



Immersion of Augmented Virtual Reality and Its Effect on Empathy

Alexis Delgado Soto (Stacy Freiheit, PhD, LP, Faculty Sponsor)
Augsburg University



Abstract

This study investigates how virtual reality can stimulate empathy in college students. Empathy is a link between ourselves and those around us. It helps us understand what others are experiencing. Social issues such as homelessness, bullying, racism or domestic violence are items that normally don't go beyond sympathy in research. We can use virtual reality to increase accessibility to individuals who wouldn't otherwise have been able to or want to experience these issues first hand safely. Participants in the VR condition and our other condition will experience a 7 minute long piece of media relating to homelessness.

It was found that our VR condition experienced greater levels of arousal, rated higher on our immersion survey and were more likely to agree towards charitable activities affecting our cohort of interest. While our 2D condition rates showed almost no physiological stimulation, rated average on our immersion survey and less likely to be charitable.

Introduction

We all seek to understand, observe, explain, predict and control varying models of our psychology. However, undergraduate researchers often must sacrifice control over their environment, to account for things like cost and time. Virtual environments present us with techniques to stimulate these phenomena, and account for the individual cues that create its effect on our perceptions Providing this cohort greater power in quantifying and understanding how different affect stimulate cognitive phenomenon allows this area of knowledge to grow even more.

Empathy is our ability to reflect the personal feeling and emotions of another sensation, upon a presentation of stimuli. *Immersion is known as a mediator of meaningful emotional experiences, however research has not made their relationships clear* (Diemer, Alpers, Peperkorn, Shiban, & Muhlberger, 2015). Background narratives, virtual environments that just simulate, or can also interact have varying and interact or do both enhance emotional engagement of a subject (Diemer, Alpers, Peperkorn, Shiban, & Muhlberger, 2015).

Hypotheses

- Subjects who experience a full virtual environment will experience greater immersion, be more empathic and experience greater emotional arousal afterwards than those who are exposed to a piece of 2-Dimensional media.

Results

Tests of Between-Subject Effects						
R squared = .380	SS	df	MS	F	Sig.	F.Crit
Virtual reality/Non virtual reality						
V*Heart rate/NV*heart rate						
V*Survey/NV*S survey						
V*ZSG/NV*ZSG						
Error						
Total						

Fig. 1 Group differences are examined between variables of interest

Descriptive Statistics				
Condition	Conditions	Mean	Std. Deviation	N
VR condition	Heart Beat			
	Survey			
	Response			
2D condition	Heart Beat			
	Survey			
	Response			
Total	Heart Beat			
	Survey			
	Response			

Fig. 2 Examining standard deviations and means between groups

Dependent variable: Immersion, heart rate, and Response		
Between-Subjects Factors		
Conditions	Value label	N
Virtual reality	Heart Beat	
	Survey	
	Response	
2D media	Heart Beat	
	Survey	
	Response	

Fig. 3 Dependent variable sample size

Method

Measures

- An online survey was created and administered through Google Forms to asses their immersion
- As a measure of empathy, subjects were asked they'd like to volunteer for shifts at our Augsburg sponsored homeless shelter
- Phycological measure of heartbeat was used to assess emotional arousal

Procedure

- VR condition and our normal condition experience a 7 minute long piece of media relating to homelessness.
- Subjects will have their heart rates measure before, and immediately after the experiment ends.
- Our survey will be administered after they complete their heart rate is taken
- Before they leave, they'll be prompt with a rehearsed phrase asking them if they'd be interested in volunteering.

Discussion

The results show that VR technology stimulates empathy far more than conventional 2D forms of media. Subjects in our VR condition experienced greater levels of emotional arousal, felt that they were more immersed, and were more empathetic after. These finding indicate, that we can create experiences that accurately invoke particular behaviors which are more natural for observation without having to worry about cost and time.

Limitations

- Extensive risk mitigation and an adequate plan in case of a potential physical or psychological injury requires a complete laboratory setting to increase ecological validity and control.

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