Computers in Human Behavior 48 (2015) 219–225

Contents lists available at ScienceDirect

Computers in Human Behavior

journal homepage: www.elsevier.com/locate/comphumbeh

Too good to care: The effect of skill on hostility and aggression following violent video game play

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ARTICLE INFO

Article history:

Keywords:
Video games
Aggression
Hostility
Flow
Construal level theory

ABSTRACT

An experiment tested if higher skilled players would experience diminished aggression related outcomes compared to lower skilled players due to flow state optimization. Specifically, the study observed if higher flow states made narrative-defined game goals more salient, thus reducing focus on the more peripheral violent content. After controlling for the amount, type, and context of violence, higher skilled players experienced lower levels of hostility and aggression related cognitions and greater levels of flow than lower skilled players. Additionally, skill altered players' perceptions as well, as higher skilled players experienced higher construal levels and perceived less violence than lower skilled players.

1. Introduction

It took only three days in September of 2013 for *Grand Theft Auto* to earn $1 billion in sales, making it the fastest entertainment property in history to reach that milestone (Peckham, September 20, 2013). Although *Grand Theft Auto* may be an outlier, video games in general are a commanding entertainment medium, often outselling other media products (ERA, 2013) and garnering a great deal of use (Takahashi, 2010). Nevertheless, the violent content often featured in video games (see Smith, Lachlan, & Tamborini, 2003) has caused some to investigate its effect on aggression and related constructs (e.g., hostility, hostile attribution bias, etc.). As a result, a prominent debate has formed on the topic. One group of researchers (see Anderson et al., 2010) provides evidence suggesting that video game violence increases players' levels of aggression and related constructs. Another group (see Ferguson & Kilburn, 2010) suggests that violent video games exhibit a null effect on aggression and may even lead to positive effects.

This scientific schism implies that the phenomena at hand may be more complicated than the presence or absence of violent content. Indeed, some research has identified a number of content characteristics and individual differences that moderate and mediate the effect of game violence (e.g., Hartmann & Vorderer, 2010; Krcmar & Farrar, 2009). Despite these inquiries, research that accounts for differences between players is minimal (Weber, Behr, Tamborini, Ritterfeld, & Mathiak, 2009). To address this deficiency and to explore the effect of violence on aggression further, the current study investigates player skill level as another individual difference of interest.

2. Literature review

2.1. Video game violence

Across time, genre, and content rating, content analyses reveal that the vast majority of video games contain violent content (Dietz, 1998; Haninger & Thompson, 2004; Thompson & Haninger, 2001). For example, Braun and Giroux (1989), at the genesis of this vein of research, found that 75% of the arcade games they sampled contained violence. A more recent study by Smith et al. (2003) that sampled popular console video games found that about 74% of titles (averaged across content rating) contained violence. Although one could argue that the loose definitions of violence some of these studies use may inflate the prevalence of violence to a degree, it is clear that game developers often employ violence as a vehicle for entertainment.

The commonness of violent content among video games has prompted a litany of research centered upon potential effects. The results of these academic endeavors are perplexing, as conclusions appear to contradict one another. One body of research suggests that video game violence causes a consistent adverse effect on users' levels of aggression and other related constructs such as hostility and arousal (e.g., Arriaga, Esteves, Carneiro, & Monteiro, 2006; Bushman & Huesmann, 2006; Lynch, Gentile, Olson, & van Brederode, 2001). Although the outcome appears to be consistent, a meta-analysis by Anderson et al. (2010) shows that

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http://dx.doi.org/10.1016/j.chb.2015.01.059
0747-5632/

the average effect size is small, $r^2 = .023$. Despite these findings, another body of research suggests that the link between video game violence and aggression does not exist (e.g., Adachi & Willoughby, 2011; Ballard, Visser, & Jocoy, 2012; Valadez & Ferguson, 2012). Furthermore, Ferguson (2007) contends that publication bias, poor measures, and/or the omission of control variables cause many studies linking game violence and aggression to report inflated effects sizes.

Overall, despite the explosion of research, the literature often leaves researchers interested in the effects of game violence with more questions than answers. Why does the literature appear incongruent? Rather than being a product of chance or error, these baffling discrepancies may be the result of unaccounted variables revolving around individual differences.

2.2. Individual differences and skill

Research on video game content characteristics and individual differences in relation to aggression show that "content isn't king". The non-linear, interactive nature of video games encourages a multitude of play styles and creative solutions to game challenges. Specifically, existing work has identified a number of individual differences pertaining to violent content. For example, Lachlan and Maloney (2008) observed how trait personality differences affected presence in violent video games. The authors found that players' trait anger and empathy positively correlated with gun violence. In contrast, those with higher trait telepresence tendencies performed less gun violence than those with lower telepresence tendencies.

