Salon de FréFré: A VR + ASMR Experience

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ABSTRACT

We will build a multimedia experience which combines VR with ASMR and plan to compare users' experiences with the VR system against an audio-only system. We expect to see higher levels of relaxation as a result of the increased immersion/presence offered by VR.

Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; required. **Rob: Optional section to be included in your final version, but strongly encouraged. On the submission page only the classifiersâĂŹ letter-number combination will need to be entered.**

ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous; See http://acm.org/about/class/1998/ for the full list of ACM classifiers. **Rob: Optional section to be included in your final version, but strongly encouraged.**

INTRODUCTION

Project Overview

The topic of interest for this project is Autonomous Sensory Meridian Response, commonly known as ASMR, which is a *"sensory phenomenon, in which individuals experience a tingling, static-like sensation across the scalp, back of the neck and at times further areas in response to specific triggering audio and visual stimuli"* [3]. Although ASMR can occur as a result of virtually any stimulus, there is an emerging trend of ASMR content uploaded to YouTube, with one of the most popular channels garnering nearly 200 million views since their first video was uploaded four years ago [2]. These videos are meant to lull viewers into relaxed states by incorporating specific audio stimuli, including whispering, tapping, brushing, and other sounds, ideally recorded using binaural microphones.

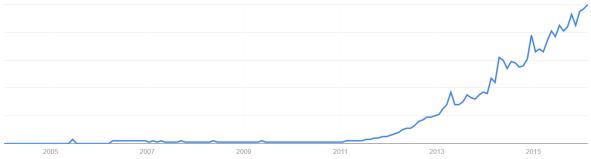

Figure 1. The popularity of ASMR searches has been rising steadily over the past four years. Data Source: Google Trends (www.google.com/trends/).

We plan to explore whether the immersion and interactivity of a virtual reality system affects viewers' experience with media designed to evoke ASMR. This exploration will be achieved through the use of a custom-developed ASMR experience, an Oculus Rift[1], and a pair of high quality headphones[2].

The ASMR experience that we intend to create is one wherein the participant's avatar receives a virtual salon makeover. It will consist of a makeup artist, shown in proxy as a roughly animated character silhouette, applying makeup to the participant's avatar. True to the format of ASMR videos, the artist will move around and speak as they go about their tasks. The artist's speech will be a pre-recorded mono track and positional audio will be used to place it relative to the participant.

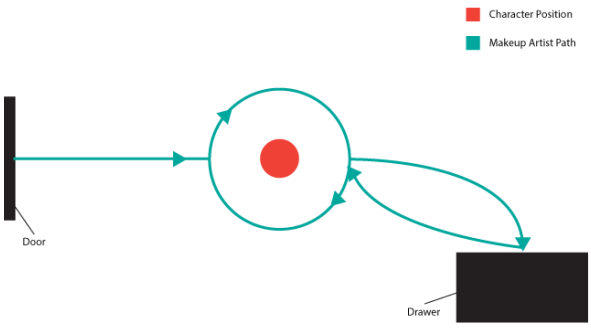

Figure 2. Mockup of the salon layout and the makeup artist's motion path.

At certain points, the artist will offer participants a selection of products. A selection can be made by through head-tracking: by maintaining eye contact with the choice for a set time (see Figure 3). Choices made will cosmetically affect the avatar displayed at the experience's conclusion.

[1]DK2 headset
[2]Grado SR80e headphones

Figure 3. Mockup of the selection method which uses the center of the screen as a cursor position.

User Study

To evaluate the experience, a comparative study will be performed in which participants are exposed to two variations of the experience: one will be the VR experience exactly as developed, and the other will lack visual stimuli and interaction in order to isolate audio, the component most closely associated with the YouTube ASMR format[3]. The test will use a within-subjects design, as individual differences would be a significant source of error for something as subjective as ASMR.

