Computers in Human Behavior 28 (2012) 1465–1470

Contents lists available at SciVerse ScienceDirect

Computers in Human Behavior

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

How to ameliorate negative effects of violent video games on cooperation: Play it cooperatively in a team

Tobias Greitemeyer [a,*], Eva Traut-Mattausch [b], Silvia Osswald [c]

[a] Department of Psychology, University of Innsbruck, Austria
[b] Department of Psychology, University of Salzburg, Austria
[c] Department of Psychology, Ludwig-Maximilians-University, Germany

ARTICLE INFO

Article history:
Available online 5 April 2012

Keywords:
Violent video games
Cooperation
Video game context
Media effects
Trust

ABSTRACT

The present research tests the idea that playing a team-player video game in which players work together as teammates and assist each other in achieving a common goal ameliorates the negative effects of violent video game play on cooperative behavior. In fact, two studies revealed that, relative to a single-player mode, playing a cooperative team-player violent video game increased cooperation in a decision dilemma task. Importantly, cooperative behavior generalized across targets in that the decision dilemma was played with a partner who was not the video game play partner. Mediation analyses revealed that cooperative team-play promoted feelings of cohesion, which activated trust norms, which in turn increased cooperative behavior.

1. Introduction

Children spend a considerable time of their life playing video games. A recent nationally representative survey in the US revealed that 88% of youth between ages 8 and 18 play video games (Gentile, 2009). Most video games contain violence, with content analyses of video games suggesting that acts of violence are perpetrated in 70–85% of all available video games (Dietz, 1998). Playing violent video games has been shown to have detrimental effects on a variety of social outcomes (Anderson et al., 2010). For instance, cooperative behavior has been shown to be decreased after playing violent video games (Sheese & Graziano, 2005).

It is notable that many of the current violent video games involve a multi-player mode where the player can interact with other human individuals. In fact, recent estimates indicated that 65% of game-playing teens play with other people who are in the room with them, whereas 27% play games with people who they connect with through the internet. Overall, 76% of teen gamers play games with other people in some way. Importantly, more than half of these respondents indicated seeing other players being cooperative while playing (Lenhart et al., 2008). Could it be that cooperatively playing a violent video game in a team ameliorates the deleterious effects of violent video games on cooperation? This issue will be addressed in the present research.

Concretely, we examined the novel idea that participants who played a cooperative multi-player video game are more likely to cooperate in a decision dilemma than participants who played the same video game but in a single-player mode. Importantly, we suggest that cooperative behavior does not only generalize across situations (video game vs. decision dilemma) but also across targets in that the decision dilemma is played with a partner who is *not* the video game play partner. In the following, we review previous research into the effects of video game play, which will be followed by the presentation of two studies examining whether cooperatively (relative to a single-player mode) playing violent video game increases cooperative behavior.

2. Previous research into the effects of video game play

Most previous research into the effects of video game play has addressed the effects of playing violent video games. It has been shown, for instance, that playing violent video games increases state hostility and anxiety levels (Anderson & Ford, 1986), the accessibility of aggressive thoughts (Anderson & Dill, 2000), and aggressive behavior (Greitemeyer & McLatchie, 2011), while it decreases helping (Bushman & Anderson, 2009) and cooperative behavior (Sheese & Graziano, 2005). Meta-analytic evidence (Anderson et al., 2010) confirms that playing violent video games is associated with an increase in aggression and aggression-related variables and a decrease in prosocial outcomes.

Recently, some studies have examined possible positive effects of playing video games with prosocial content (for a review, Greitemeyer, 2011). In fact, playing prosocial video games increases the accessibility of prosocial thoughts (Greitemeyer & Osswald, 2011), prosocial affect (Greitemeyer, Osswald, & Brauer, 2010), and helping behavior (Gentile et al., 2009; Greitemeyer & Osswald, 2010), and reduces antisocial affect (Greitemeyer et al., 2010), aggressive

* Corresponding author. Tel.: +43 (0)512 507 37452; fax: +43 (0)512 507 2835.
E-mail address: tobias.greitemeyer@uibk.ac.at (T. Greitemeyer).

0747-5632/$ - see front matter © 2012 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.chb.2012.03.009

cognitions (Greitemeyer & Osswald, 2009), and aggressive behavior (Greitemeyer, Agthe, Turner, & Gschwendter, 2012).

Thus, depending on the content of the video game, either positive or negative effects of video game exposure on social outcomes are to be expected. However, there are other dimensions on which playing video games can have an influence on the player. Gentile and colleagues (Gentile, 2011; Gentile & Stone, 2005; Gentile et al., 2009) have identified five dimensions—the amount, content, context, structure, and mechanics—of video game play that each are assumed to have specific effects. The amount of game play is assumed to affect the magnitude of other effects (Gentile, 2011). For instance, the more one plays violent video games, the more pronounced should be the effects on aggressive outcomes. Content of game play refers to the script elements of the game (e.g., whether the goal of the game is to harm or benefit other game characters). Game context involves whether the players play on their own or with other players. Game structure refers to the formal features of the game (e.g., first-person vs. third-person perspective). Game mechanics include the realism of the controller, with greater transfer to the real world being expected if the mechanics are realistic (e.g., playing a racing game with a wheel and pedals instead of keyboard, Gentile, 2011).