Trait personality differences aside, one of the most noteworthy individual differences related to video games is player skill, as it greatly affects the content players generate and their overall experience (Matthews & Weaver, 2013; Smith, 2006; Weber et al., 2009). Although skill affects human interaction with a number of technologies (e.g., internet use; van Deursen & van Dijk, 2009), its relationship to video games appears unique. Unlike other media, games *require* a certain level of mastery to progress. Indeed, overtly punishing failure is a common game mechanic.

Research exploring skill's effect on human's processing and effects of video games is uncommon. Nevertheless, the results from correlational and experimental research yield a number of curious findings. Using Bracken and Skalski's (2009) Game Playing Skill scale (GaPS), Skalski, Tamborini, Shelton, Buncher, and Lindmark (2011) found that skill positively predicted spatial presence when playing video games. Additional studies show that skill is positively related with presence and (indirectly) hostility (Nowak, Krcmar, & Farrar, 2008) and negatively related to frustration (Chumbley & Griffiths, 2006). Observing massively multiplayer online game players, Schrader and McCreery (2008) found that low skilled players relied heavily on trial and error during enemy engagements. In contrast, high skilled players performed more problem solving and information gathering due, in part, to their greater game-related knowledge and technical skills. Analyzing the gameplay content from players of all skill levels, Matthews and Weaver (2013) reported that higher skilled players experienced more acts of violence, were more often the perpetrators rather than the targets of violence, saw more graphic violence, and experienced more on-screen and up-close violence.

Another body of evidence exists observing how particular cognitive skills (e.g., 3D mental rotation, targeting, etc.) affect game behavior and experiential outcomes. Specifically, Huh, Rosaen, Sherry, and Bowman (2006) show that performance at each analog test predicts performance in corresponding video games (e.g., targeting and performance at first-person shooter games) and flow during game play (Huh et al., 2006). Additionally, for those with higher cognitive skills, having an audience increases game performance for less challenging games (Bowman & Tamborini, 2008).

In sum, the extant literature on player skill reveals a multitude of implications for games research. However, little (if any) work has observed how skill affects the processing and effects of violent content. This area of inquiry may be illuminating, as skill appears to have a robust relationship with variables commonly featured in violence research. In particular, Csikszentmihalyi's theory of flow (1990) provides compelling predictions due to its reliance on skill.

2.2.1. Skill, flow, and narrative

Essentially, flow is an autotelic (i.e., self-motivating) experience people seek when attempting to fulfill a goal. Flow is an optimal balance between skill and challenge characterized by intense focus, temporal distortion, loss of a reflective self-consciousness, and a number of other related experiences (Sherry, 2004). Thus, although flow has the ability to alter one's experience, the careful balance it demands makes it difficult to achieve. Related to video games, it is likely that flow may be an ephemeral state as well, especially when a player's skill is incongruent with a game's challenge. However, it is likely that higher skilled players could apply particular skills across an array of game types—thus resulting in more flow states. This reasoning drives the following hypothesis:

H1. Higher skilled players will experience greater flow than lower skilled players.

For those who enter a flow state, the experience alters perceptions in notable ways. As Sherry (2004) explains, media-induced flow can induce powerful emotions and allow people to temporarily ignore their surroundings in the pursuit of seeing a movie's resolution or conquering the next level in a video game. This hypnotic state motivates/biases users to process goal-relevant information. Because video games are heavily goal-driven, being in a flow state likely alters how players perceive information peripheral to narrative-defined game goals. Existing work on narrative reveals its ability to moderate many effects. For example, Hartmann and Vorderer (2010) found that minute narrative tweaks reduced player's guilt and negative affect after playing a violent video game. Additionally, narrative—compared to the absence of narrative—increases arousal, presence, identification with player characters (Schneider, Lang, Shin, & Bradley, 2004), and enjoyment (Lee, Park, Jin, & Kang, 2005). To extend this body of literature, the current paper explores the intersection between narrative, flow, and skill. It is likely that violent game content is peripheral to game narrative, as the narrative often identifies and contextualizes goals. Based on this assumption, players in a flow state may experience reduced aggression-related outcomes following game play. However, player skill predicates both of these assumptions. This logic drives the following predictions:

H2. Higher skilled players will experience less hostility than lower skilled players.

H3. Higher skilled players will experience less aggression related cognitions than lower skilled players.

Despite predictions related to flow, the frustration-aggression hypothesis (Dollard, Doob, Miller, Mowrer, & Sears, 1939) may be able to explain the relationship between these variables. Explained briefly, this perspective holds that frustration always leads to aggression in some form. Berkowitz (1989) reformulated the relationship by arguing that frustration causes negative affect that may lead to aggression. Thus, the frustration-aggression hypothesis would predict that lower skilled players may experience greater levels of frustration due to interference of goal attainment (e.g.,