

Do Stereotypic Images in Video Games Affect Attitudes and Behavior? Adolescent Perspectives

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Abstract

This study examined adolescents' attitudes about video games along with their self-reported play frequency. Ninth and eleventh grade students (N = 361), approximately evenly divided by grade and gender, were surveyed about whether video games have stereotypic images, involve harmful consequences or affect one's attitudes, whether game playing should be regulated by parents or the government, and whether game playing is a personal choice. Adolescents who played video games frequently showed decreased concern about the effects that games with negatively stereotyped images may have on the players' attitudes compared to adolescents who played games infrequently or not at all. With age, adolescents were more likely to view images as negative, but were also less likely to recognize stereotypic images of females as harmful and more likely to judge video-game playing as a personal choice. The paper discusses other findings in relation to research on adolescents' social cognitive judgments.

Keywords: adolescents, video games, stereotypes, development, gender, media

It is a well-known fact that today U.S. adolescents spend large amounts of time playing video games (Anderson and Bushman 2001). A recent study found that, on average, eighth and ninth grade girls play video games about five hours a week, and boys at the same age play, on average, 13 hours a week ([Gentile et al. 2004](#)). Since many of the popular video games are highly aggressive in content (Anderson and Bushman 2001), researchers have focused primarily on measuring the effects of playing violent video games on aggressive behavior. Documented effects of playing aggressive games included increased aggressive behavior and cognition ([Anderson et al. 2004](#)), physiological desensitization to real-life violence (Carnagey, Anderson and Bushman 2007), decreased sensitivity to happy facial expressions compared to angry expressions ([Kirsh and Mounts 2007](#)), lower empathy (Funk et al. 2004), decreased prosocial behavior ([Anderson et al. 2004](#)), and decreased school performance ([Gentile et al. 2004](#)).

One of the less-well explored consequences of exposure to video games is the reinforcement of negative stereotypes, particularly gender stereotypes. It has been demonstrated that most video games contain negatively stereotyped gender images (Dietz 1998; Dill et al. 2005), such as portrayals of males in dominant roles and as overly masculine violent heroes, and of females in submissive, sexually exploitive roles—as busty, brainless, victims of aggression ([Provenzo 2000](#)). At the same time, little research has been conducted to investigate the specific effects that exposure to stereotypical and/or violent content has on players' attitudes towards male and female roles and characteristics. Currently, some of the popular video games, such as Grand Theft Auto (GTA), portray and even reward sexualized violence towards women without emphasizing any negative consequences to the perpetrator. Previous research has shown that aggressive behavior increases when violence is perceived as normative and socially approved (Vernberg, Jacobs, and Hershberger 1999). Additionally, studies on exposure to aggressive images in the video games (Funk 2005) and to violent and sexually degrading depictions of women in the movies ([Anderson et al. 2003](#)) suggest that desensitization to the suffering of others and lower empathy may result from a prolonged exposure to such images. Since many of the popular video games today contain both stereotypical and aggressive content, it is likely that large amounts of time spent playing video games in general, and aggressive video games in particular, will have a negative effect on adolescents' social cognitive development, desensitizing them to gender stereotypes and sexualized violence against women in society.

Extensive research findings indicate that in other forms of entertainment media, including movies, commercials and cartoons, gender stereotypes are pervasive ([Beasley and Standley 2002](#); [Davis 2003](#); [Thompson and Zerbinos 1997](#)). This may have negative consequences for children's views of gender traits and roles, such as having more traditional job expectations for themselves and other people ([Thompson and Zerbinos 1997](#)). One of the particular concerns about adolescent exposure to negative gender stereotypes, which are commonly displayed in video games, is that stereotypes are being formed and transformed during this period of development (Ruble and Martin 1998). While gender stereotypes about play activities (e.g., dolls and trucks) emerge as early as the preschool period (Killen et al. 2001), gender stereotypes about adult gender roles and sexuality, in particular,

are highly charged and complicated topics during adolescence (Martin 1996). Thus, exposure to sexually exploitive stereotypical portrayals of women in video games may negatively affect social development and social relations during adolescence. In fact, adolescents who support decisions to exclude others from peer activities solely on the basis of gender often justify their decisions by using stereotypes (Killen and Stangor 2001). This indicates that the reinforcement of gender stereotypes is potentially related to the approval of gender-based exclusion. Taking it a step further, social psychologists have demonstrated that stereotypic expectations often lead to discriminatory behavior and attitudes in adulthood (Dovidio et al. 1996; Dovidio, Glick, and Rudman 2005). The concern is that the more accepting children and adolescents become of the stereotypes, the more likely they are to engage in or accept stereotypic expectations that are presented as normative in the media. Thus, while almost no research has investigated whether adolescents are aware of gender stereotypes in video games (or how they evaluate such images), the topic clearly warrants empirical attention.

