Participant Information Sheet

> ## What technostress do senior users of the metaverse experience?
>
> **Pengen Mai, Researcher**
> **Dr. Dahlia El-Manstrly & Prof. Hossein Olya, Supervisor**

Thank you for your interest in this study!

You are invited to participate in an academic research project, which aims to understand older adults' experiences and potential stress with emerging technologies. Before you decide whether to take part, we would like you to understand why the project is being undertaken and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

What is the purpose of the project?

This research aims to understand how older adults experience and perceive new technologies like the Metaverse, which is a virtual environment accessed through devices like headsets or glasses. In the Metaverse, users can engage in activities such as exploring virtual destinations, learning, and entertainment. Technologies like virtual reality (VR) and augmented reality (AR) are expected to become as integral to our daily lives as smartphones and computers are today.

When smartphones and computers were first introduced decades ago, many people found them challenging to use. I vividly remember how my grandparents initially refused to adopt smartphones, feeling overwhelmed by the unfamiliar technology. Over time, as landlines were phased out, they had no choice but to adapt, and the journey was filled with struggles, adjustments, and eventually, success. Inspired by their story, I want to better understand how older adults today engage with emerging technologies, what challenges they face, and what excites them about these innovations.

Your participation in this study is meaningful in many ways. Not only is the virtual reality experience engaging and enjoyable, but your insights will help us better understand the experiences of older users and their unique perspectives. By sharing your thoughts, you'll also contribute to improving future technology designs, ensuring they are more accessible and enjoyable for everyone. Moreover, your voice can

represent the experiences of your generation, helping researchers and developers recognize and address the needs of older adults in the world of new technology.

Why have I been chosen?

We welcome any comments, thoughts, feedback, or insights about emerging technology use experiences from 60+ year-old adults. The emerging technology of the Metaverse includes but is not limited to, VR, AR, and AI. **No prior experience with the metaverse is required.** We warmly welcome participants with zero experience.

*Please see the appendix for examples and an explanation of these technologies.

Do I have to take part?

You do not have to participate in our research unless you feel free or comfortable joining and continuing. Participation is on a voluntary basis. You can withdraw from this study at any time without providing a reason. If you decide to withdraw, please contact the researcher. If you withdraw before or during the VR experience, any data collected will be deleted. We will permanently remove your data to ensure your personal privacy.

What will happen to me if I take part? What do I have to do?

You are reading this Information Sheet with the researcher and be encouraged to ask questions about these informed consent documents. Then you will be asked to sign the Consent Form.

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│ 1. Fill out the registration form │
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┌─────────────────────────────┐
│     2. Confirmation phase     │
└─────────────────────────────┘

     Researcher confirms time and location

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               ▼
┌─────────────────────────────┐
│     3. VR Experience phase    │
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     Approximately 20-minute virtual travel experience

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               ▼
┌─────────────────────────────┐
│      4. Interview phase       │
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     Approximately 45-minute interview about your thoughts and experience

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               ▼
┌─────────────────────────────┐
│    5. Compensation phase      │
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     Receive at least £20 voucher/cash and a small gift
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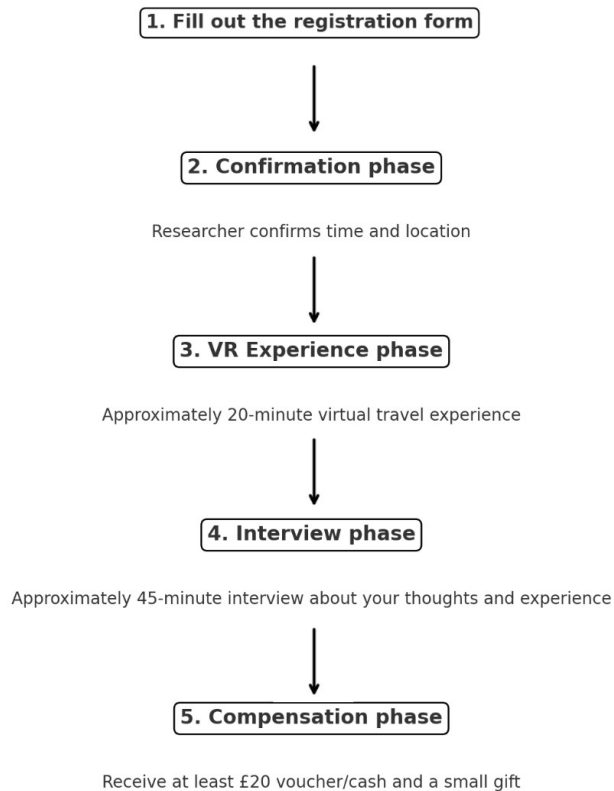
Figure 1. Flowchart of the Research Participation Process

