



The effects of dissociation, game controllers, and 3D versus 2D on presence and enjoyment



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ABSTRACT

Dissociative experiences create a feeling of being outside one's own body. Oftentimes, people experiencing these states claim to be off in another place and find they are losing time. Gamers who experience a high level of presence with their games echo these sorts of claims. A gaming experiment was conducted to determine if those people scoring high in having dissociative episodes experience presence more so than those scoring low in having dissociative episodes. The experiment also manipulated the variables of controller type (steering wheel versus traditional controller) and stereoscopic dimension (2D versus 3D) to determine if they interacted with ratings of dissociative episodes. Enjoyment of the game, which has been theoretically linked to presence, was also measured. After 146 participants played a racing game under the different manipulated conditions, the study confirmed that dissociation was highly related to sense of presence in a game and enjoyment. Playing the game with a steering wheel, as opposed to traditional controller, also created a greater sense of presence and enjoyment. 3D, as opposed to 2D, did not impact sense of presence or enjoyment. No interactions among the three variables occurred.

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1. Introduction

A quick look through recent journals dedicated to media psychology, as well as human–computer interaction, will show that the scholarship on presence is richly vibrant. While various, and sometimes conflicting, definitions of presence are still being argued, much of the research is conducted by testing antecedents in the achievement of presence. Many of these studies have recently focused on presence as achieved through home gaming systems. Some facet of the playing experience will be manipulated to investigate the impact of presence and enjoyment. Some studies investigate how skill level or experience in gaming impacts feelings of presence and enjoyment; but fewer focus on personality traits of the player and how those aspects impact presence and enjoyment when playing a home video game. The current study specifically investigates how a player's self-rated dissociative trait interacts with the playing experience to possibly elicit both presence and enjoyment with the game.

1.1. Presence

Various definitions of presence have been proposed. In short, presence is the feeling of being located within a mediated

environment. Lee defines presence as a “psychological state in which virtual objects are experienced as actual objects in either sensory or nonsensory ways” (2004, p. 27). Steuer (1992) defines it as the extent to which one feels located in the mediated environment as opposed to the actual physical environment. The International Society of Presence Research more comprehensively defines it as a “psychological state or subjective perception in which even though part or all of an individual's current experience is generated by and/or filtered through human-made technology, part or all of the individual's perception fails to accurately acknowledge the role of the technology in the experience” (International Society for Presence Research, 2000, paragraph 2). The ISPR website also mentions that presence is a multi-dimensional concept with scholars arguing that the different types should be separated into those that pertain to perceptions of physical environments, those that pertain to perceptions of social interaction, and those that deal with both of these. The current study deals with perceptions of the physical environment, and particularly with the concept of spatial presence.

Much of the current scholarship being produced on the concept of presence has examined the construct of spatial presence. Sacau, Laarni, and Hartmann (2008) define spatial presence as “the subjective experience of a user or onlooker as being physically located in a mediated space” (p. 2256). Lombard and Ditton (1997) define spatial presence as a type of perceptual illusion that tricks the user into thinking the environment is non-mediated. While there still exists the belief that spatial presence does depend on technology

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factors, the evolution of the concept of presence to today's concept of spatial presence has growingly placed more emphasis on subjective psychological factors.

Three factors are thought to be important when inducing presence: characteristics of media form, characteristics of media content, and characteristics of the media user (Lombard & Ditton, 1997). Characteristics of media form include aspects such as screen size, viewing angle, sound, and screen resolution. Changes in these aspects have been known to influence psychological effects (Skalski & Whitbred, 2010). Characteristics of media content include the objects, actors, and events portrayed by the mediated environment. Thomson, Goldiez, and Le (2009) suggest factors in the mediated environment such as social realism, quality of writing, quality of acting, physical appearance of actors, and the nature of the task or activity in the environment could influence feelings of presence.

In noting that characteristics of the user are important in inducing presence, there is an awareness that technology alone is not sufficient to create a sense of "being there." As Schubert, Friedman, and Regenbrecht (2001) state: "Stimuli from a VE (virtual environment) are only the raw material for the mind that constructs a mental picture of a surrounding world, instead of a mental picture of pixels on the display in front of the eyes" (p. 267). Past research has investigated the relationship between personal factors and presence. Sas and O'Hare (2003) found a significant relationship between presence scores and level of creative imagination as well as presence and empathy. Laarni, Ravaja, Saari, and Hartmann (2004) conducted an experiment which revealed that extraversion, impulsivity, and self-transcendence affected sense of presence when viewing a multimedia presentation. Weibel, Wissmath, and Mast (2010) showed that personality traits belonging to the Big Five (especially high openness to experience, neuroticism, and extraversion) are related to feeling immersed in a virtual environment. In short, presence is an experience in which content is not only mediated through technology but also processed and interpreted in relation to the user's own psychological traits and states.

