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The influence of solitary and cooperative violent video game play on aggressive and prosocial behavior



Jessica M. Jerabeck a, Christopher J. Ferguson b,*

- ^a Department of Psychology and Communication, TX A&M International University, 5201 University Boulevard, Laredo, TX 78041, United States
- ^b Department of Psychology, Stetson University, 421 N. Woodland Blvd., DeLand, FL 32729, United States

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ABSTRACT

Research examining the issue of video game violence influences on aggression continues to be debated within the scientific community. Thus far, no consensus has been reached regarding the influence of such games. This study adds to the prior literature by examining how violent video games may promote prosocial or aggressive behavior when played either cooperatively or alone. Results indicated that violent content in video games had no influence on prosocial behavior, aggressive behavior, or self-perceptions of empathy. Playing cooperatively was associated with less aggressive behavior, whether games were violent or not.

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1. Introduction

A heavily debated topic within psychological research continues to be the assumed negative effects that violent media, particularly violent video games, has on behavior. Even more specifically, debate remains how violent video games may affect aggression and prosocial behavior. The current article investigates the possibility that prosocial thoughts and behaviors could be influenced by playing violent video games through the facilitation of cooperative team play.

Over the past few decades, video games have become one of the largest and most popular industries, making over \$20 billion in sales and reaching over 90% of American children (Lenhart et al., 2008; Olson et al., 2007). However, their popularity has been associated with social problems relevant to youth (e.g. American Academy of Pediatrics, 2009; American Psychological Association., 2005; AAP and APA respectively). Although groups such as the AAP and APA have released position statements expressing concern about potentially harmful violent game effects, some scholars (e.g. Kutner & Olson, 2008) argue they have become a scapegoat for societal problems despite relative lack of evidence for harm and that this tendency has become endemic not only in the general public but also scholarly community (Grimes, Anderson, & Bergen, 2008; Hall, Day, & Hall, 2011a).

E-mail address: CJFerguson1111@aol.com (C.J. Ferguson).

${\bf 2.\,Limitations\,and\,issues\,of\,current\,violent\,video\,game\,research}$

The recent Brown v. Entertainment Merchants Association (EMA) ruling (2011) made by the US Supreme Court, in which the majority decision expressed criticisms of current video game research (although minority decisions of other justices were more credulous) has resulted in calls for a more critical look into the state of video game research (e.g. Ferguson, 2013; Hall, Day, & Hall, 2011b). The ruling struck down a California law banning the sale of certain violent video games to children.

The Supreme Court ruling has sparked a much needed, more critical look into the field of video game research by calling attention to some significant weaknesses that have been endemic to the media violence field for decades (Freedman, 2002; Grimes et al., 2008; Kutner & Olson, 2008). One such limitation exists within the homogeneous nature of both violent and nonviolent video games. More specifically, much violent video game research fails to equate the violent and nonviolent games on other dimensions that may be related to aggression, such as competitiveness (Adachi & Willoughby, 2011a,b). Because of this, they have not controlled for other extraneous variables, and so cannot claim pure causation.

3. Measuring aggressive behavior

Despite the continuing controversy and large number of research studies, there has been a lack of strong systematic research. Griffiths (1999) reviewed the empirical studies and the various research methodologies used in this area of research. He argued that all the published studies on video game violence have methodological problems and that they only include possible

^{*} Corresponding author. Address: Department of Psychology, Stetson University, 421 N. Woodland Blvd., DeLand, FL 32729, United States. Tel.: +1 (956) 326 2636; fax: +1 (956) 326 2474.

short-term measures of aggressive consequences. This same argument was repeated twelve years later by the US Supreme Court in Brown v EMA (2011) suggesting a fundamental lack of progress in this area (see also Ferguson, 2013).

Another limitation related to this lies within the actual method of measurement for aggression in many studies (Adachi & Willoughby, 2011a,b). The Taylor Competitive Reaction Time Test (TCRTT) is used extensively throughout violent video game research despite increasing evidence that suggests its validity and utility is in question (Ferguson & Rueda, 2009). During administration of the TCRTT, a participant is told that he or she is competing with another participant, who in fact does not exist, to see who can push a button faster upon the appearance of a cue. After each trial the loser receives an aversive punishment, such as a loud noise blast, and the winner chooses the intensity of this punishment. The level of punishment intensity is indicative of aggressive behavior. Some scholars argue for the validity of this measure (e.g. Anderson, Lindsay, & Bushman, 1999; Giancola & Parrott, 2008) although it has also been controversial.