The VR travel and interview are two consecutive sessions, taking place on the same day at the same location. They will take about 60 - 80 minutes of your time.

During the VR experience, you will participate in a 15-20 minute virtual travel experience using a Meta Quest 3 VR headset (as shown in Fig 2 below). You will explore 2-3 tourist destinations, complete small tasks such as taking photos, and follow the guidance provided by the travelling application. The images you see in the VR helmet will be synchronized to the researcher's computer screen in real time. The researcher will observe your behavior and expressions during the session and take notes on key actions, which will be used in the follow-up interview. You can stop or pause the VR experience at any time if you feel uncomfortable.

After the VR session, you will participate in a 45-60 minute face-to-face interview after rest. You are expected to talk with the researcher about your feelings, thoughts, and insights into your VR travel experience and related technology use experience. You will be asked how you responded to any challenges and whether you used specific coping strategies. Your responses will help us better understand how seniors interact with VR technology and cope with these challenges. There will be no strict questions, and you are free to talk about anything related to the topics. The interview will be recorded using an encrypted voice recorder provided by the university's IT services.

Figure 2. The device used in the VR experience: Quest 3

What are the possible disadvantages and risks of taking part?

If you participate in the VR travel and interview, there are some potential physical and psychological risks. During the VR experience, wearing a headset to engage in immersive 3D scenes may cause dizziness, similar to motion sickness, which can typically be resolved in a short time. The researcher has several methods to help prevent or alleviate dizziness, such as proper headset usage. However, the researcher advises you to carefully consider your health condition before participating.

During the interview, we will discuss topics related to challenges and difficulties, which may prompt you to recall negative experiences or emotions. At any point during the process, you are free to request a pause or to leave. You can also take a break and return when you feel ready.

The project's safeguarding officer is Dr. Dahlia El-Manstrly. If you feel distressed and wish to discuss the project further, please send an email directly to: d.el-manstrly@sheffield.ac.uk.

What are the possible benefits of taking part?

Whilst there are no immediate benefits for those people participating in the project, people often find it helpful to talk about their experiences. In the interview, you can speak to the researcher about difficulties you have experienced using any technology. Your contributions will enhance scholars' and companies' understanding of older adults' VR use experience and try to improve it. There is also a potential for these conversations to be thought-provoking and empowering, as the sharing of views can suggest that you are not isolated in your experience or perspective. You will receive £20 voucher or cash plus a small gift if you complete the participation.

Will I be recorded, and how will the recorded media be used?

For the VR experience, the researcher will record the scenes you see through the VR device via screen recording. These scenes will be recorded using Google Meet, logged in with the researcher's university account. The screen recording is solely for the researcher to observe the participant's experience and will not contain any personally identifiable information. Additionally, the researcher will observe your behavior and expressions during the session, taking notes on key actions such as hesitation or asking for assistance, which will be used in the follow-up interview. These recordings and notes will be deleted after the study is completed.

During the interview, the recording will be made using an encrypted voice recorder provided by the university's IT services. Any identifiable information (such as names) in the recording will be anonymized during transcription. Participants will not be identifiable in the transcribed text. Only the research team will have access to the recordings, and they will be destroyed once satisfactory interview transcriptions are completed.

Will my taking part in this project be kept confidential?

This research will be carried out by the researcher, Pengen Mai (Chris), who is a doctoral student at Sheffield University Management School. All the information that we collect about you during this study will be kept strictly confidential. To ensure that the participants are not identifiable, pseudonyms (we would like you to choose your own pseudonym) as opposed to real names will be used in the transcripts and reporting of the interviews, and all introductions at the beginning of the interview will be done before turning on the recording of the session. The pseudonyms will not be linked to anyone's real names or email addresses. The details of any potential participants who engage in the recruitment process (eg., express interest formally) but do not wish to continue with the study will be deleted two weeks after all interviews take place.