1.2. Enjoyment as an aspect of presence

In the process of being transported into and interacting with another environment, enjoyment can result from such immersion (Green, Brock, & Kaufman, 2004). Sherry (2004) states that media enjoyment is a result of a flow experience where media content and the user's ability to interpret that content balances. Weibel, Wissmath, and Mast (2011) found that when given an immersive narrative text, participants with keen imagery abilities experienced both presence and enjoyment. Recent work has also argued that feelings of control impact both a flow experience and enjoyment within a video game environment. Sense of control acted as a mediator between console type (PS2 versus Wii) and enjoyment when participants were allowed to play a football video game (Limperos, Schmierbach, Kegerise, & Dardis, 2011). Feelings of spatial presence have also been shown to predict enjoyment. A regression analysis indicated that those participants who felt more spatial presence when playing a tennis game on the Wii also felt more enjoyment with the game (McGloin, Farrar, & Krcmar, 2011). There are conflicting results as well, however. Researchers found that spatial presence did not predict enjoyment when participants played a golf game on either a Wii or PS2 (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011). Schmierbach, Limperos, and Woolley (2012) found that presence did not directly lead to enjoyment when participants were asked to play a racing video game. Given such inconsistencies, more work investigating the relationship between presence and enjoyment is needed.

1.3. Focus of the current study

The current study seeks to continue investigating the dependent variables of spatial presence and enjoyment in relation to the field of home video gaming. Specifically, an experiment is devised in which a user variable in addition to media form variables will be allowed to influence presence and enjoyment. Past work has focused on the interplay of individual abilities and personality on sense of presence (Aardema, O'Connor, Côté, & Taillon, 2010; Alsina-Jurnet & Gutiérrez-Maldonado, 2010; Murray, Fox, & Pettifer, 2007) but no study has looked at dissociation and how it impacts home gaming. In particular, the current experiment will focus on an individual's level of dissociative experiences and how that influences both presence and enjoyment when playing a home video game.

In terms of media form variables, the type of game controller will be varied as well as the perception of movement of the objects within the game. Perception of movement will be adjusted by having players view the game in either 2D or 3D (a variable which this study labels as *dimension*). While studies investigating the impact game controller type has had on presence and/or enjoyment have been conducted (Limperos et al., 2011; McGloin et al., 2011; Skalski et al., 2011), no home video game studies incorporating the impact of 3D on presence and enjoyment, or its interaction with controller type, are known. Possible interactions between dissociation, controller type, and dimension of game play will be explored.

1.4. Dissociation, spatial presence, and enjoyment

Dissociation, sometimes also known as depersonalization disorder, can lead to "a sense of detachment and unreality toward oneself or the external world" (Aardema, O'Connor, Côté, & Taillon, 2010, p. 429). A feeling of dissociation can range on a spectrum from normal, everyday experiences that most people have to chronic, clinical manifestations. It is believed that some sort of dissociative experience is normal in most populations (Trueman, 1984).

Aardema, O'Connor, Côté, and Taillon (2010) suggest that one's tendency to become absorbed into one's own imagination can give rise to feelings of dissociation. Absorption is a state of "openness to experiencing, in the sense of readiness to undergo whatever experiential events, sensory or imaginal, that may occur, with a tendency to dwell on, rather than go beyond, the experiences themselves and the objects they represent" (Tellegen, 1981, p. 222). Glicksohn and Avnon (1997) analyzed the relationship between absorption and the experience of altered states of consciousness (ASC). Results suggested that such a link did exist and that one's ability to become absorbed is a predisposing factor to experiencing an ASC. These altered states could give rise to a dissociative feeling of being immersed in another environment. Sacau et al. (2008) explain that absorption allows a user to more easily suspend their disbelief regarding the virtual environment and therefore forget the real one. This loss of oneself into the mediated world to the detriment of the real world is a key factor when inducing presence.

Past work by Wirth, Hofer, and Schramm (2012) has looked at the relationship between absorption and presence in a virtual environment. Participants stood in front of a 6.6 by 9.8 foot screen and navigated through the environment using a keyboard and mouse. Those participants who scored high in trait absorption had a higher sense of presence in the environment than those who scored low in trait absorption. The authors' conclusions stated that further study was needed in relation to the differing components of absorption and that future replications could include the study of game controller type. The current study follows those recommendations

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