Adachi and Willoughby (2011a,b) point out three main problems with this measure. First, the motivation to behave aggressively is ambiguous as it is unclear whether participants view their behavior as aggressive or just as competing in a competitive game. Second, studies employing the modified TCRTT have not measured aggression uniformly, so it is difficult to compare and build upon previous research (Ferguson, 2013). This problem of unstandardization means that, in effect, researchers could select outcomes that support their hypotheses and ignore those that do not (even acting in good faith, see Simmons, Nelson, & Simonsohn, 2011 for discussion of methodological flexibility problems in psychological research). Ferguson and Kilburn (2009) found that studies using this measure tend to have spuriously high effect sizes relative to standardized, better validated measures. Third, the modified TCRTT has been shown to lack validity as a measure of aggressive behavior. When Ferguson and Rueda (2009) examined the convergent validity of the modified TCRTT, they found that neither intensity nor duration were related to trait aggression, domestic violence, nor violent criminal acts. Past attempts to "validate" the TCRTT have mainly relied on intercorrelations between social psychological measures, rather than predictive validity studies or convergence with well-validated clinical measures.

Given the weaknesses of the TCRTT, some recent studies employed a newer, and potentially more valid method of measurement for aggression: the Hot Sauce Paradigm (Adachi & Willoughby, 2011a,b). This measure involves informing participants that they are to create a hot sauce for a confederate to eat. The level and amount of sauce given is then seen indicative of aggressive behavior (Lieberman, Solomon, Greenberg, & McGregor, 1999).

4. Competition and cooperation

4.1. Competition, and motivations for video game play

One of the main concerns of violent video game research is the question of whether individual studies are actually measuring aggression, or rather, whether they are measuring competitiveness. According to a study done by Anderson and Morrow (1995), competition produces more aggressive thoughts than cooperation, and it is likely that video game competitiveness influences aggressive thoughts. Zhang, Liu, Wang, and Piao (2010) found that competition, as well as violent content, increased aggressive cognition and aggressive behavior. More recently, Adachi and Willoughby (2011a,b) using more careful matching of video game conditions found that competitiveness, but not violent content, was associated with increased aggression.

Along those lines, another direction in video game research looks at the emotional benefits of video game play, particularly in males. Jansz (2005) proposes a theoretical explanation for the continuous rise in popularity of violent video games in terms of their emotional appeal, particularly for adolescent male gamers. It is argued that the violent video game provides a safe place to experience a various array of emotions that may or may not be accepted wholly accepted by society. For example, the violent video game can evoke emotions inherent of both the dominant male identity (anger, aggression, etc.), as well as those at odds with that masculinity (fear, empathy, etc.). Because it is just a game, adolescent males are free to feel without discrimination, providing them with a valuable outlet for stable identity development.

As well as benefiting the individual, research has also found that video games, even violent games, can be useful in improving social ability and promoting prosocial behavior. Prosocial behavior is defined as voluntary behavior intended to benefit another (Eisenberg & Fabes, 1990). This line of video game research emphasizes the importance of context, not just content, when evaluating the effects video games on behavior. Lucas and Sherry (2004) looked into the interpersonal appeal of violent video games comparing both males and females. They found that males, more often than females, used video games as a communication tool to satisfy their social needs for inclusion, affection, and control. Jansz and Martens (2005) investigated the appeal of playing digital interactive games at a local area network (LAN) event. They found that the players were most highly motivated by social motives, followed by competition and interest. Past studies have differed whether violent video games contribute to or detract from prosocial behavior (e.g. Ferguson & Garza, 2011; Saleem, Anderson, & Gentile, 2012), although given many violent games include prosocial content, it may be difficult to differentiate them fully.

4.2. Empathy

Other constructs may also account for the effect of cooperative video game play on cooperative behavior. For example, it has been shown that empathy, the ability to take the emotional perspective of others, is an important precursor in the development of cooperative behavior in social dilemmas (Batson & Ahmad, 2001; Batson & Moran, 1999; Rumble, Van Lange, & Parks, 2010; Van Lange, 2008). Empathy has also been shown to be evoked by prosocial media exposure and to elicit helping behavior (Greitemeyer & Osswald, 2009) and so, may also mediate the effect of cooperative video game play on cooperative behavior.

Dispositional measures of empathy have frequently been positively linked to children and adults' prosocial behavior. There is substantive evidence positively relating empathy and prosocial behaviors, and negatively relating to aggressive behaviors (Eisenberg, Fabes, & Spinrad, 2006). Carlo et al. (2012) linked empathy and prosocial behaviors through the use of problem-focused coping. Using self-report measures, they found that empathy positively predicted problem-focused coping, which in turn, positively predicted prosocial behaviors and negatively predicted aggression.

4.3. The social context of video gameplay

Recent research suggests that the social context of game play can mitigate the effects of game content (Eastin, 2007; Ewoldsen, 2012; Ferguson & Garza, 2011; Lim & Lee, 2009). This suggests that cooperative gameplay, regardless of violent content, has the potential to improve future cooperation by facilitating cooperative behavior during gameplay. Cooperation can be defined as behavior that maximizes the collective over the individual (Kollock, 1998). Cooperative activities can help solve conflicts and reduce aggression (Deutsch, 1993). During cooperative game play, feelings of

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