

Eastern Kentucky University
Encompass

EKU Libraries Research Award for Undergraduates

2014

Projecting the self into a virtual world

Kevin S. Smith

Eastern Kentucky University, kevin_smith202@mymail.eku.edu

Follow this and additional works at: <http://encompass.eku.edu/ugra>

Recommended Citation

Smith, Kevin S., "Projecting the self into a virtual world" (2014). *EKU Libraries Research Award for Undergraduates*. 1.
<http://encompass.eku.edu/ugra/2014/2014/1>

This Event is brought to you for free and open access by the Student Scholarship at Encompass. It has been accepted for inclusion in EKU Libraries Research Award for Undergraduates by an authorized administrator of Encompass. For more information, please contact Linda.Sizemore@eku.edu.

Projecting the Self into Virtual Worlds

Kevin Smith

Eastern Kentucky University

Abstract

The purpose of the present study was to examine the effect of perspective-taking instructions (PTI) on (a) the tendency to project aspects of the self onto a video game character and (b) the degree “telepresence” within a virtual world. Perspective taking instructions encourage subjects to imagine themselves as a story character. It has been found in the past that PTI may cause an individual to merge identities with a story character in written stories (Goldstein & Cialdini, 2007) and films (Davis et al., 1996). This study replicated these findings using a video game. Male video gamers played a video game and completed character trait measures about themselves and about the game character. Subjects given perspective-taking instructions (PTI) had more overlap in the character traits ascribed to themselves and the character than did control subjects. PTI did not significantly impact telepresence. Positive and negative implications of these findings are discussed.

Projecting the Self into Virtual Worlds

Virtual world (VW) presence or “telepresence” is a widely studied concept in computer science research describing the human interaction with a VW. A VW can be defined as a psychologically inhabitable space within a technological environment (i.e. televisions, computers, head mounted displays, videogame consoles, etc.). Telepresence can be defined as immersion into a VW to the point the VW is experienced as reality, and there is a loss of awareness of stimuli outside the virtual environment. Telepresence was originally the focus of researchers in computer science who were concerned with creating highly “immersive”, high definition, and realistic video games and other technology (Slater, 2009; Slater & Wilbur, 1997; Minsky, 1980). Psychological researchers have become interested in telepresence and have measured it with emotions (Visch, Tan, & Molenaar, 2010) and spatial memory (Johnson & Adamo-Villani, 2010) and have looked at its relation to personality traits (Weibel, Wissmath, & Mast, 2010). Telepresence has also been said to be related to a flow experience which is the optimal state of an interaction where one becomes so attentive while completing a task that everything around the individual seems to disappear (Nah, Eschenbrenner, & DeWester, 2011).

Slater et al. (2006) showed just how strong telepresence can be. In a study where he and colleagues recreated Stanley Milgram’s (1963) controversial obedience to authority study where researchers instructed participants to administer shocks to another human being up to the point of serious injury and even death, participants showed significantly increased physiological responses in skin conductance level, skin conductance response, and heart rate when asked to similarly administer shocks to a virtually rendered avatar (a computerized representation of a prototypical human being). The authors then explain how telepresence could have been evident as the participants compliantly responded to the avatars request to speak more loudly when

prompted. Also, the participants showed signs of hesitation in administering shocks to the avatar when instructed possibly indicating that participants perceived the avatar as a real human being and hence apprehensive while inflicting pain.

It has been discovered that not only do certain properties of a technology allow more immersion into a VW and reduce the psychological connection to the external world but an added narrative can increase this feeling as well. Gorini, Capideville, De Leo, Mantovani, and Riva (2011) found that by adding a suspenseful narrative (i.e. revealing that a murderer was on the loose within the VW) to a highly immersive condition that the participants not only reported high levels of telepresence on a questionnaire but they also showed an increased heart rate on a biofeedback device after they encountered the murderer within the virtual environment. Taken together, these results may indicate a narrative's significance with an immersive technology.

Degree of violence and degree of frustration for gameplay may affect telepresence (Nowak, Kremar, & Farrar, 2008). By assigning participants to either a violent or non-violent game and they found that when the game was perceived as being violent the participants' telepresence increased. Also, they found that after becoming experienced with the game participants' frustration decreased leading to an increased telepresence. These results may be important when designing new studies that want to manipulate telepresence using videogames.

Merged Identities

Telepresence in a VW may be related to the phenomenon of "merged identities" that can occur both in an outside of the VW environment. Merged identity occurs when people either project their own traits onto a character in a narrative, or begin to define themselves with the given traits of a character from a narrative. Jerome and Jordan (2007) theorized that a mediated environment such as a VW may be a place where an individual will project self during a state of

telepresence. Klimmt, Hefner, Vorderer, Roth and Blake (2010) found that after participants played either a racing game or first person shooter game they responded to an Implicit Association Task in a manner that indicated implicit shifts in self-perception: they associated the word 'me' more with game-relevant words.