Most of the current work in the field has been guided by social psychological theories, and few studies have examined players' evaluations of video game images from a developmental viewpoint. One recent exception is a study guided by a developmental social-cognitive framework that investigated how young adults (college students) evaluate gender stereotypic images in video games (Brenick et al. 2007). Brenick and colleagues interviewed college students about "moral" (e.g., Does exposure to negative images in video games have harmful consequences?), "social-conventional" (e.g., Who should decide whether games with gender stereotypical images are appropriate for adolescents to play: adolescents or authority figures, such as parents or government?), and "personal" (e.g., Is video game playing solely a personal choice? Does it affect others?) aspects of video games. These categories of assessments stem from social-cognitive domain research, which has demonstrated that individuals (from childhood to adulthood) use these categories of social reasoning when evaluating social issues. The categories refer to the moral domain (equality, fairness, avoidance of harm), the social-conventional domain (traditions, authority regulations, customs, conventions), and the personal domain (individual prerogatives, personal discretion).

Brenick et al. (2007) found that males and high-frequency video game players were less critical of the stereotypic content of the games than were females and low-frequency players. Further, frequent players were less likely to think that stereotypic portrayals may have negative effects on the players or that character portrayal should change if some players are negatively affected by it. Thus, they viewed video game playing more as a matter of personal choice, with players responsible for controlling their playing habits and game selection, than as a social-conventional issue, with society responsible for regulating video game content. Additionally, higher-frequency players were more likely to assert that parents should have less authority over what games their children can play, compared to less frequent players. Whether these findings generalize to younger adolescents is not known, and yet, adolescents constitute the majority of video game players and consumers. Further, these findings were documented in a study using face-to-face,

individually administered interviews; whether the same pattern would be revealed in a more anonymous survey format is not known. In addition, the sample was fairly small ($N = 87$), and a larger sample would provide findings that are more generalizable.

Therefore, the aim of the study presented here was to investigate the relationships between adolescents' video game playing habits and their evaluations of video games. The project focused on evaluations of gender portrayals in games with theoretically gender-neutral roles and in games with negatively stereotyped roles for males and females. We chose different types of games to determine whether adolescents differentiated between the games, considered gender portrayals in such games to be stereotypical, and whether they viewed these types of images as positively or negatively influencing their behaviors and attitudes about gender roles.

This project was unique in several ways. First, we investigated adolescents' social-cognitive interpretations of video games by examining age-related and gender differences for two groups of participants, ninth and eleventh graders (14 and 17 years of age), which has not been done before. Second, we analyzed how adolescents evaluated three types of video games, one that has been characterized as having few gender stereotypes, one that has been noted to have negative male gender stereotypes (i.e., extreme aggression and physically enhanced body features), and one that has been noted to have negative female gender stereotypes (i.e., sexually exploitive body features and passive roles). In this way, we focused on the quality of video game content, not merely the engagement in video game playing. Third, we drew on social-cognitive developmental theory to investigate multiple aspects of how adolescents evaluate potentially stereotypic gender roles. Fourth, we assessed adolescents' video game playing habits (play frequency) in relation to their social-cognitive interpretations of games.

Our analysis of adolescents' play frequency in relation to their judgments was based on research showing that young adults who played video games frequently were less critical of the stereotypic game content than low-frequency players (Brenick et al. 2007). However, it is important to emphasize here that our goal was not to demonstrate causality, that is, that playing video games "causes" desensitization to stereotypic images. It may be that adolescents who readily accept gender stereotypes frequently play video games because they do not find the images to be disturbing. Likewise, adolescents who reject gender stereotypes may stay away from video games because of the negative content. Demonstrating causality was not feasible with our design, and this type of relationship is very difficult to document because it requires controlling for exposure to game playing outside of the experimental context as well as controlling for numerous other factors that may also contribute to increased desensitization. Instead, the goal in this study was to document the relationship between game playing and multiple social-cognitive measures of adolescents' evaluations of stereotypes. Based on our findings, future studies could be systematically designed to more directly examine whether game-playing results in negative social attitudes, and possible causal relationships.

One of our main hypotheses was that participants would differentiate between the games that had stereotypic and non-stereotypic gender images on the basis that previous research has shown that young adults view exaggerated physical features and attributes, such as aggression and sexuality, as associated with stereotypic gender roles (Brenick et al. 2007). In addition, based on previous research (Killen et al. 2002), we expected that the older participants would view stereotypic images more negatively than the younger ones.

