for doing this."

"Interesting study. Thanks for letting me take part today."

"Thanks for letting me take part in your study!"

"This study was nice to do, it was relaxing to imagine my dream sensory room :)"

"No thanks but great research :)"

Contact information

If you are interested in helping us run this experiment or happen to have any questions, please do not hesitate to contact us using the information below:

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