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AUTHOR Kirsh, Steven J.
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ABSTRACT

Although positive effects of children playing video games have been found, recent research suggests that exposure to violent video games may lead to an increase in aggressive behavior. This study investigated the effects of playing violent versus nonviolent video games on the interpretation of ambiguous provocation situations. Participants were 52 third- and fourth-grade children. Children played with either a very violent video game, "Mortal Kombat II," or a relatively nonviolent video game, "NBA Jam: TE," for 13 minutes. Following the video game play, children were read five stories in which a same-sex peer caused a clearly negative event to happen but the intent of the peer causing this negative event was ambiguous. After each story, children were asked a series of questions about the peer's intent, subsequent actions, and whether the peer should be punished and how much. Responses were coded in terms of amount of negative and violent content. Results indicated that children playing the violent video game responded more negatively on three of the six ambiguous provocation story questions than children playing the nonviolent video game. These data suggest that playing violent video games leads to the development of a short-term hostile attribution bias. (Author/HTH)

Seeing The World Through "Mortal Kombat" Colored Glasses: Violent Video Games and Hostile Attribution Bias

Steven J. Kirsh
Washburn University

ABSTRACT

This study investigated the effects of playing violent versus nonviolent video games on the interpretation of ambiguous provocation situations. Participants were 52 third- and fourth-grade children. Children played either a very violent video game, "Mortal Kombat II," or a relatively nonviolent video game, "NBA Jam: TE" for 13 minutes. Following video game play, children were read 5 stories in which a same-sex peer caused a clearly negative event to happen but the intent of the peer causing this negative event was ambiguous. After each story, children were asked a series of questions about the peer's intent, subsequent actions, and whether the peer should be punished and how much. Responses were coded in terms of amount of negative and violent content. Results indicated that children playing the violent video game responded more negatively on three of the six ambiguous provocation story questions than children playing the nonviolent video game. These data suggest that playing violent video games leads to the development of a short-term hostile attribution bias.

Poster session presented at the biennial meeting of the Society for Research in Child Development, Washington, DC, April, 1997.

INTRODUCTION

Since the late 1970s, one of the preferred leisure activities of children has been playing video games (Cesarone, 1994). Although positive effects of children playing video games have been found [e.g., aiding hand-eye coordination, improving children's attention to detail, and aiding the recovery of oncology patients (Funk, 1993)], recent research suggests that exposure to violent video games may lead to an increase in aggressive behavior (Cooper & Mackie, 1986; Irwin & Gross, 1995; Funk, 1993). However, the mechanism through which violent video games might cause aggressive behavior has yet to be established.

One explanation for the link between violent video game play and aggressive behavior comes from the literature on social information processing in aggressive children. Dodge (1980, 1982) contends that aggressive children act aggressively, in part, due a hostile attribution bias. That is, when exposed to a frustrating social stimulus (e.g., being hit in the back with a ball), a hostile attribution bias causes cue distortion, which leads aggressive children to interpret the stimulus as an aggressive cue and thus respond aggressively (Dodge & Frame, 1982). Dodge contends that past social experiences lead to the formation of a hostile attribution bias. However, it is possible that exposure to violent video games may contribute to the development of a hostile attribution bias. If this were the case, then children's increased aggression following video game play (Cooper & Mackie, 1986; Irwin & Gross, 1995; Funk, 1993) may result from cue distortion caused by a short-term hostile attribution bias.

To test the proposition that violent video games lead to a short-term hostile attribution bias, children were asked to play either an action oriented, very violent, video game or an action oriented, non-violent, video game. Given that arousal has been linked with aggression (Rule, Ferguson, & Nesdale, 1980) both video games were action oriented in an attempt to mitigate the impact of arousal. Immediately following video game play, children interpreted a series of ambiguous provocation stories. It was hypothesized that children exposed to the very violent video game would develop a hostile attribution bias and thus interpret the ambiguous provocation situations more negatively and violently than children exposed to the non-violent video game.

METHOD

Subjects

Participants were 52 third- and fourth-grade children (44% female; 90% European-American) from a middle class community of 150,000 in Northeastern Kansas. Age ranged from 104 to 131 months (M = 118; SD = 7).

Procedures

First, children were asked several questions about their experience with video games. Next, children were instructed on how to use the remote control box connected to the video game. Children were then allowed a two minute warm up

period in order to increase familiarity with the game controls. After the warm up period, children played one of the experimental video games for approximately 13 minutes. Following video game play, children were read five ambiguous provocation stories. After each story, children were asked a series of questions and their responses were tape recorded.

Measures

Video Game Experience Children were asked about the number of hours a day they play video games, the number of days a week they play video games and their experience with the experimental video game.