We hypothesize that the addition of visual stimuli and interaction with the system will further immerse the participant in the ASMR experience. As 98% of individuals searching for ASMR videos have indicated that they do so for relaxation [3], we will be evaluating the participant's sense of relaxation. This will be measured through surveys and possible physiological indicators (e.g. heart rate, respiratory rate) during or after the experience. We expect to observe higher satisfaction with the experience as a result of these factors than with passive audio alone. We believe this will open up the ASMR video-producing community to a new form of experience unlike those found on YouTube.

Future Work

A possible extension of this experience would be to have the test administrator brush the participant's face with actual makeup brushes in-sync with the virtual brushes. As we intend to primarily evaluate the visual and interactive elements, this idea was excluded from this proposal. We hypothesize that this haptic stimuli on its own could be capable of eliciting sensations similar to ASMR (which would interfere with our study) [5], and so we leave this for future works to consider.

Experience Outline

1. The participant is seated and puts on the equipment
2. A makeup artist enters the salon and introduces herself
3. The artist asks participants to select a colour for their makeup
    - VR: Participants are presented with a palette and make a selection
4. The artist circles participants, brushing their face and whispering quietly about what she's doing, occasionally complimenting the participant
5. Participants are informed that the makeup is complete
6. The artist instructs participants to turn and look at their reflection in a mirror she's holding
    - VR: Participants see their avatar in a mirror, re-textured based on earlier selections

[3]During interactive elements in which a question is posed to the participant, the audio will continue without any user input. Both versions will include some questions in this format (e.g. *"How was your day?"*) to avoid interference with study results.

RELATED WORK

ASMR Definitions

Autonomous Sensory Meridian Response is the tingling sensation across the scalp and back of the neck that is caused by specific audio and visual stimuli. [3] ASMR community members claim that the shivers they experience are intense feelings of relaxation that begin in the head and extend to their limbs. [1] ASMR is relaxing and pleasurable experience of tingling in the scalp that works its way down the spine caused by sensory triggers. [4]

ASMR Video Situations

Many videos portray role play situations where the viewer is being cared for and often groomed. [3] Some ASMR videos are in the form of instructional videos for topics such as massage, spa-treatments, meditation and other forms of self-care. [1] Often ASMR videos are performed by a single female speaking softly and in a slow manner. [1] Role play situations are commonly used to induce ASMR including situations with dental hygienists, travel agents, and receptionists. [1] Video scenarios often imitate the attention and intimacy provided by service industries. [1]

ASMR Stimuli

ASMR videos largely feature audio stimuli, including tapping on household items. [3] Of those that experienced ASMR, they reported the following triggers: whispering, 75 percent; personal attention, 69 percent; crisp sounds, 64 percent; slow movement, 53 percent; and repetitve tasks, 36 percent. [3] Of the 52 percent of people that have a preference for where they watch ASMR videos, many preferred quiet locations and the use of binaural headphones so they could hear a greater depth of sound. [3] Many participants indicated that they were triggered watching others perform tasks or having attention paid to them. [3] ASMR is also sometimes referred to as the Whisper Community as many ASMR videos are performed in a whisper. [1] Common ASMR videos are whispers, rustling paper, finger tapping and crinkling plastic. [1] Many ASMR videos focus only on the lips, torso or hands of the performer. This is done to focus the viewer on these body parts in a meditative way. [1] Some ASMR videos rely only on audio stimuli and only show the audience a black screen or a static image. [1] Some ASMR inducing triggers slow and soft speech, and pages turning.[4] Some methods of inducing ASMR include dimming the lights, and using headphones. [4]

Flow

ASMR shares flow state features including an intense focus and decreased awareness of time passing. Flow state is the state achieved when most productive during an activity. [3] Flow was best experienced with more ASMR triggers. [3] The behaviour of participants resembled flow state in that they completed precise tasks with confidence and precision. [3]