Further, we predicted that, with age, adolescents would be more likely to view game playing as a personal choice. Older adolescents would be more likely to oppose authority regulation of video games because they are less likely than younger adolescents to accept parental authority over their lives (Smetana and Turiel 2003) and are more likely to view their free-time activities as under their personal jurisdiction (Smetana 1988; 2006; Smetana and Asquith 1994). However, we also predicted that this judgment would interact with the type of game such that endorsement of personal (adolescent) jurisdiction over video games would be stronger for games without stereotypic images than for the games with stereotypic gender images. We expected that the games with potentially negative images would require more complex social-cognitive evaluation. That is, games with negative images, which could potentially cause harm to others, would require participants to consider an additional, "moral," dimension of reasoning when evaluating such games. In contrast, adolescents would be more likely to evaluate games without stereotypes using only one, "personal," social-cognitive dimension, which is reserved for the acts that involve consequences solely for the self (e.g., nicknames or hair length; see Nucci 2001).

Additionally, based on research showing that frequent exposure to negative images often leads to desensitization (Anderson et al. 2003; Carnegie et al. 2007; Funk 2005), we expected that frequent players would be less likely to acknowledge that (1) there are stereotyped gender images in the games; (2) there is a potential that stereotypical character portrayals may have a negative influence on players, for example, on their attitudes towards males and females in real life; (3) there is a possibility that adolescent players may not be mature enough to understand that some video games contain images inappropriate for them; and (4) that they would display less concern for others who may be offended by gender portrayal of the characters. Lastly, we expected that (5) adolescents who played frequently would be more likely to oppose the idea of parental and/or governmental regulation of video games compared to those who played less frequently or not at all.

Because of the consistent reports of gender differences with regards to the amount of video game playing (Gentile et al. 2004), we expected to find that overall, males play video games more often than females. We also expected that females would view stereotyped representations of women in video games more negatively compared to male participants, based on previous findings of such differences in young adults (Brenick et al. 2007). At the same time, we predicted that playing habits would be measurably related to evaluations of video games beyond what can be explained by gender differences alone.

Method

Participants

Participants ($N = 361$) were ninth- and eleventh-grade adolescents: 167 females (65 ninth graders; 102 eleventh graders) and 194 males (112 ninth graders; 82 eleventh graders). The mean age of the ninth grade males was 15.32 years and females was 14.51 years, and the mean age of the eleventh grade males was 17.33 years and females was 16.77 years. The sample was 57 percent European-American, 17 percent African-American, 13 percent Asian-American, 4 percent Latin-American, and 8 percent biracial or other. All students were from middle- to high-income families, and were enrolled in six high schools in the Washington, D.C. metropolitan area. The sample for the study reflected the demographics of the metropolitan region, including the ethnicity and socioeconomic status breakdown.

Survey and Procedures

The assessment measure developed for this study, *Social Evaluations of Video Games Survey for High School Students*, was designed to assess adolescents' attitudes towards and evaluations of gender stereotypes in video games as well as their video game playing habits. The format and content of the survey were based on an in-depth interview conducted with college students and were refined through numerous pilot administrations (Brenick et al. 2007). We administered the survey to groups of participants at their respective schools in one-time 25-minute sessions.

In the survey, participants were asked to evaluate three types of video games: (1) *gender-neutral* (Surfing), (2) *male-stereotyped* (Terrorist Hunt) and (3) *female-stereotyped* (Extreme Golf). We refer to the games as "stereotyped" on the basis of previous research documenting these types of games as reflecting stereotypes (Dill et al. 2005; Funk 2005). However, whether adolescents viewed the images as stereotypic was an empirical question, one which required documentation and investigation.

We presented participants with a brief written description of the content and purpose of each game. Extensive pilot testing indicated that adolescents were familiar with these different genres of video games, and we found that the vast majority of the participants readily identified the video games based on their brief descriptions. In a previous study with college students, screen shots of these exact games were shown to young adults (Brenick et al. 2007). However, even though all games were rated "T" (approved for players 13 years of age and older) by the Entertainment Software Rating Board, a decision was made against using screen shots of the actual games in the adolescent study to ensure a large and representative sample. Our concern was that some parents may not have approved of their adolescents' participation in a study that would involve exposure to violent and/or sexualized images.

