Gamifying Disaster Preparedness

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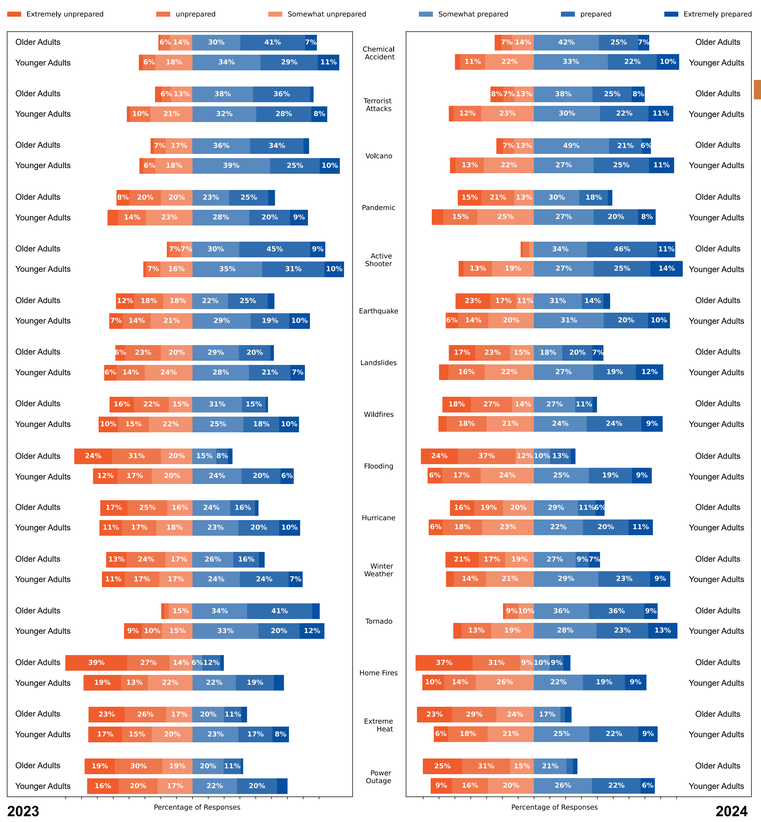
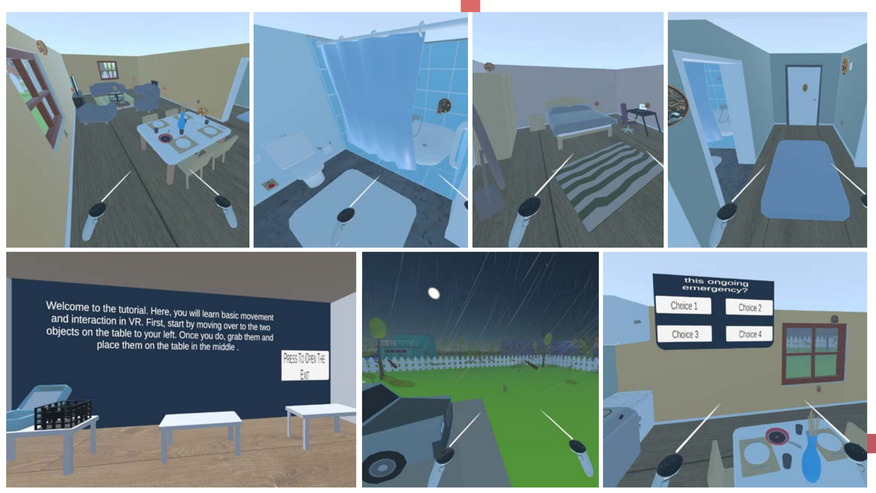


National Survey Results

Universally we are **under-prepared for disasters**. This graph represents the preparedness of individuals based on a **nation wide survey** we launched in **2023** and **2024**. Traditional preparedness techniques often suffer from **low engagement** due to their perceived applicability and **lack of immediate reward**, which can provoke insufficient preparedness levels. Given the specific vulnerabilities and experiences of older adults this issue carries a heightened level of significance.