Perspective taking instructions (PTI) have been shown to affect the likelihood that people will merge identities with story characters. PTI is when someone is asked to imagine themselves as being the character they are seeing or reading about while imagining that they are in the same situation as that character. Goldstein and Cialdini (2007) found that participants given PTI before reading a narrative in which the character was the same gender reported that they possessed behavioral traits similar to the character in the narrative (i.e. being helpful). Further those participants, more than control participants, were willing to comply with a request to complete additional questionnaires that were not required.

Davis, Conklin, Smith, and Luce (1996) found similar results when they presented PTI to participants. However, instead of showing that PTI lead participants to take on behavioral traits of a character in a narrative, they showed that participants given PTI projected their own traits onto a story character of the same gender. Moreover, they found that PTI also caused greater attentiveness to a character while watching a narrative.

The Present Study

The present study went beyond previous research examining PTI's effects on self-perception. Also, it examined to see if PTI would also increase telepresence. Videogame characters are often only minimally defined, so it seemed that with PTI the results should mirror those of Davis et al. (1996) in which subjects see characters as possessing similar self-traits. Further, since PTI has been shown to cause greater attentiveness to a game character, these

instructions may therefore increase flow, an aspect of telepresence (Nah, Eschenbrenner, & DeWester, 2011).

Method

Participants

25 college students were recruited via an online experiment management system that provided a description of the present study. Restrictions for participation were that subjects must be 18 years or older, males, and experienced gamers. Participants were randomly assigned to one of two conditions, either one receiving PTI or another, alternative instructions.

Materials

A trait measure questionnaire (Loehlin, & Nichols, 1976) was given to evaluate participants' self-traits. Each question consisted of antonyms which served as anchors on each side of a numbered Likert-scale (e.g. Timid 1 2 3 4 5 Bold). This scale consisted of 30 items. Instructions for filling out the scale were listed at the top of the page. A copy of this form is provided under Appendix B.

An X-box game console with a standard wireless controller was used for game play. Hitman: Absolution was the chosen game for the study and it had a narrative backstory about the game character. The game console was connected to a 32 inch, Samsung, flat screen television and the game was played within a darkened room.

PTI was modified versions of those used by Davis et al. (1996) and Goldstein and Cialdini (2007). Alternative instructions were given to the control group and simply advised the participant to make themselves comfortable, pay close attention to the story, and that they could play the game with any style they choose. The PTI group was instructed in the same way but they were further advised that: "as you play and become comfortable with Agent 47 please

imagine how you yourself would feel if you were actually in the game as Agent 47. In your mind's eye, trade places with Agent 47 and play the game as if the missions were actually happening to you.”

A “game experience questionnaire” was used to assess both telepresence and the degree to which the subject projected their self traits onto the game character. The questionnaire also included filler items about the subjects’ evaluation of the game.

Telepresence questions were taken from Nowak and Biocca’s (2003) telepresence scale and an activity flow state scale (Payne, Jackson, Noh, & Stine-Morrow, 2011). These items were 20 Likert-type questions anchored with strongly disagree (1) and strongly agree (5) with such questions as: I performed automatically, without having to think about it and time felt like it sped up. Questions numbered 6 and 8 were reversed-scored. Question number 19 asked participants if they had ever played the game before.

Questions measuring self-projection were 30 items identical to the initial trait measure, but participants were asked to rate Agent 47 as they viewed him after game play. These questions were included in the game experience questionnaire as number 20. Items were in a different random order than the initial trait scale. The full test measure is listed under Appendix E.

Procedures

The participants showed up to the lab individually. They were shown to their chair with a folder waiting in front of them on top of the desk. After the participant was seated, the researcher introduced himself and told the individual that the present study would be assessing gamer personalities and looking at the types of games they enjoy. They were prompted when to take out each form from the folder. The folder was arranged as follows: consent form, gamer trait scale,

either perspective taking instructions or alternative instructions, and preliminary debriefing. The participant was then told to take out the form entitled consent form and follow along silently as the researcher read it aloud. After gaining consent the researcher told the participant to lay the form face down next to the folder. The participants were then reminded to take out their cell phones and place it on silent or turn it off and place it out of view. After this was complete, the participant was advised to take out the next form entitled gamer trait scale. Further, the participant was instructed to carefully read the instructions, take their time when answering, and answer to the best of their knowledge. Lastly, they were advised to lay down their pencil after completing the form and to place the page face down on top of the consent form.