The Surfing game description was as follows: "This section asks questions about a video game that involves surfing through waves. The goal is to stay on top of the board while surfing the largest waves imaginable, earning points for the difficulty and creativity of the tricks you complete. Typical screen shots from the game would

be as follows: Screen Shot 1: A male surfer and a female surfer are shown in full body wetsuits balancing on surfboards on a large wave. Screen Shot 2: A male surfer and a female surfer are shown in full body wetsuits doing tricks on a surfboard."

The Terrorist Hunt game description was: "This section asks about a video game in which you have to obtain vital intelligence, find terrorists, and eliminate them at all costs, including killing, shooting, and maiming. You are on the hunt to destroy all potential terrorists at any means. Typical screen shots from the game would be as follows: Screen Shot 1: A male character is shown holding a machine gun, shooting and killing another character, head on. Screen Shot 2: A male character is shown holding a machine gun to the head of another character that he is holding in a headlock."

Finally, the description of the third game, Extreme Golf, was the following: "This section asks about a video game in which scantily clad women are playing rounds of golf. The characters include rappers, ex-cons, and strippers. The women are shown in tight tops, short shorts and mini-skirts and are dancing on the green. Typical screen shots from the game would be as follows: Screen Shot 1: A female character in a mini skirt and tight top is shown bending over to put down her golf ball. Screen Shot 2: A female character in a tight halter top is shown swinging around the flag pole of the hole marker to celebrate a good shot."

Male characters in the Terrorist Hunt game were examples of stereotypes because they were violent and aggressive. In the Extreme Golf, female characters were examples of stereotypes in that they were shown acting provocatively with exaggerated body parts and thus were depicted as sexualized objects. The characters in the Surfing game were not stereotyped—the surfers were portrayed fully clothed in wetsuits and without exaggerated body parts; male and female characters were able to perform the same tricks with equal skill.

All descriptions were based on the actual games available on the market; however, the real names of the games were not used to avoid influencing participants' opinions. These games were selected due to their popularity at the time of the instrument development as well as the inclusion of the stereotyped and non-stereotyped male and female main characters. The order of presentation was the same for all participants and was designed to present the non-stereotypical images first, followed by the games with stereotyped images to avoid priming a negative viewpoint. The neutral game served as "baseline" for evaluation of participants' reasoning about the stereotyped games.

For each game, we administered the evaluative questions organized by topic. The four main social-cognitive assessments and were: (1) Gender of players ("Who plays this type of game [males, females, or both] and why?"), (2) Evaluation of gender stereotypes ("Do male/female stereotypes exist in this game? If so, what are the stereotypes?"), (3) Influences of video game playing on players' behaviors, attitudes, and judgments ("Do adolescents change their attitudes about males/females in real life based on what they see in video games?"), and (4)

Authority jurisdiction ("Who should decide what video games are appropriate for adolescents?"). Questions were answered with Likert-type scale or forced-choice responses.

The survey concluded with questions regarding personal game usage and preferences. Participants were asked to report how often they played video games and to select what types of games they played most often from a list of 11 game categories: action, music, first-person shooter, adventure puzzle, sports, extreme sports, racing, strategy, fighting, and role-playing games. All of the prospective survey takers were presented with a short description of the study, informed of the confidential, anonymous, and voluntary nature of the study and debriefed following the assessment.

Measures

Predictors

Three predictor variables were used: play frequency, gender, and grade (ninth or eleventh). Participants were asked to rate how often they played video games on a scale anchored from 0 to 3, where 0 = Never; 1 = Rarely, 1 or 2 times a month; 2 = Sometimes, 1 or 2 times a week; 3 = Often, 3 or more times a week. This four-point scale was similar to scales used in previous research, such as the five-point scales used by [Colwell and Payne \(2000\)](#) or by [Gentile and Gentile \(2008\)](#), which generally captured the range from "never" to "daily." The scale used in the current study did not include a "daily" anchor because the study did not focus so much on a small minority of problematic players who display "obsessive," or even addictive, interest in video game playing. Instead, we were more interested in an average adolescent's evaluations of gender stereotyped characters in video games, regardless of how often he or she played them. Therefore, broadly capturing a group of adolescent players who may be exposed to video games relatively frequently, three or more times a week, was deemed sufficient. For multinomial regression analyses, the play frequency variable was treated as categorical.