So far, most research has addressed the effects of video game content. As Gentile and Stone (2005, p. 354) put it: "Most of the research on video games has documented what are likely to be effects of the content of the games." For instance, the most recent meta-analysis into the effects of playing violent video games combined a staggering total of 136 research papers, with more than 130,000 participants included (Anderson et al., 2010). In contrast, relatively little is known about the effects of the other dimensions. The present studies examine the effects of context of game play (according to Gentile, 2011, the least researched dimension of video game effects). In particular, we tested the hypothesis that playing a violent video game cooperatively in a team (relative to a single-player mode) increases cooperative behavior.

3. Cooperative goal structures

Cooperative goal structures occur when goals are positively linked in that individuals only attain their goals when other individuals also attain their goals. Among others, Deutsch (1993) has argued that cooperative goal structures are important precursors in the development of prosocial outcomes (see also Bonta, 1997; Johnson & Johnson, 1983). Theoretical perspectives, such as interdependence theory (Kelley & Thibaut, 1978), assume that cooperative behavior in mixed-motive situations is predominantly shaped by expectations about a partner's cooperation. In fact, trust norms (i.e., the expectation that the other player in the decision dilemma will cooperate) have been shown to be a crucial determinant of cooperative behavior (Smeeters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003; Van Lange & Kuhlman, 1994). In line with these considerations, we propose trust norms being the proximal antecedent of cooperative behavior and that cooperative game play increases cooperative behavior via activated trust norms. We further assume that feelings of cohesion constitute the mediating path from cooperative game play to trust norms. In line with this reasoning, previous research has shown that cooperatively playing increases feelings of cohesion (Deutsch, 1973), which in turn activates trust norms (Kreijns, Kirschner, & Jochems, 2003). Thus, we anticipated that (a) feelings of cohesion would mediate the effect of cooperative violent game play on trust norms and (b) that trust norms would mediate the effect of cooperative violent game play on cooperative behavior.

This reasoning was tested in two studies. Study 1 addressed whether playing a team-player violent video game in which one cooperatively engages in violent behavior against a common enemy ameliorates the deleterious effect of playing violent video games on cooperative behavior. Study 2 examined whether feelings of cohesion and norms of trust constitute the mediating path from media exposure to action.

4. Study 1

4.1. Method

4.1.1. Participants, procedure, and materials

Participants were 32 students at a German university (24 women, eight men). All students received partial course credit for participation and were recruited via the psychology subject pool. Four participants, who were unfamiliar with one another, arrived at the laboratory and were paired off in one of two rooms. Each pair was randomly assigned to one of three video game conditions (cooperative team-player violent vs. single-player violent vs. single-player neutral).

At the onset, participants learned that they would take part in two unrelated studies. For the first study, they would play and evaluate a video game. These ratings were allegedly used for future research. The violent video game was Far Cry, which is a first-person shooter. The neutral video game was Tetris, in which falling geometrical figures must be correctly positioned. In the cooperative team-player condition, both players worked together as teammates. In the single-player conditions, each participant played on her/his own. After 15 min of video game play, participants were separated and their perceptions of the video game were assessed. As manipulation checks, participants indicated how violent the content of the video game was and how cooperative the content of the video game was. They were also asked how exciting they perceived the video game to be. These items were assessed using a scale from 1 (*not at all*) to 7 (*very much*). Participants were then thanked and told that the first study was over.

Afterwards, participants played a one-shot version of a two-person give-some dilemma (adopted from Van Lange, 1999). Participants learned that they were paired with one of the two participants who had played in the other room. They were given four chips and were told that their partner also received four chips and would face the same decision. Each chip had a value of 1 Euro to the participant and a value of 2 Euros to the partner. Participants then had to decide how many chips they would give to the partner. It was stressed that the other participant would not learn their identity. The number of chips left for the other participant was used as a measure of cooperative behavior (see Van Lange, 1999). Finally, participants were thanked and paid, probed for suspicion, and fully debriefed. None of the participants indicated any suspicion of a relationship between playing the video game and the decision making task. The same applies to Study 2.

4.1.2. Data analysis

Because of non-independence in the team-player violent video game, the group was treated as the unit of analysis in this experimental condition (using the average of the two participants' responses). The same applies to Study 2. When testing our predicted effects, planned contrasts are reported. To control for excitement level of the video games, a multiple regression was performed on the data. Likewise, testing whether sex of participant moderates the effect of video game condition on cooperative behavior was done by running a multiple regression. All analyses were run using SPSS.

4.2. Results

4.2.1. Manipulation checks

Mean ratings (and standard deviations) of the video games are reported in Table 1. As intended, the content of the single-player