Preliminary IRB applications have been initiated. We are currently awaiting faculty availability for the project

Protocol Title: Hypnosis Virtual Reality (HVR): A Study of Presence

Principal Investigator:
Roberto Carneiro II
Matthew Carlson

Objective:

Measure the concept of presence (as defined by Witmer and Singer in *Measuring Presence in Virtual Environments: A Presence Questionnaire,* [1]) during hypnosis, virtual reality, and "HVR" or Hypnosis Virtual Reality, and how it is affected by involvement and immersion .

Methods:
We will accept rolling participants (subjects) until a sufficient sample size has been reached.

- Let the population size be represented by **N**.
- For each subject **x** in **N**, **x** will be placed in an Experimental Group, as represented in **Figure 1**.

Experimental Groups
- **Hypnosis Immersion$_0$ -> VR Immersion (No hypnosis)$_1$**
    - Hypnosis Pre-Talk
        - Short, educational talk to establish a base understanding of hypnosis and to dismiss any fear of hypnosis based on preconceived misconceptions from popular culture. We will also answer any questions.
    - Hypnotize the subject
        - Read preconstructed hypnosis script. This script uses relaxing and hypnotic techniques to put you into a trance.
    - Scene Construction
        - Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
    - Exit Scene

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[1] *"Presence is defined as the subjective experience of being in one place or environment, even when one is physically situated in another. As described by teleoperators, presence is the sensation of being at the remote worksite rather than at the operator's control station. As applied to a virtual environment (VE), presence refers to experiencing the computer-generated environment rather than the actual physical locale."* Bob G. Witmer and Michael J. Singer, *Measuring Presence in Virtual Environments: A Presence Questionnaire. Presence,* Vol. 7, No. 3, June 1998, 225–240 r 1998 by the Massachusetts Institute of Technology, *https://nil.cs.uno.edu/publications/papers/witmer1998measuring.pdf*
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- ■ The subject will exit the hypnotic state after sufficient time in the scene or upon request.
  - ○ VR Pre-Talk
    - ■ Short, educational talk to establish a base understanding of VR and answer and questions.
  - ○ Put the subject in VR
    - ■ The subject will put on the VR headset.
  - ○ Scene Construction
    - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
  - ○ Exit Scene
    - ■ Subject will take off the VR after sufficient time in the scene or upon request.
- **VR Immersion (No hypnosis)$_0$ -> Hypnosis Immersion$_1$**
  - ○ VR Pre-Talk
    - ■ Short, educational talk to establish a base understanding of VR and answer and questions.
  - ○ Put the subject in VR
    - ■ The subject will put on the VR headset.
  - ○ Scene Construction
    - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
  - ○ Exit Scene
    - ■ The subject will take off the VR after sufficient time in the scene or upon request.
  - ○ Hypnosis Pre-Talk
    - ■ Short, educational talk to establish a base understanding of hypnosis and to dismiss any fear of hypnosis based on preconceived misconceptions from popular culture. We will also answer any questions.
  - ○ Hypnotize the subject
    - ■ Read preconstructed hypnosis script. This script uses relaxing and hypnotic techniques to put you into a trance.
  - ○ Scene Construction
    - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
  - ○ Exit Scene
    - ■ The subject will exit the hypnotic state after sufficient time in the scene or upon request.
- **Hypnosis Immersion$_0$ -> VR Immersion (with hypnosis)$_1$**
  - ○ Hypnosis Pre-Talk
    - ■ Short, educational talk to establish a base understanding of hypnosis and to dismiss any fear of hypnosis based on preconceived misconceptions from popular culture. We will also answer any questions.

- ○ Hypnotize the subject
  - ■ Read preconstructed hypnosis script. This script uses relaxing and hypnotic techniques to put you into a trance.
- ○ Scene Construction
  - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
- ○ Exit Scene
  - ■ The subject will exit the hypnotic state after sufficient time in the scene or upon request.
- ○ VR Pre-Talk
  - ■ Short, educational talk to establish a base understanding of VR and answer and questions.
- ○ Hypnotize the subject
  - ■ Read preconstructed hypnosis script. This script uses relaxing and hypnotic techniques to put you into a trance.
- ○ Put the subject in VR
  - ■ The subject will put on the VR headset.
- ○ Scene Construction
  - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
- ○ Exit Scene
  - ■ Subject will exit the hypnotic state after sufficient time in the scene or upon request.
  - ■ Subject will take off the VR after sufficient time in the scene or upon request.
- **VR Immersion with Hypnosis$_0$**
  - ○ VR Pre-Talk
    - ■ Short, educational talk to establish a base understanding of VR and answer and questions.
  - ○ Hypnosis Pre-Talk
    - ■ Short, educational talk to establish a base understanding of hypnosis and to dismiss any fear of hypnosis based on preconceived misconceptions from popular culture. We will also answer any questions.
  - ○ Hypnotize the subject
    - ■ Read preconstructed hypnosis script. This script uses relaxing and hypnotic techniques to put you into a trance.
  - ○ Put the subject in VR
    - ■ The subject will put on the VR headset.
  - ○ Scene Construction
    - ■ Read preconstructed scene construction script. Imagery and low volume audio cues will be included.
  - ○ Exit Scene