The researcher then stated that he would perform a quick 10 minute demonstration of the game to show the participant how to progress through level one of the game silently until reaching the end of that level successfully. The game was then reset so the participant could start at the beginning of level 1 and hear the full narrative of the game's story.

After the game demonstration but before actual participant game play the researcher asked the participant to take out the next form from the folder and to follow along carefully as the researcher read the instructions aloud. This page was either the PTI or alternative instructions. Once the instructions had been read the researcher told the participants that he would now turn off the lights and that they could begin playing the game. They were also told that the experimenter would be right outside if they needed any assistance. No indication of gameplay time-limit was given to the participant nor did they ask.

After allowing the gamer 30 minutes of game play the researcher returned, turned on the lights, and asked the participant to please pause or quit playing the game. Some more than others had to be reminded twice to please put down the controller and stop playing, as if they could not

hear the researcher. The researcher then proceeded to ask that the participant take out the next form entitled video game experience. Again the participant was instructed to please read the instructions carefully, take their time when answering, and to answer to the best of their knowledge.

After the videogame experience form was completed the participant was told to please take out the next form entitled preliminary debriefing. The researcher read this aloud as they followed along silently. They were told that a full explanation of the study would be sent to them by the end of the semester. The researcher then thanked the participant for their participation in the study and stated that if they did not have any further questions or concerns that they were free to leave. Overall, each session took approximately 1 hour.

After the data was gathered, the researcher sent a final debriefing by email to each individual explaining the true nature of the study. Again they were told the specific hypotheses' of the study and encouraged to contact the researcher with any additional questions or concerns.

Results

Merged Identities

Each participant was scored by counting the number of traits to which subjects gave a similar rating for themselves and for the game character (ratings could only differ by 1 point). Furthermore, after analyzing the means of each group by using a t-test, a significant difference between the PTI and control group was found ($t(23) = 2.3, p < .05$).

Telepresence

The total scores for each participant were counted on the telepresence measure and means were compared between each group. However there was no significant change of reported

telepresence between PTI (M= 35.07) and control (M=36.83) groups. All data can be found in table one labeled under Appendix I. Implications and direction for future research will be discussed.

Discussion

PTI was found to cause participants to project self on to a video game character i.e. reporting themselves as being similar with the game character on self-reports. PTI was not shown to significantly affect telepresence. The overall results confirm previous findings which showed that PTI helped merge identities between a participant and a human character in a video (Davis, Conklin, Smith, and Luce, 1996) and a character in written texts' (Goldstein & Cialdini, 2007). This study extends this research by showing participants' identities could be merged with a videogame character. Lastly, these results support the theory that virtual environments are a place where individuals project self (Jerome & Jordan, 2007) and without the need of increased telepresence as previously thought.

Possible limitations of technology may have contributed to low construct validity on the telepresence measure. Similarly, limited game play time (30 minutes) may have been insufficient in eliciting a state of full telepresence. This is because time limit may have constrained proficiency in learning the game controls; furthermore this could have contributed to game frustration which has been shown to negatively affect telepresence (Nowak, Kremer, & Farrar, 2008).

Internal and construct validity was established by using variables and measures taken from previous studies and that have shown reliability in the past (Nowak & Biocca's, 2003; Payne, Jackson, Noh, & Stine-Morrow, 2011; Loehlin & Nichols, 1976). External validity was

established by finding significant difference between the PTI and the control groups on the merged identity measure but within an alternate context different from the original study environment.

Future research should focus on finding if other psychological processes can be projected or perceived within a VW. Specifically, one could look at the way an individual problem solves within a VW. Moreover, researchers should utilize virtual environments to construct and administer additional therapies that have been proven useful in pain management (Mühlberger, Wieser, Kenntner-Mabiala, Pauli, & Wiederhold, 2007), and in the treatment of some types of psychological disorders (Rothbaum, 2009).

The results of this study may also indicate a pathetic or anthromorphic fallacy of reasoning as found in other studies (Nowak, & Biocca, 2003) where an individual will attribute human characteristics to an inanimate object. The overall implications of PTI may reflect to the power of suggestion and be beneficial in future instances where one is trying to manipulate a state of empathy in a participant. Empathy has been concluded to be one's ability to take the perspective of another (Arizmendi, 2011). Theoretically, PTI may make group therapy more appealing to clients by helping evoking a state of empathy i.e. if the listener successfully merges identities with a target to the point they can relate (e.g. a member of AA who is skeptical of talking in a group or listening to others).