ASMR Uses

Of those polled, 98 percent of people strongly agree that they use ASMR videos for relaxation, while 82 percent use it for sleep and 70 use it for stress. [3] While 30 percent of people stated that they viewed ASMR content during spare time with no preference in when they viewed it, 81 percent said that they preferred to watch ASMR videos before bed. [3] This corresponds to the fact that many ASMR viewers watch the videos with the purpose of inducing sleep. Participants felt best when actively engaging with ASMR content, with 80 percent of participants stating the video had an affect on their mood. Even without experiencing the ASMR sensation, 50 percent said that ASMR content had a positive affect on their mood, with only 30 percent stating the tingling sensation was essential. [3] Many participants said that they used ASMR to ease symptoms of moderate to severe depression, with a total of 69 percent making this indication. [3] ASMR has been promoted as a treatment for stress and insomnia. [1] Those who view ASMR content may be predisposing themselves to the shivering experience through the intention since they are seeking out videos for relaxation and pleasure. [1] ASMR videos are often advertised as therapy for insomnia and anxiety. [4]

ASMR and Immersion

Individuals can experience ASMR burnout where a given video will no longer trigger the ASMR experience for them. To overcome this, many viewers turn towards more immersive experiences aided by the use of technology. [1] An immersive experience indicates that individuals are looking for a more immediate experience that includes interactivity. [1]

VR

VR is effective in inducing emotions as seen through the indication of anxiety and relaxation when participants were placed in anxiety-inducing or relaxation-inducing environments. [11] The feeling of presence is greater in emotional environments, and the emotional state was influenced by the level of presence. [11] VR users are directly engaged with the effects of a virtual experience. [15] VR provides users with a safe place where they are able to explore and act without feeling threatened [10] by dangerous, real, or humiliating consequences [13]. VR is beneficial for analyses and experimentation due to the fact that virtual environments are controlled and reproducible [8].

VR and Input Methods

When comparing pointing methods of mouse or gaze, participants perceived gaze as faster but less accurate than mouse pointing. Participants were faster and suffered less in accuracy for harder tasks when using gaze pointing methods [7]. Discomfort is a serious drawback of gaze pointing especially if it requires users to keep their heads still for a long time [7]. According to their study comparing mouse and gaze pointing techniques and mouse button or EMG switch selection, combining gaze pointing and facial EMG has potential to outperform the mouse [7].

VR and Immersion

In VR, relaxing experiences increased feelings of quietness and happiness while reducing anger, sadness and anxiety. [11] The level of presence felt by participants was greater in relaxing and anxious environments than in neutral ones, with the greatest feeling of presence in the relaxing environment. [11] This indicates that emotional environments bring out feelings of presence better than non-emotional ones. A positive correlation was found between positive environment effects and a sense of presence. [11] Participants using VR augmented rehabilitation experienced an increase in heart rate and respiratory rate [15]. The participants sense of presence is influenced by both the attributes of the VR platform as well of the features of the environment itself and the characteristics of the individual user [9].

VR and Therapy

Participants enjoy VR therapy more than traditional forms of therapy which can increase motivation to complete treatment [6]. Since some VR systems are relatively affordable, rehabilitation can be done at home, which is much more convenient [8]. VR rehab therapy can be fun, which increases participant motivation to complete the therapy session [8]. Using VR to rehabilitate is useful but it is less effective to assess rehabilitation using VR since subjects react differently [8]. In a study comparing Virtual Reality Cognitive Behaviour Therapy against Cognitive Behaviour Therapy and no therapy for the treatment of speaking anxiety, the virtual reality treatment was better than no treatment but not significantly better than traditional therapy [14]. The virtual reality therapy had a lower drop out rate of 6 percent than participants that received group therapy which was 18 percent. Those who received normal cognitive therapy had a drop out rate of 12 percent [14]. A year after the initial study, there was no significant difference in the level of anxiety felt between those who participated in the virtual reality and those that received traditional cognitive therapy. Each group was compared on five anxiety measures which were LSAS fear, LSAS avoidance, SSPS positive, SSPS negative and FNE during three time periods [12].

VR Limitations

Reaction time data is affected by any level of latency [8]. Reactions within a VR environment are not always the same as they would be in a real world environment [8]. In a study testing reaction times in a real world environment, a real world environment with a see-through HMD and a virtual environment with an HMD, subjects reacted significantly slower in the virtual environment. The delay was fairly consistent and was most likely caused by latency [8]. People tend to sway more when walking and immersed in a virtual environment [8].