Outcomes

Dependent measures were ten evaluative social-cognitive assessments asked for each game separately that assessed participants' reasoning about the stereotyped images or games containing stereotyped images. These questions encompassed various aspects of participants' reasoning and directly corresponded to the five main hypotheses outlined earlier for play frequency: (1) presence of stereotyped gender images in the games ("Are there stereotypes in this game? If so, are they positive? Negative?"), (2) potential that stereotypical character portrayals may have a negative influence on players, for example, on their attitudes towards males and females in real life ("Can playing this game have harmful consequences for the players? Do you think adolescents change their attitudes about males and females based on what they see in the games?"), (3) possibility that adolescent players may not be mature enough to understand that some video games contain images inappropriate for them ("Are adolescents mature enough to choose which games are all right for them to play?"), (4) concern for others who may be offended by gender portrayal of the characters ("Is it OK to keep playing the game if a friend is

upset about how the characters are portrayed?”), and (5) attitude towards parental and/or governmental regulation of video games (“Who should decide which games are all right for adolescents to play? Should government control which games are appropriate for teenagers? Would it be OK for anyone to play a game like this if there were no rating system?”).

Data Analysis

The three predictor variables and their interaction terms were regressed in a stepwise method on the ten outcome measures described above, separately for each game. Ordinary least squares (OLS) regression was used for items measured with Likert scales, and logistic and multinomial logistic regression methods were used for binary (yes/no) and multiple choice items, respectively. For multinomial logistic regression, the three-way interaction term was dropped to create more parsimonious models.¹ Additionally, repeated measures ANOVA analyses [4 (Play Frequency) X 2 (Gender of Participant) X 3 (Game Type: *Surfer*, *Terrorist Hunt*, *Extreme Golf*), with repeated measures on the last factor] were conducted for some of the questions to assess whether participants’ evaluations varied across the types of games. Follow-up tests were conducted with t tests with Bonferroni adjustment for multiple comparisons. All reported findings are significant at the $p < .05$ level, unless otherwise specified.

Results

Descriptive Analyses

Gender Attributions about Game Playing

When asked, “Who plays this type of game?” (1 = males, 2 = females, 3 = both), participants described the gender-neutral (GN) game as played by both males and females ($M = 2.37$, $SD = .92$) more often than male- and female-stereotyped (MS and FS) games, ($M = 1.28$, $SD = .69$ and $M = 1.49$, $SD = .85$) [$t(357) = 19.298$, $p < .001$, and $t(355) = 13.736$, $p < .001$]. Further, when asked “Why?” among seven possible choices (violence, sexual appearance of characters, sports, socialization of players, lack of stereotypes, identification with gender of characters, cognitive complexity, and game playing as an activity in itself), 41 percent of participants selected “no stereotypes” for GN game, which was the most frequently used justification [$M = .41$, $SD = .49$; min $t(358) = 6.664$, $p < .001$]. For MS and FS games, the most frequent justifications respectively were “violence” ($M = .74$, $SD = .43$) and “sexual appearance” ($M = .54$, $SD = .48$) [min $t(359) = 24.510$, $p < .001$ and min $t(360) = 12.163$, $p < .001$]. These findings provide evidence that adolescents differentiated between the three types of video games along stereotypic categories. Moreover, they ascribed the attribute of “violence” to the

¹ For the evaluative question, “Are adolescents mature enough to choose which games are all right for them to play?” asked for the female-stereotyped game, the gender by play frequency interaction term was dropped as well to ensure proper model convergence.

game categorized by prior studies as reflecting negative male stereotypes, and the attribute of "sexual appearance" to the game reflecting negative female stereotypes. Further, these data confirm that, despite the absence of the screen shots, verbal descriptions of the games contained adequate information about the content of the games for participants to differentiate between the character portrayals in games categorized as depicting non-stereotypic and stereotypic gender roles.

Play Frequency and Game Preference

Descriptive statistics for play frequency by gender and grade are provided in Table 1. Pairwise comparisons yielded significant gender and age differences with respect to the amount of video game playing. The mean ratings (0 = never, 1 = rarely, 2 = sometimes, and 3 = often) for usage revealed that boys ($M = 2.03$, $SD = .95$) and adolescents in ninth grade ($M = 1.80$, $SD = 1.06$) reported higher frequency of video game play than girls ($M = .81$, $SD = .91$) and adolescents in eleventh grade ($M = 1.13$, $SD = 1.07$), respectively [$t(356) = 12.384$, $p < .001$, and $t(357) = 5.959$, $p < .001$]. The age trend was the same for both genders: ninth-grade boys ($M = 2.27$, $SD = .80$) reported playing video games significantly more often than eleventh-grade boys ($M = 1.71$, $SD = 1.04$) [$t(190) = 4.239$, $p < .001$]. Similarly, ninth-grade girls ($M = 1.03$, $SD = .97$) played games more frequently than girls in eleventh grade ($M = .68$, $SD = .85$) [$t(165) = 2.493$, $p < .01$]. Thus, with age, adolescents' frequency of game playing decreased.