- We will be measuring **Presence** based on the player's <u>focus</u> of a "**Scene**".
- There is a total of 1 **Scene**.
- Each group will participate in the"**Scene Construction**".
- To construct the **Scene**, there will be **Scene Construction Steps**.
- Each **Scene Construction Step** will be associated with a **Visual Cue** or an **Auditory Cue** represented by **Figure 2**.
- Each group will participate in **Scene Construction**.
- Each Experimental Group will participate in the **Scene Construction** once under a **condition** where each subject **x** will follow the specific order of conditions as shown in **Figure 1**.
- The **conditions** include: Hypnosis Immersion, Virtual Reality Immersion, Hypnosis Virtual Reality Immersion.
- Each **condition** will be preceded by a pre-talk specific to Hypnosis and/or Virtual Reality (all scripts attached at end of file).
- The end of each condition will be followed by an **Auditory Cue** of uniquely made background music.
- Each **condition** will be followed by a survey base on the (<u>Measuring Presence in Virtual Environments: A Presence Questionnaire</u>, p. 232-235)[1].

id	Scene Construction Step	Visual Cue	Auditory Cue
0	-----	Black Background	None
1	Open Grassland	Grassland fades in around you	None
2	Look up at the Sky	Blue sky, Clouds	None
3	Feel the Breeze Look at the Clouds Quickly Moving in the Sky	Grass swaying, clouds picking up the pace	Light Wind

4	See the mountains in the distance	Mountains fade in	Rock rumbling
5	Fade out of voice	The whole scene is shown	Start off soft 2-minute music sequence
Figure 2			

Effects on Subjects:

Hypnosis Disclaimer: Subjects will be hypnotized

Everyone gets hypnotized every day. Have you ever driven a car, watched TV, or read a book and time just flew by? Ever been in the zone for sports? These are everyday examples where you hypnotized yourself. Most people know nothing about hypnosis except from what they have seen in movies. Every time you are hypnotized, you hypnotize yourself. It's not mind control. You cannot make someone do something they wouldn't already do if they weren't hypnotized.

Instead, Hypnosis is a deep state of focus where you're able to bridge your conscious and unconscious minds. This allows you to access the unconsciously regulated functionality of the brain. This could be anything from emotion, to memories, to overriding your senses. In this case, we are using it to test focus. The subject is listening to a set of instructions and I am their guide. At any point, the subject may choose to open their eyes and walk away.

The effects completely wear off after session. Subjects are more susceptible to hypnosis in the future as a natural human side effect (tolerance).

Virtual Reality Disclaimer: Subjects will be immersed in VR

During the usage of VR there is a low chance that some users may experience motion sickness, loss of balance, nausea, or slight dizziness. These symptoms tend to arise more frequently in games involving movement, fast-paced action, and prolonged usage, no of which will be in our simulation.

We hope to mitigate these negative symptoms by having the subject sit down, and having the experience last between 5 to 10 minutes. We hope that by taking these actions, we are able to emphasize the more positively reported experiences, such as: relief of anxiety, happiness, peace of mind, and tranquility.

Measures to Minimize Risk:

- The subject may freely leave experiments at any time.
- Educational hypnosis pre-talk.
- Educational VR pre-talk.

- Campus infirmary phone number on hand.
- In the case of any specific issues, the following phrase will be used, "The scene fades and you tend to your breathing." This phrase is a standard exit phrase among hypnotists. We will only be constructing scenes, so the phrase will be more than enough to exit a session.
- Person of opposite biological sex to be present for entire duration of immersion upon request.

Likelihood of Harm:

Minimal to non-existent. All measures to minimize risk will be taken as outlined above.

Documentation of Risks:

We will record the audio of every session.
At the start of every session we will include "Do you consent to be recorded for the duration of this experiment" in the audio.

Benefits to Participants:

Hypnosis education.
Virtual Reality education.
Relaxation.

Alternate Method Not Using Human Subjects:

None.

Qualifications of Researcher:

Roberto Carneiro II:
Dual Computer Science and Psychological Sciences Student, Rensselaer Polytechnic Institute (estimated Graduation May 2019)
Practicing New York State hypnotist for over 4 years. (New York State allows open practice of hypnotism.) Hypnotized over a hundred people in 1 on 1 sessions to test anxiety, memory studies, and teaching self-help hypnosis.

Matthew Carlson:
Dual Computer Science and Game and Simulations Arts and Sciences Student, Rensselaer Polytechnic Institute (Estimated Graduation May 2019)

Studying computer science and game development for 4 years working on numerous trans-disciplinary teams and projects including *The Aquatic Messenger*, an immersive environmental ecology VR for the Jefferson Project, the *Mandarin Project*, (using deep immersion for language acquisition) and the *World of Plankton*, a VR experience currently on extended exhibition at the Echo Museum.

Recruiting of Subjects:

RPI via Experimetrix.

Confidentiality:

During the experiments, each person will be identified by RIN (non-name, unique id). Upon completion of the experiment, these RINs will be replaced with an auto-incrementing id [0,n] where n is the population size. The physical data will be shredded and destroyed. The RIN is needed to guarantee a subject does not repeat the experiment. All data will be digitally encrypted and exclusively restricted to the above-mentioned researchers and digitally destroyed thereafter.

*We would like to apply for expedited review as we fall under sections 4 and 7.