Testing Methods

Some questionnaires that were used to evaluate mood before and after the virtual experience are Visual Analogue Scale, Positive and Negative Affect Schedule, and State Trait Anxiety Inventory. The Visual Analogue Scale, or VAS, required participants to indicate how they feel at a specific moment in time in regards to their level of happiness, anger, surprise, disgust, anxiety and quietness. Positive and Negative Affect Schedule, or PANAS, uses a list of 20 adjectives that describe 10 positive emotions and 10 negative emotions. Participants must indicate

the extent that the feel each of the emotions at a given moment on a scale of 1 to 5. State Trait Anxiety Inventory, or STAI, measures the level of anxiety participants feel on a scale of 0 to 3. The state version asks participants how they feel at a given moment, while the trait version asks for their general feelings. [11]

SAMPLE STUFF

		Test Conditions	
Name	*First*	*Second*	*Final*
Marsden	223.0	44	432,321
Nass	22.2	16	234,333
Borriello	22.9	11	93,123
Karat	34.9	2200	103,322

Table 1. Table captions should be placed below the table. We recommend table lines be 1 point, 25% black. Minimize use of table grid lines.

REFERENCES

1. Joceline Andersen. 2015. Now YouâĂŹve Got the Shiveries Affect, Intimacy, and the ASMR Whisper Community. *Television & New Media* 16, 8 (2015), 683–700.
2. Anonymous. 2016. YouTube Stats, Channel Statistics. (2 February 2016). http://socialblade.com/youtube/user/gentlewhispering
3. Emma L Barratt and Nick J Davis. 2015. Autonomous Sensory Meridian Response (ASMR): a flow-like mental state. *PeerJ* 3 (2015), e851.
4. Dave Bergmann. 2015. YouTube therapy: with ASMR, an unlikely sound-based treatment for stress and insomnia, a "brain orgasm" could be just a few clicks away. *Men's Fitness* 31, 5 (2015), 46. http://carletonu.summon.serialssolutions.com/2.0.0/link/0/eLvHCXMwrV1La8JAEB76uBSkD_t-MXjoqakaH0kKpQRRemkt1Z5l3d2AVaOYBPEX9G93JlujlPbWW2Czm2XYnfl2Mt9-ABX7rmI98AnCdbQIqo6ntNunTaLsoBZ64QkvkE7JS7nKDfv13e74zF3P1K649p0NxzVBjeRhIpNRT_L_akJQm7BdpmWZ0vv8duanKVamfpoitkWHoqVTXgsvrT1YpiNMUcmqNsmM_0vtjf8z6X3Y_Yak6Js1dAAbOsxDzuTz0NCU8pBf4Uu8wVQbPTqET3IW3aSv0dC4FvfIeV30O89vt[illegible]gWy6FQ0LqBkJW0Ph0BFutUywLShpVzqCns_g5I_Rzv9suYAdgjo1U-R1CVvxLNFXfJ2GsXbyBXmr1Gw
5. G Stanley Hall and Arthur Alliń. 1897. The psychology of tickling, laughing, and the comic. *The American Journal of Psychology* 9, 1 (1897), 1–41.
6. Rachel Kizony, Noomi Katz, and others. 2003. Adapting an immersive virtual reality system for rehabilitation. *The Journal of Visualization and Computer Animation* 14, 5 (2003), 261–268.
7. Julio C Mateo, Javier San Agustin, and John Paulin Hansen. 2008. Gaze beats mouse: hands-free selection by combining gaze and emg. In *CHI'08 extended abstracts on Human factors in computing systems*. ACM, 3039–3044.
8. M Morel, B Bideau, J Lardy, and R Kulpa. 2015. Advantages and limitations of virtual reality for balance assessment and rehabilitation. *Neurophysiologie Clinique/Clinical Neurophysiology* 45, 4 (2015), 315–326.
9. Eric B Nash, Gregory W Edwards, Jennifer A Thompson, and Woodrow Barfield. 2000. A review of presence and performance in virtual environments. *International Journal of human-computer Interaction* 12, 1 (2000), 1–41.
10. Giuseppe Riva. 2005. Virtual reality in psychotherapy: review. *Cyberpsychology & behavior* 8, 3 (2005), 220–230.
11. Giuseppe Riva, Fabrizia Mantovani, Claret Samantha Capideville, Alessandra Preziosa, Francesca Morganti, Daniela Villani, Andrea Gaggioli, Cristina Botella, and Mariano Alcañiz. 2007. Affective interactions using virtual reality: the link between presence and emotions. *CyberPsychology & Behavior* 10, 1 (2007), 45–56.
12. Marilyn P Safir, Helene S Wallach, and Margalit Bar-Zvi. 2011. Virtual reality cognitive-behavior therapy for public speaking anxiety: one-year follow-up. *Behavior Modification* (2011), 0145445511429999.
13. Penny J Standen and David J Brown. 2005. Virtual reality in the rehabilitation of people with intellectual disabilities: review. *Cyberpsychology & behavior* 8, 3 (2005), 272–282.
14. Helene S Wallach, Marilyn P Safir, and Margalit Bar-Zvi. 2009. Virtual reality cognitive behavior therapy for public speaking anxiety A randomized clinical trial. *Behavior modification* 33, 3 (2009), 314–338.
15. Brenda K Wiederhold and Mark D Wiederhold. 2006. Evaluation of virtual reality therapy in augmenting the physical and cognitive rehabilitation of war veterans. *International Journal on Disability and Human Development* 5, 3 (2006), 211–216.