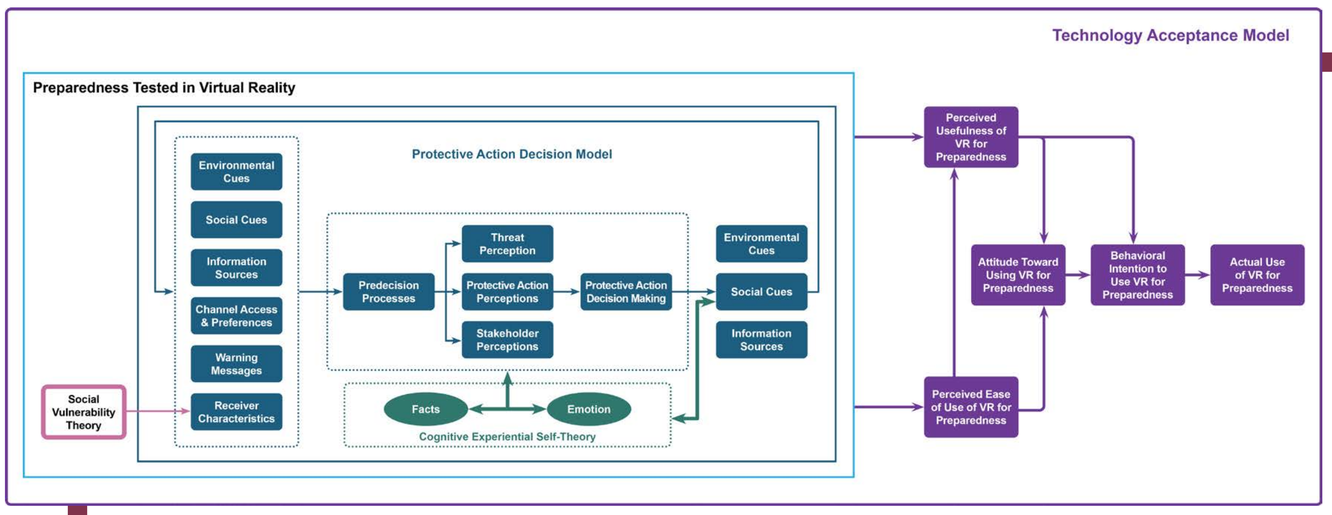
Game Design & Development

Effective disaster preparedness is critical for **community resilience**. However, motivating individuals and measuring preparedness remains a significant challenge. **Gamification, or serious games**, apply game design elements in non-entertainment contexts and offer an innovative strategy for enhancing engagement and knowledge retention.



- Built the virtual environment
- Completed most of interactions
- Included over 20 students
- Developing assets (objects)
- Implementing a style guide
- Exploring accessibility

What you see here are pictures from the space and the outdoors, including an example of how prompts will look like.



Theoretical Framework

Blue: the **protective action decision model** highlights several factors that feed into the **decision-making** process which includes environmental cues, social cues, information sources, channel access & preferences, warning messages, receiver characteristics.
Pink: Social Vulnerability Theory, other factors that make people more or less vulnerable during disasters that is related to their **situation or characteristics**. Within the decision-making process includes the perceptions for threat, stakeholders, and suggested protective action.
Green: Cognitive Experiential Self-Theory (CEST), test if people focused on **facts** alone or **emotions** alone – end up making sound decisions.
Purple: Technology Acceptance Model, are people likely to use **VR** for preparedness, based on the **perceived ease of use** and **perceived usefulness** of the tool to improve their preparedness. Perhaps their **attitude** toward VR may change through this experiment.

Experiment Design

Our experiment is set up to have a **pre-test, post test and 6month posttest**. The **pre-test** is where we will collect any demographic information that is necessary for the protective action decision model (**PADM**), such as the receiver characteristics and previous disaster experience. We want to **randomly** select people to experience the **preparedness tutorial** or the **basic tutorial** in the first part of the experiment. We anticipate that most, if not all participants, will not have any prior experience with VR and will need a tutorial. Therefore, we baked in an experiment using the tutorial. Next, we want to again randomize the participants to go through the **scenarios** based focusing on either facts or emotions. This will help us to collect data based on the **CEST** model. Once the participant has their charge (facts or emotions) they will go through **two hazard scenarios** in the same virtual environment. One is an **evacuation (hurricane)**, and the other is a **shelter in place (chemical spill).**