Minimizing Cybersickness through Increased-Intensity Habituation

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ABSTRACT

Habituation is an effective method in decreasing cybersickness in virtual environments (VEs). It has not been explored in depth because users are often opposed to continued use following an initial use resulting in cybersickness. Recent research indicates that by decreasing the field of view (FOV) decreases symptoms, but also decreases presence. We hypothesize incorporating increased FOV settings into habituation will result in less cybersickness without affecting presence. This method of increased-intensity habituation will be valuable to therapy patients who, in order to receive effective treatment, need to stay in the VE for about 30-60 minutes without experiencing symptoms of cybersickness. We created a VE which has the capacity to manipulate both the FOV and blur edges. We tested it in this exploratory study to determine its potential effectiveness. The experiment shows the time a user spent in a VE increased over time without increased cybersickness. The visual manipulations did not seem to affect presence. We present a protocol to extend this research.

BACKGROUND

Cybersickness

- Sensory conflict theory \cite{1}
- Headaches, dizziness, nausea, fatigue
- Sex and age differences

Field of View Manipulations \cite{3, 4}

- Lowering visual inputs decreases cybersickness
- Decreases presence

Rotational Blurring \cite{5}

- Decreased cybersickness
- Minimal loss of presence

PRELIMINARY RESULTS

Field of View Manipulations (Vignette)

- Virtual Reality Sickness Score (VRSS) vs. Habituation Session

- Presence Score vs. Percent Field of View

- Time vs. Habituation Session

- One hour recovery period

POSSIBLE PROCEDURE

- 360 subjects to be randomly assigned to each condition
- Conditions: Habituation (control), increased intensity FOV, and incrementally decreased blurs
- Sessions over a three-day period per subject
- Two hours rest between each session
- Use virtual reality sickness questionnaire before and after each session and presence questionnaire after each
- Measure time spent in environment without cybersickness

REFERENCES

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