

NURTURING NATURE IN VIRTUAL REALITY: A PRELIMINARY STUDY OF PRO-ENVIRONMENTAL PUBLIC SERVICE EXPERIENCES

A Preliminary Study of Pro-Environmental Public Service Experiences

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Extended Abstract

The effects of human intervention on the environment are numerous and increasingly devastating. The proliferation of fossil fuel based vehicles and factories have led to wide-spread environmental threats, such as global warming and powerful superstorms. Further still, many species of animals have become endangered due to such environmental changes and an encroachment on their natural habitats. For example, humpback whales were once hunted to the point of extinction but now face new threats related to ecosystem pollution. Likewise, certain species of elephants, such as African Elephants, are under constant threat due to environmental encroachment and ivory poaching. Unfortunately, research indicates that it can be difficult to keep people informed and actively engaged with environmental issues.

Environmental issues can sometimes be difficult for people to engage with in a meaningful way for a number of reasons. First, environmental issues are usually not immediately observable (Ahn et al., 2016; Kollmuss & Agyeman, 2002; Preuss, 1991). Second, there is usually a temporal gap between the cause and effect of environmental issues (Ahn et al., 2016; Ahn, Fox, Dale, & Avant, 2015). In the U.S., a common method to keep the public informed and engaged with environmental issues are public service announcements (PSAs). However, research indicates that PSAs may not be as effective in a modern day multi-media landscape (Boyle et al., 2014; Fishbein, Hall-Jamieson, Zimmer, von Haeften, & Nabi, 2002; Paek, Hove, Ju Jeong, & Kim, 2011; Walther, DeAndrea, Kim, & Anthony, 2010). Therefore, we must continue to explore new means and methods for engaging the public with increasingly important environmental issues.

The present in progress research explores new ways, using the immersive and interactive affordances of virtual reality (VR), to disseminate novel pro-environmental experiences to young adult audiences. In the past, “Public Service Announcements” (PSAs) were a common method for engaging the public with pro-environmental information (Cialdini, 2003). More recently, pro-environmental VR-based experiences have been shown to increase participants involvement with nature, the perception of environmental risk, pro-environmental behavioral intentions, and environmental efficacy (Ahn, Bailenson, & Park, 2014; Ahn et al., 2016). The repurposing of VR to convey pro-social experiential messages to the public has been recently referred to as “Public Service Experiences” (PSEs)(Ball, 2018). PSEs specifically, have been shown to have positive indirect effects on pro-environmental attitudes

and behavioral intentions (such as support for conservational policies) via the mediating roles of spatial presence and narrative engagement (Ball, 2018).

However, there are still lingering questions regarding the mechanism behind the impacts of VR-based pro-social experiences such as PSEs (Ahn, Fox, Dale, & Avant, 2015). In particular, there is a need to better understand the dimensions and roles of narrative and interactivity in PSE effects (Ahn et al., 2014; Ahn et al., 2015; Christy & Fox, 2016; Peng, Lee, & Heeter, 2010). Specifically, PSEs, unlike PSAs, may provide ideal contexts to create and disseminate interactive narratives which may result in more engaging and influential experiences (Green & Jenkins, 2014). Furthermore, there is a need in the literature to explore granular differences in immersive affordances in order to draw more precise conclusions regarding the nature of PSE effects (Cummings, Bailenson, & Fidler, 2012).

The present in progress study seeks to build and expand upon the PSE literature by continuing to explore possible mechanisms, and their relation to one another, which may account for any potential PSE effects. Therefore, this research builds on previous literature by testing a new conceptual framework that might help explain PSE effects. Specially, this study consults the literature surrounding immersion, presence, narrative transportation, narrative interactivity, and natural mapping. Furthermore, this study seeks to fill a particular gap in the literature related to gradient manipulations of immersive factors. Many studies related to technological immersion only compare “high vs low” conditions, ignoring potentially important and subtle differences in immersive factors (Ball, 2018). Therefore, this study tests the impact of granular differences in immersion factors, specifically, gradations in naturally mapped movement in virtual reality. Finally, based on spreading activation theory, this study seeks to explore the possibility that pro-environmental PSE’s might have the ability to activate other associated environmental attitudes.

In order to explore the above questions, an experiment is currently being conducted which tests the potential impacts of narrative interactivity and naturally mapped movement in a PSE. The experiment is a between-subjects factorial design. Specifically, the experiment is a 2 (high and low narrative interactivity) X 3 (low, medium, and high natural mapping) factorial design. Upon completion, the total participants for this study will consist of 180 undergraduate college students obtained from a large mid-western university. The experiment involves exposing participants to a 10-15 minute virtual experience/environment which includes endangered wildlife such as elephants. The selected stimulus for this study is *Nature Treks VR* (Carline, 2017). *Nature Treks VR* is a nature-based VR experience which was created for the HTC Vive. *Nature Treks VR* is an experience in which players select from a diverse selection of natural environments to explore. Players are then encouraged to freely wander the environments, “relax and immerse” themselves in nature and interact with the various kinds of wildlife (Steam, 2017). In this study, the “Savannah” environment was chosen, which includes endangered animals such as elephants. The results should provide contributions to the literature surrounding VR effects, environmental communication, PSEs, technological immersion, narrative persuasion, and spatial presence.

References

Ahn, S. J., Bostick, J., Ogle, E., Nowak, K. L., McGillicuddy, K. T., & Bailenson, J. N. (2016). Experiencing Nature: Embodying Animals in Immersive Virtual Environments Increases Inclusion

of Nature in Self and Involvement With Nature. *Journal of Computer-Mediated Communication*. doi: 10.1111/jcc4.12173

Ahn, S. J., Fox, J., Dale, K. R., & Avant, J. A. (2015). Framing Virtual Experiences: Effects on Environmental Efficacy and Behavior Over Time. *Communication Research*, 42(6), 839-863. doi: 10.1177/0093650214534973

Boyle, L., Cordahi, G., Grabenstein, K., Madi, M., Miller, E., & Silberman, P. (2014). Effectiveness of Safety and Public Service Announcement (PSA) Messages on Dynamic Message Signs (DMS): Federal Highway Administration.

Carline, J. (2017). Nature Treks VR: Greener Games.

Fishbein, M., Hall-Jamieson, K., Zimmer, E., von Haeften, I., & Nabi, R. (2002). Avoiding the Boomerang: Testing the Relative Effectiveness of Antidrug Public Service Announcements Before a National Campaign. *American Journal of Public Health*, 92(2), 238-245.

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental education research*, 8(3), 239-260.

Paek, H.-J., Hove, T., Ju Jeong, H., & Kim, M. (2011). Peer or expert? The persuasive impact of YouTube public service announcement producers. *International Journal of Advertising*, 30(1), 161-188.

Preuss, S. (1991). *Umweltkatastrophe Mensch: Über unsere Grenzen und Möglichkeiten, ökologisch bewusst zu handeln*: Asanger.

Steam. (2017). Nature Treks VR.

Walther, J. B., DeAndrea, D., Kim, J., & Anthony, J. C. (2010). The influence of online comments on perceptions of antimarijuana public service announcements on YouTube. *Human communication research*, 36(4), 469-492.