Is interesting how individuals socially perceive others as being like themselves (Davis, Conklin, Smith, & Luce, 1996) and vice versa (e.g. once emulating or modeling another self) (Goldstein, & Cialdini, 2007) when instructed to do so. It would be interesting to find other studies utilize virtual worlds as safe research environments to conduct ethically, what could not be controlled for before by using real-life conditions.

References

- Arizmendi, T. G. (2011). Linking mechanisms: Emotional contagion, empathy, and imagery. *Psychoanalytic Psychology, 28*(3), 405-419.
- Davis, M. H., Conklin, L., Smith, A., and Luce, C. (1996). Effect of perspective taking on the cognitive representation of person: A merging of self and other. *Journal of Personality and Social Psychology, 70*, 713–726.
- Goldstein, N. J., and Cialdini, R. B. (2007). The spyglass self: A model of vicarious self-perception. *Journal of Personality and Social Psychology, 92*(3), 402-417.
- Gorini, A., Capideville, C. S., De Leo, G., Mantovani, F., and Riva, G. (2011). The role of immersion and narrative in mediated presence: The virtual hospital experience. *Cyberpsychology, Behavior & Social Networking, 14*(3), 99-105.
- Jerome, L. W., and Jordan, P. J. (2007). Psychophysiological perspective on presence: The implications of mediated environments on relationships, behavioral health and social construction. *Psychological Services, 4*(2), 75-84.
- Johnson, E., and Adamo-Villani, N. (2010). A study of the effects of immersion on short-term spatial memory. *World Academy of Science, Engineering & Technology, 71*, 582-587.
- Klimmt, C., Hefner, D., Vorderer, P., Roth, C., and Blake, C. (2010). Identification with video game characters as automatic shift of self-perceptions. *Media Psychology, 13*(4), 323-338.
- Loehlin, J. C., and Nichols, R. C. (1976). *Heredity, environment, and personality: A study of 850 sets of twins*. Austin: University of Texas Press.
- Minsky, M. (1980). Telepresence. *Omni 45*–52.
- Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology, 67*, 371–378.

Mühlberger, A., Wieser, M. J., Kenntner-Mabiala, R., Pauli, P., and Wiederhold, B. K. (2007).

Pain modulation during drives through cold and hot virtual environments.

Cyberpsychology & Behavior, 10(4), 516-522.

Nah, F., Eschenbrenner, B., and DeWester, D. (2011). Enhancing brand equity through flow and telepresence: A comparison of 2D and 3D virtual worlds. *MIS Quarterly, 35(3), 731-A19.*

Nowak, K. L., and Biocca, F. (2003). The effect of the agency and anthropomorphism on users' sense of telepresence, copresence, and social presence in virtual environments. *Presence: Teleoperators & Virtual Environments, 12(5), 481-494.*

Nowak, K. L., Krcmar, M., and Farrar, K. M. (2008). The Causes and Consequences of Presence: Considering the Influence of Violent Video Games on Presence and Aggression. *Presence: Teleoperators & Virtual Environments, 17(3), 256-268.*

Payne, B. R., Jackson, J. J., Noh, S. R., and Stine-Morrow, E. A. L. (2011). Activity Flow State Scale. Retrieved from PsycTESTS.

Rothbaum, B. (2009). Using virtual reality to help our patients in the real world. *Depression & Anxiety (1091-4269), 26(3), 209-211.*

Slater, M. (2009). Place illusion and plausibility can lead to realistic behaviour in immersive virtual environments. *Philosophical Transactions of The Royal Society B: Biological Sciences, 364(1535), 3549-3557.*

Slater, M., Antley, A., Davison, A., Swapp, D., Guger, C., Barker, C., and Sanchez-Vives, M. (2006). A virtual reprise of the Stanley Milgram obedience experiments. *Plos One, 1e39.*

Slater, M., and Wilbur, S. (1997). A framework for immersive virtual environments (FIVE). *Presence: Teleoperators & Virtual Environments, 6(6), 603.*

Visch, V. T., Tan, S. S., and Molenaar, D. (2010). The emotional and cognitive effect of immersion in film viewing. *Cognition & Emotion*, 24(8), 1439-1445.

Weibel, D., Wissmath, B., and Mast, F. W. (2010). Immersion in mediated environments: The role of personality traits. *Cyberpsychology, Behavior & Social Networking*, 13(3), 251-256.

Mean Level Differences between PTI and Control Groups on Both Dependent Measures: Merged Identities and Telepresence

Group	PTI		Control	
	M	SD	M	SD
Merged identities	20.53	3.4	17.66	2.7
Telepresence	35.07	6.07	36.83	3.83

Email Kevin Smith for the studies appendices: kevin_smith202@mymail.eku.edu