Table 1. Mean video game play frequency by gender and grade

Gender	Grade	Play Frequency					
		<i>N</i>		<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Often</i>
Females	9 th	65	M	0.35	0.35	0.20	0.09
			SD	0.48	0.48	0.40	0.29
	11 th	102	M	0.52	0.33	0.10	0.05
			SD	0.50	0.47	0.30	0.22
Males	9 th	112	M	0.03	0.13	0.37	0.46
			SD	0.16	0.34	0.48	0.50
	11 th	82	M	0.12	0.37	0.20	0.32
			SD	0.33	0.48	0.40	0.47
Total		194	M	0.07	0.23	0.29	0.40
			SD	0.25	0.42	0.46	0.49

Note: $N = 361$. Never = Never plays video games. Rarely = Plays video games once or twice a month. Sometimes = Plays video games once or twice a week. Often = Plays video games three or more times a week.

With respect to game preference, there were gender and age differences as well. Out of the 11 popular game categories (action, music, first-person shooter, adventure puzzle, sports, extreme sports, racing, strategy, fighting, and role-

playing games), girls picked music games as their favorite type of games significantly more often than did boys, and boys picked action, shooter, sports, fighting, and role-playing games more often than did girls [min $t(357) = 2.495$, $p < .05$]. Additionally, game preferences changed somewhat with age among boys: those in eleventh grade chose puzzle games more often than ninth-graders; in comparison, younger boys picked shooter games more often than did eleventh-grade boys [min $t(191) = 1.987$, $p < .05$]. Thus, boys' interest in violent (shooter) games decreased with age. Descriptive statistics for game preference are provided in Table 2.

Presence of Stereotyped Gender Images

"Are there stereotypes in this game? Are the images positive? Are the images negative?" Stepwise logistic regression analyses of participants' responses to these questions (1 = yes, 0 = no) revealed that for the female-stereotyped (FS) game, gender, with an odds ratio (OR) of 4.18 for girls ($CI_{95} = 2.21$ to 7.89 , $p < .001$), and gender by grade interaction ($OR = .25$, $CI_{95} = .09$ to $.74$, $p < .05$) were the significant predictors of the judgment that stereotypes were present [$\chi(4) = 28.817$, $p < .001$]. This indicates that overall, girls ($M = .76$, $SD = .43$) were more likely than boys ($M = .63$, $SD = .48$) to recognize that portrayals of female characters in the FS game were stereotypic. When looking at gender differences by grade, follow-up t tests revealed that while ninth-grade boys ($M = .77$, $SD = .42$) and girls ($M = .74$, $SD = .44$) did not respond significantly differently, eleventh-grade girls ($M = .77$, $SD = .42$) were more likely to view images in the FS game as stereotypical representations of women than were eleventh-grade boys ($M = .45$, $SD = .50$), ($p < .001$). For the male-stereotyped (MS) game, none of the predictor variables were significantly associated with participants' responses. Thus, older girls viewed the images in the FS game as more stereotypic than did older boys; there were no gender differences for recognizing the images as stereotypic in the MS game.

Two additional logistic analyses were conducted to determine whether those who did perceive stereotypes in the MS and FS games evaluated them as positive or negative. For the MS game, gender was the only significant predictor of both positive [$\chi(1) = 11.423$, $p < .01$] and negative evaluations [$\chi(2) = 15.221$, $p < .001$], with girls being more likely to see male-stereotyped characters as negative ($OR = 2.20$, $CI_{95} = 1.31$ to 3.70 , $p < .01$) and less likely as positive ($OR = .32$, $CI_{95} = .16$ to $.65$, $p < .01$).

For the FS game, for positive evaluations [$\chi(3) = 23.333$, $p < .001$], gender and age were the two significant predictors: girls ($OR = .21$, $CI_{95} = .07$ to $.62$, $p < .01$) were less likely than boys to perceive images in the FS game as positive stereotypes of women, whereas younger adolescents ($OR = 3.04$, $CI_{95} = 1.27$ to 7.26 , $p < .05$) were more likely to do so than older adolescents. For negative evaluations, gender ($OR = 6.71$, $CI_{95} = 3.51$ to 12.83 , $p < .001$) and interaction of gender by grade ($OR = .22$, $CI_{95} = .08$ to $.62$, $p < .01$) were the significant