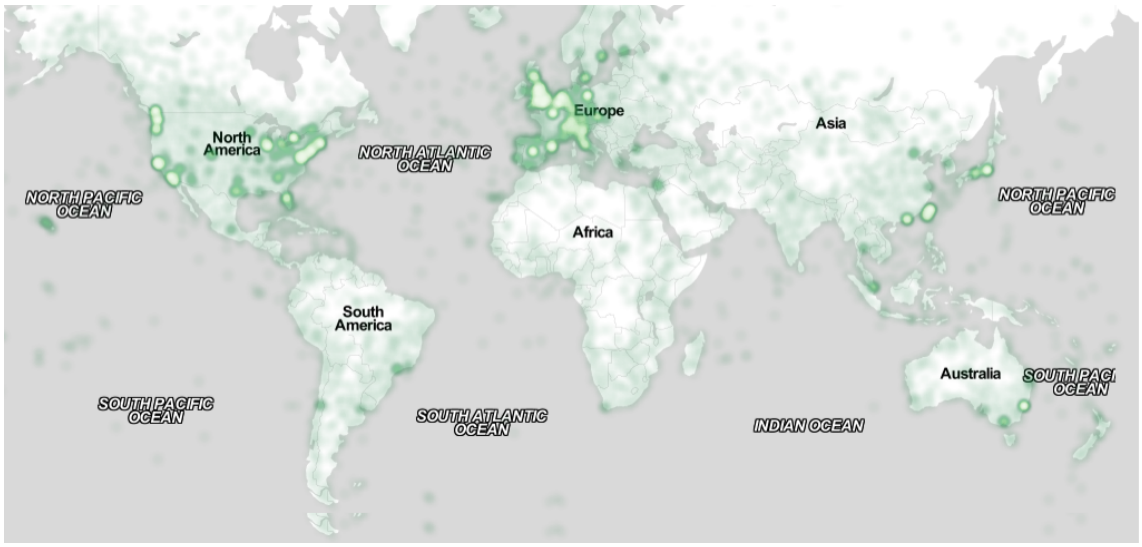

Figure 4. In this image, the map maximizes use of space. You can make figures as wide as you need, up to a maximum of the full width of both columns. Note that LaTeX tends to render large figures on a dedicated page. Image: ayman on Flickr.