Video Game System. A 16-bit video game system produced by Genesis was used during the experimental manipulation. The Genesis system consisted of a video game cassette player connected to a hand-held remote control box. A series of six buttons and a directional pad on the remote control box allowed the player to manipulate computerized figures about the screen. The two Genesis games used were "Mortal Kombat II" and "NBA "Jam: TE." "Mortal Kombat II" involves rounds of hand-to-hand combat between two martial artists with the winner proceeding to the next round. "NBA Jam: TE" is a two-on-two basketball game.

Mortal Kombat II was rigged so that the child either won or tied a round. Children were required to use a same sex, same race combatant. The game was rigged so that children of similar races and genders used the same player. During the game, players engaged in combat with both male and female opponents. Children in the middle of a round (which lasts about one minute) when the experimental time limit of 13 minutes expired were allowed to complete the round. "Mortal Kombat II" was designated as the very violent video game. The average number of aggressive acts (e.g., punches, kicks) per minute for a randomly selected set of 10 games was 137 (SD = 48).

"NBA: TE" was rigged so that children would always control the same basketball team, i.e., "Chicago Bulls". Children played one full game, which lasted approximately 13 minutes. The winner of the basketball game (computer or player) was recorded. The average number of aggressive acts (e.g., shoving) per minute for a randomly selected set of 10 games was 4 (SD = 2).

Ambiguous Provocation Stories. In the ambiguous provocation stories a same-sex peer caused a clearly negative event to happen (e.g., a child is hit in the back with a ball) but the intent of the peer causing this negative event was ambiguous. These stories were adapted from Dodge and Frame (1982). After each story was presented, children were asked a series of six questions about the peer's intent, subsequent actions, whether the peer should be punished and how much, and the peer's feelings. Responses were coded in terms of amount of negative and violent content. Inter-rater reliability for a randomly selected 29% (N = 15) of the children (450 total responses) was .88 (Cohen's Kappa). Responses were summed across all five stories for each question (possible range, 0-5).

RESULTS

Preliminary analyses were conducted to assess the relation between children's responses to the ambiguous provocation stories and age, sex, familiarity with the video game, and whether or not the child won the experimental video game. Results indicated that age and winning/losing the video game were significantly related to several questions (all $p < .05$). Thus, to control for these factors, age and winning/losing the video game were entered as covariates in subsequent analyses.

Next, for each question a one-way analysis of covariance was conducted. Results indicated that children exposed to the very violent video game (Mortal Kombat II) responded more negatively to the ambiguous provocation stories than children exposed to the relatively non-violent video game (NBA Jam: TE) on three of the six questions: "Why did the boy/girl ...?" $F(1,51) = 8.85, p < .01$; "What would you do next after...?" $F(1,51) = 8.34, p < .01$; and "Do you think the boy/girl liked you?" $F(1,51) = 4.54, p < .04$. Table 1 presents the means and standard deviations for the individual questions.

DISCUSSION

The results of the present study offer some support for the contention that violent video games lead to the development of a short-term hostile attribution bias. Children playing the violent video game responded more negatively on three of the six ambiguous provocation story questions than children playing the nonviolent video game.

Interestingly, whereas both closed-ended questions asked in the present study resulted in nonsignificant findings, three of the four open-ended questions posed to participants were significant. One possible explanation for this finding is that open-ended questions, in which the child generates a list of potential responses and then chooses one, may more likely be influenced by a hostile attribution bias than close-ended questions, in which the child must choose from a experimenter-provided list of potential responses.

Previous research has shown that playing violent video games leads to an increase in aggressive behavior (Cooper & Mackie, 1986; Irwin & Gross, 1995; Funk, 1993). The current data suggest that one reason for this increase may, in part, be due to short-term hostile attribution bias. The specific mechanism is as follows: exposure to video game violence results in cue distortion which leads to an increased predisposition to perceive the world in a negative manner. However, additional research is necessary to determine how long after playing a violent video game the hostile attribution bias lasts.

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Table 1

Children's Responses as a Function of Video Game Play

Question	Video Game: Mortal Kombat II (n = 26)	Video Game: NBA Jam: TE (n = 26)
Why did the kid...?	2.4 (1.2)	1.5 (1.1)
Do you think that the kid... on purpose or by accident?	1.7 (1.0)	1.6 (1.2)
What would you do next after...?	1.3 (1.1)	0.7 (1.0)
Do you think the kid should be punished alot, a little, or not at all?	2.6 (1.5)	2.7 (1.6)
How do you think the kid feels after ...?	1.5 (1.4)	1.3 (1.3)
Do you think the boy/girl liked you?	1.7 (1.3)	1.3 (1.2)

Note: Italicized questions, $p < .05$.

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Signature: Steven J. Kirsh	Printed Name/Position/Title: STEVEN J. KIRSH ASSISTANT PROFESSOR	
Organization/Address: DEPT. OF PSYCHOLOGY SUNY @ GENESEO GENESEO, NY 14454	Telephone: (716) 245-5215	FAX: (716) 245-5235
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6/96)