Table 2. Mean preferences for different types of video games by gender and grade

Gender	Grade	N	Action	Music	Shooter	Adven- ture	Puzzle	Sports	Extreme Sports	Racing	Strategy	Fighting	Role Playing	Don't Play
Females	9 th	65	M 0.23	0.12	0.14	0.32	0.11	0.22	0.08	0.28	0.14	0.12	0.18	0.34
			SD 0.43	0.33	0.35	0.47	0.31	0.41	0.27	0.45	0.35	0.33	0.39	0.48
		101	M 0.15	0.08	0.06	0.19	0.12	0.17	0.08	0.20	0.14	0.11	0.09	0.50
Total			SD 0.36	0.27	0.24	0.39	0.33	0.38	0.27	0.40	0.35	0.31	0.29	0.50
		166	M 0.18	0.10	0.09	0.24	0.11	0.19	0.08	0.23	0.14	0.11	0.13	0.44
			SD 0.39	0.30	0.29	0.43	0.32	0.39	0.27	0.42	0.35	0.32	0.33	0.50
Males	9 th	111	M 0.46	0.01	0.56	0.30	0.02	0.66	0.10	0.27	0.20	0.23	0.31	0.03
			SD 0.50	0.01	0.50	0.46	0.13	0.48	0.30	0.45	0.40	0.42	0.46	0.16
		82	M 0.38	0.06	0.41	0.21	0.11	0.62	0.12	0.26	0.18	0.27	0.24	0.10
Total			SD 0.49	0.24	0.50	0.41	0.32	0.49	0.33	0.44	0.39	0.45	0.43	0.30
		193	M 0.42	0.03	0.50	0.26	0.06	0.64	0.11	0.26	0.19	0.24	0.28	0.06
			SD 0.50	0.17	0.50	0.44	0.23	0.48	0.31	0.44	0.40	0.43	0.45	0.23

Note: N = 359.

predictors: overall, girls were almost six times more likely to perceive images in this game as negative stereotypes of women than were boys. Further, follow-up *t* test analyses of gender differences by grade showed that in ninth grade, there was no significant difference between boys' ratings ($M = .59$, $SD = .49$) and girls' ($M = .63$, $SD = .49$); however, in eleventh grade, girls ($M = .74$, $SD = .44$) were more likely than boys ($M = .29$, $SD = .46$), ($p < .001$) to view images in the FS game as negative stereotypes of women. Older girls were thus more likely to view the images in the FS game as negative stereotypes than were older boys. The summary of the results for the regression analyses for the MS and FS games appear in Table 3.

Table 3. Logistic regression analyses by game type: Main effects for presence of stereotyped images

	<i>Male-stereotyped</i>			<i>Female-stereotyped</i>		
	<i>OR</i>	<i>95% CI</i>		<i>OR</i>	<i>95% CI</i>	
Presence of stereotypes						
Play frequency	.90	.72	1.13	‡	†	†
Gender	1.60	.97	2.64	4.18***	2.21	7.89
Grade	‡	†	†	2.76	.93	8.14
Stereotypes positive?						
Play frequency	‡	†	†	.98	.64	1.48
Gender	.32**	.16	.65	.21**	.07	.62
Grade	‡	†	†	3.04*	1.27	7.26
Stereotypes negative?						
Play frequency	.95	.75	1.20	‡	†	†
Gender	2.20**	1.31	3.70	6.71***	3.51	12.83
Grade	‡	†	†	2.20	.80	6.04

Note: $N = 359$. OR = Odds ratio. CI = Confidence interval. Values for gender were 0 = boys, 1 = girls; for grade 0 = 11th, 1 = 9th; for outcome variables 0 = no, 1 = yes. * $p < .05$, ** $p < .01$, *** $p < .001$. ‡ = variable was eliminated during the stepwise computation process. † = not applicable.

Comparisons of the responses across games confirmed that participants evaluated the three games differently according to their content. Regarding the positive and negative evaluations of the stereotyped images, there were within-subjects differences in the assessments [$F(2, 704) = 41.152$, $p < .001$, $\eta_p^2 = .11$, for whether the images are negative; $F(2, 704) = 4.191$, $p < .05$, $\eta_p^2 = .01$, for whether the images are positive]. Stereotyped images in the FS game were rated as negative the most often ($M = .53$, $SD = .48$) compared to the two other games ($M = .30$, $SD = .43$, for GN; and $M = .34$, $SD = .45$, for MS), ($p < .001$ for all pairwise comparisons). Images in the GN game ($M = .12$, $SD = .30$) were viewed

as positive more often than those in the FS game ($M = .07$, $SD = .24$; $p < .001$), but neither the GN nor FS game were evaluated significantly differently from the MS game ($M = .09$, $SD = .26$).