The only instance where confidentiality may be broken is if any research team member is concerned about you or believes that you are a risk to yourself or others. We will always inform you if we plan on doing this and keep you fully informed.

If we write any reports or publications from this research, you will not be able to be identified. Only anonymized data from our study might be shared on open-access research repositories for the purpose of future research. Upon completion of your participation and after we have sent you the online shopping voucher, all email correspondence will be deleted. According to the University of Sheffield's Records Management Policy and Guidance, the research data will be retained for ten years.

What is the legal basis for processing my personal data?

According to data protection legislation, we are required to inform you that the legal basis we are applying in order to process your personal data is that 'processing is necessary for the performance of a task carried out in the public interest' (Article 6(1) (e)). Further information, including details about how and why the University processes your personal information, how we keep your information secure, and your legal rights (including how to complain if you feel that your personal information has not been handled correctly), can be found in the University's Privacy Notice. https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

What will happen to the data collected, and the results of the research project?

We will use an audio recorder to record the face-to-face focus interviews. Only the research team will have access to the audio recordings, which will be destroyed when a satisfactory interview transcription is completed. When the questionnaire ends data collection, the data from the questionnaire results will be exported and organized. These anonymized and non-identifiable data will be used for the research data analysis.

Then, your data will be analysed. The outcomes of the analysis will be used as the researcher's PhD thesis. Data presentations in this study include analysed outcomes, thesis, journal articles, and visual representation. Perhaps, your pseudonymised data will be used in the thesis or future publications as the result of this research project. However, no one can recognise you because the data is pseudonymised.

Who is organising and funding the research?

This research project has no funding.

Who is the Data Controller?

The University of Sheffield will act as the Data Controller for this study. This means that the University is responsible for looking after your information and using it properly.

Who has ethically reviewed the project?

This project has been ethically approved via the University of Sheffield's Ethics Review Procedure, as administered by Sheffield University Management School .The researcher and supervisors are responsible for looking after the data they collect and analyse, but overall responsibility lies with the researcher.

Data generated by research projects are the property of the University of Sheffield. The University of Sheffield will act as the data controller for this study, which means that the University is responsible for looking after your information and using it properly.

What if something goes wrong and I wish to complain about the research or report a concern or incident?

During the VR experience and interview, you may pause at any time if you feel any discomfort. There will be a space where you can take some time out. If, after a break, you do not wish to continue, you are free to leave at any time without needing to provide a reason.

If you have any concerns or complaints about the study, you may contact the researcher (Pengen Mai, p.mai@sheffield.ac.uk). Alternatively, you can contact Dr. Dahlia El-Manstrly (d.el-manstrly@sheffield.ac.uk).

If the complaint relates to how your personal data has been handled, you can find information about how to raise a complaint in the university's privacy notice: https://www.sheffield.ac.uk/govern/data-protection/privacy/general.

If participants feel a report they have made to this contact has not been handled satisfactorily, they can contact Head of Department (Prof. Hossein Olya h.olya@sheffield.ac.uk) or the university's Research Ethics and Integrity Manager (Lindsay Unwin; l.v.unwin@sheffield.ac.uk).

Contact for further information

If you have any questions or hope to get further information for this project in the future, don't hesitate to get in touch with the researcher.

Pengen Mai
PhD student, University of Sheffield   Email: p.mai@sheffield.ac.uk

Dr. Dahlia El-Manstrly
Supervisor, University of Sheffield   Email: d.el-manstrly@sheffield.ac.uk

Prof. Hossein Olya
Head of Department, Supervisor, University of Sheffield Email: h.olya@sheffield.ac.uk

Professor Fraser McLeay
Dean, Sheffield University Management School   Email:fraser.mcleay@sheffield.ac.uk

Thank you for reading this Participation Information Sheet.

