Remote Presence in Nature through Virtual Reality: A Pilot Study on the Mental Well-Being of Older Adults

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INTRODUCTION

Alarming trend: High rates of mental disorders among the elderly population

•85.9% of the 65 and older population living in group quarters reside in skilled-nursing facilities
•Institutionalized living arrangements increase risk of developing depression
•Insufficient depression management in nursing homes

Previous studies have shown the mental health benefits of nature sojourns.

•Reduction of stress & anxiety
•Improvement of overall emotional well-being

Virtual reality (VR) nature sojourns as a new form of non-pharmacological intervention for mental well-being of older adults..

METHODS

Recruited 10 participants aged 50 and above
•Participants experienced VR for 15-min. once a week, for a total of 3 weeks
•Randomly divided into automatic & manual modes of virtual nature visits
•Collected surveys on participants' feelings & thoughts
•Measured participants' blood pressure & heart rate

ECORIFT & BRIDGING ACCESSIBILITY

•Immersive VR experiences of nature preserves (U.S., Mexico, and Germany)
•**Sound:** Ambisonic field recordings displayed in dynamic 3-dimensional auditory cues
•**Image:** Fixed 360-degree photographic panoramas
•Head-tracking technology captures real-time head movements and matches auditory cues in accordance to the spatial coordinates
•Allow people with physical limitations to journey into remote natural environments

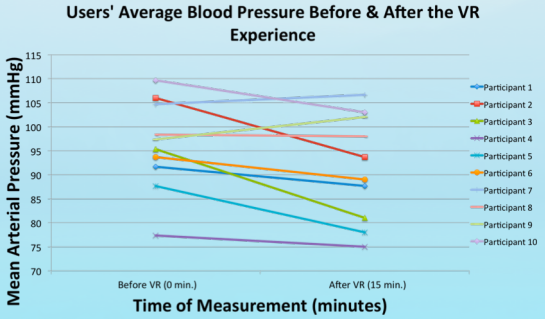
Ambisonic microphone- allows the diffusion of sound to be above & below the listener in addition to the horizontal plane

RESEARCH QUESTIONS

What therapeutic impacts, if any, does virtual exposure to the sights and sounds of natural environments have on the mental well-being of older adults?

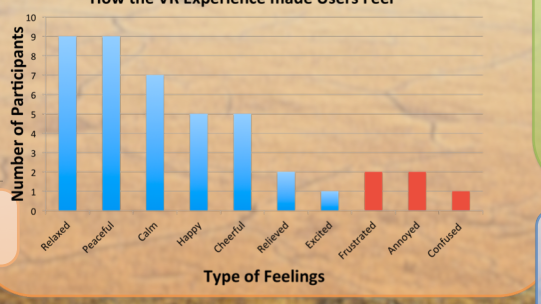
Does the travel mode (automatic vs. manual) of the VR or how frequent the VR users' visit real natural environments influence the potential therapeutic impact(s)?

RESULTS

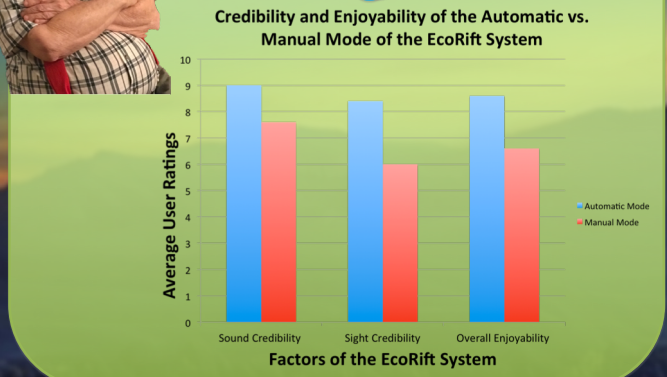


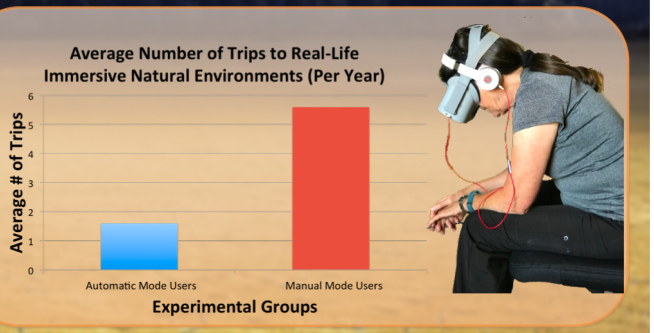
Tonto National Park photographed by Garth Paine.

Organ Pipe Cactus National Monument- Arch Canyon photographed by Garth Paine.



SONIC FUSION
•Visual & audio cues
•Touch (sense the heat of the sun)
•Smell (catch a whiff of the river's scent)





CONCLUSION

•Mean Arterial Pressure of 8 out of 10 participants decreased after immersion in VR environments
•Most VR users reported more positive than negative sensations
•Automatic mode users found the VR more enjoyable
•Positive correlation between sight/sound credibility & overall enjoyability
•Negative correlation between how frequent the user visits nature per year & overall enjoyability of the VR

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