The Contributions of Perceived Graphic and Enactive Realism to Enjoyment and Engagement in Active Video Games

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ABSTRACT
How perceived realism in a video game contributes to game enjoyment and engagement is a theoretically important and practically significant question. The conceptualization and operationalization of perceived realism in previous video game studies vary greatly, particularly regarding the dimensions of perceived graphic realism and perceived external realism. The authors argue that it is important to examine perceived enactive realism, particularly for interactive and participatory media such as video games. This study examines the contribution of two types of perceived realism—perceived graphic realism and perceived enactive realism—to enjoyment and engagement as manifested by the level of physical movement intensity in an active video game playing context. It was found that perceived enactive realism was a significant predictor of enjoyment and engagement in playing active video games. However, perceived graphic realism was not found to be a significant predictor of enjoyment or engagement. Theoretical and practical implications are discussed.

Keywords: Active Video Games, Effort, Enactive Realism, Enjoyment, Graphic Realism, Media Psychology, Perceived Realism, Wii Boxing

INTRODUCTION
Perceived realism has been found to be an important factor contributing to game experiences (Shapiro, Peña-Herborn, & Hancock, 2006; Wood, Griffiths, Chappell, & Davies, 2004), including aggressive outcomes (Jeong, Biocca, & Bohil, 2012), attitude (Barlett & Rodeheffer, 2009), attention, and retention (Krcmar, Farrar, & McGlone, 2011). Current studies have addressed this construct using an empirical approach and have not presented a consistent theoretical model illustrating the mechanism of perceived realism in game experiences. Overall,

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the existing evidence indicates that perceived realism enhances the experience of subsequent emotions, such as greater aggression (Barlett & Rodeheffer, 2009) and higher degrees of attention (Krcmar et al., 2011). However, the conceptualization and operationalization of perceived realism in previous video game studies vary greatly. A majority of previous studies focus on graphic realism in video games (Barlett, Rodeheffer, Baldassaro, Hinkin, & Harris, 2008; Ivory & Kalyanaraman, 2007; Krcmar, Farrar, & McGloin, 2011). This dimension of realism mainly addresses whether video game graphics are realistic or “lifelike” because video game visuals are computer rendered. In the video game context, only a few studies have examined graphic realism, and most of them have focused on the effects of graphical or sensory realism on players’ aggression. In one study, graphic realism led to higher levels of attention, retention, and aggressive outcomes, including physical aggression intentions and verbal aggression (Krcmar et al., 2011). In another study (Jeong et al., 2012), realistic blood color (red over blue) resulted in higher levels of physiological arousal, spatial presence, and state aggression. We are aware of only one study finding that perceived graphic realism is a significant predictor of enjoyment (McGloin, Farrar, & Krcmar, 2011).

Another conceptualization of realism in video games focuses on the inferential and imaginative dimension of realism—the extent to which the events, characters, and environment in video games are plausible, accurate, and typical and could actually be happening in real life (Anderson et al., 2004; Barlett & Rodeheffer, 2009; Shapiro et al., 2006). We term this type of realism external realism in the present study following Busselle and Bilandzic (2008). This dimension of realism is derived from previous research on realism in non-interactive media, such as books and television (Busselle & Greenberg, 2000; Hall, 2003; Potter, 1998; Shapiro & Chock, 2003). Research on non-interactive media has consistently found that external realism is a significant predictor of media enjoyment (Potter, 1988; Shapiro & Chock, 2003). In the context of video games, Barlett and Rodeheffer (2009) defined external realism as “the probability of seeing an event in real life” (p.213) and found that playing a more realistic violent game resulted in greater levels of aggressive feelings and arousal.

Beyond these two types of realism, we propose that one important dimension of realism—enactive realism—should also be examined given that video games are interactive and participatory by nature. Enactive realism in video games is defined as the player’s interaction with the game via the interface and controller as well as the player’s interaction with other characters in the game that makes the player feel as if he or she is actually participating and acting out in the mediated environment. Enactive realism is conceptually a different construct from presence, which indicates a perception of “being there” in the game. Enactive realism focuses on the naturalness and intuitive mapping of game action and a player’s control through the game interface and controllers. For example, compared with previous video games using hand-held controllers, the motion-sensing design of current active video games and exercise games allows players to intuitively swing their arms to hit a tennis ball or to literally run in the game. Scarce evidence in recent studies (Skalski, Tamborini, Shelton, Buncher, & Lindmark, 2011) indicates that the natural mapping and intuitive sensory perspective (Jeong et al., 2012) as well as the interface contributes to stronger emotional responses. We thus argue that these contextual cues are indicators of the construct that we proposed here, enactive realism.

In this study, we focus on examining the effects of graphic and enactive realism because these two dimensions were two important mechanisms in video games. Compared with these two dimensions, external realism has been deeply rooted in all forms of entertainment, including non-interactive and interactive media, and studies have shown a similar effect in video games relative to the effects in non-interactive media (Barlett & Rodeheffer, 2009).
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