Thank you for considering taking part in this study. It would be very helpful if you could pass on this information to anyone you know such as friends and colleagues who will be willing to

take part in this study. They can sign up by completing the following [by clicking on this link](#)

or by contacting the researcher, Pengen Mai at p.mai@sheffield.ac.uk directly through email.

Appendix: Technology introduction

Virtual Reality (VR)

- What it is: Virtual Reality (VR) is a technology that uses special equipment, like a headset, to place you in a computer-generated environment. With VR, you can "enter" a different place or world and feel as if you are really there.
- What it can do: VR allows you to visit places around the world, experience activities (like museum tours or exercise classes), and even attend virtual meetings or classes.
- Where it's used: VR is commonly used in entertainment (such as gaming), education (virtual classrooms), healthcare (training for surgeries), and tourism (virtual travel experiences). You can sit on the sofa at home and watch a football game or concert immersively through a VR helmet!
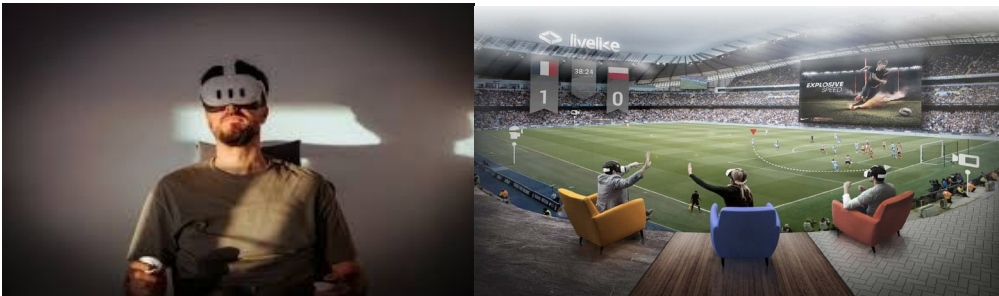

Fig 1: Wherever you sit & you can see a virtual football match (MCN, 2023)

Augmented Reality (AR)

- What it is: Augmented Reality (AR) adds digital images, text, or animations to the real world, usually seen through a smartphone, tablet, or special glasses. It lets you see extra information or images over the real things around you.
- What it can do: AR can help you with navigation, let you try on virtual clothes or glasses, and even "preview" how furniture would look in your home.
- Where it's used: AR is often used in shopping (virtual try-ons), navigation (directions), education (interactive learning), and entertainment (such as games where you can catch virtual characters on your phone: Pokémon GO).

Fig 2: AR glasses can be combined with roads for navigation (Stock Photo, 2023)

Difference between VR and AR:

When using a VR device, you see a completely virtual environment. For example, if you wear a VR headset on the street, you won't be able to see your surroundings or other people at all. In contrast, with an AR device, you can still see the real environment. For instance, if you wear AR glasses on the street, you can still see everything around you.

Artificial Intelligence (AI)

- What it is: Artificial Intelligence (AI) is a technology that allows computers and machines to "think," learn, and make decisions based on data. AI can automatically complete tasks by understanding information.
- What it can do: AI can answer questions through voice assistants (like Siri or Alexa), recognize people or things in photos, and help doctors read medical images and diagnose diseases.
- Where it's used: AI is widely used in smart homes (voice control), healthcare (medical diagnosis), transportation (self-driving cars), and customer service (chatbots).
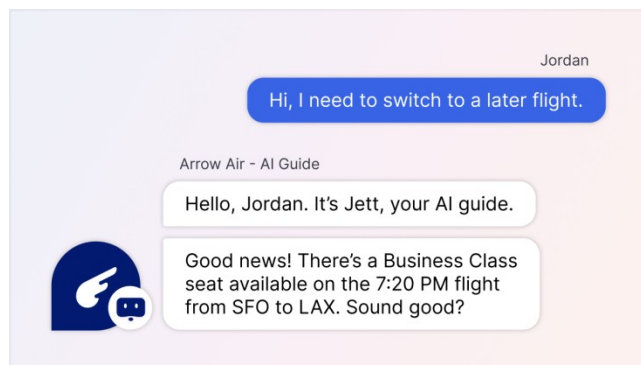

Fig 3. Conversational AI Chatbot Tools (Live Person, 2024)