Potential Effect of Stereotypical Character Portrayals

"Can playing this game have harmful consequences for the players?" We asked participants if any of the games presented in the survey would be appropriate for anyone to play if there had not been a rating system in place (see analyses of governmental regulation below) and then were offered four types of answers to justify their opinion: "people can decide what they want to play," "there are no rules against it," "there may be harmful consequences to the player," and "there are no harmful consequences to the player." Stepwise multinomial logistic regression, conducted with "harmful consequences" as the reference category, revealed that for the MS game [$\chi(3) = 25.667$, $p < .001$], gender was the only significant predictor: girls were less likely to pick "people can decide" ($OR = .35$, $CI_{95} = .20$ to $.59$, $p < .001$), "there are no rules against it" ($OR = .41$, $CI_{95} = .18$ to $.91$, $p < .05$) and "there are no harmful consequences to the player" ($OR = .13$, $CI_{95} = .03$ to $.59$, $p < .01$) over "there may be harmful consequences to the player;" which means that compared to girls, boys were significantly more likely to pick "there are no harmful consequences to the player" over "there may be harmful consequences to the player." For the FS game, gender and grade were significant predictors [$\chi(6) = 28.535$, $p < .001$]. Girls and ninth-graders were less likely to pick "people can decide" ($OR = .38$, $CI_{95} = .22$ to $.65$, $p < .001$; and $OR = .39$, $CI_{95} = .23$ to $.65$, $p < .001$) and "no rules" ($OR = .34$, $CI_{95} = .16$ to $.73$, $p < .01$; and $OR = .36$, $CI_{95} = .17$ to $.76$, $p < .01$) over "harmful consequences." In sum, compared to boys, girls were more likely to view the MS game as having harmful consequences than as having no harm; girls and younger adolescents were more likely than boys and older adolescents to view the FS game as having harmful consequences than as a game that can be played by anyone because there are no rules or because players can decide themselves what to play. These results confirm the expectation that gender differences exist regarding the attribution of harmful consequences to the images in video game playing, particularly games with negative stereotypic images.

"Do you think adolescents change their attitudes about males and females based on what they see in this game?" When judgments about the influence of character portrayals on players' attitudes towards people in real life were evaluated (1 = very negative change; 2 = somewhat negative change; 3 = no change at all; 4 = somewhat positive change; 5 = very positive change), stepwise ordinary least squares (OLS) regression revealed gender differences in evaluations of the two games with stereotyped characters. Boys ($B = .33$, $p < .001$) held more positive expectations about the influence of portrayals of males in the MS game [$F(4, 353) = 14.985$, $p < .001$, $R_a^2 = .14$]; and they also expected more favorable attitudinal changes towards females ($B = .35$, $p < .001$) as a result of character depictions in the FS game [$F(4, 352) = 14.256$, $p < .001$, $R_a^2 = .13$]. Thus, boys were more likely than girls to judge that playing games with stereotypic content leads to a positive change in players' attitudes.

In addition, for the MS game, there was a significant interaction between play frequency and grade ($B = .35, p < .05$). Multiple comparisons with Bonferroni adjustment conducted separately for each grade showed that eleventh-grade participants who played video games "often" ($M = 3.26, SD = .89$) rated characters in this game as having more positive influence on players' attitudes than those who played games "never," "rarely," or "sometimes" ($M = 2.26, SD = .79$; $M = 2.61, SD = 1.06$; and $M = 2.46, SD = .91$), ($p < .01$). In contrast, ninth-grade participants who played video games "often" ($M = 2.82, SD = .83$) differed only from those who played games "rarely" ($M = 2.32, SD = .74$), ($p < .05$). Thus, participants in eleventh grade who played video games the most were more likely to view the influence of the MS game on players' attitudes as positive compared to those who played less frequently or not at all.

For the FS game, there also was an interaction between play frequency and grade ($B = .39, p < .05$) as well as a significant effect for play frequency overall ($B = -.39, p < .05$). Follow-up multiple comparisons revealed that while ninth-graders' ($M = 2.17, SD = 1.04$) evaluations did not vary as a function of their play frequency, opinions of eleventh-graders who played "often" ($M = 3.06, SD = 1.09$) differed from opinions of eleventh-graders who played "never" or "rarely" ($M = 2.13, SD = 1.11$ and $M = 2.39, SD = 1.20$), ($p < .05$). Thus, the most frequent players in eleventh grade expected that playing the FS game had more positive influences on attitudes than did infrequent players or non-players. The summary of the regression results can be found in Table 4.

Table 4. OLS regression analyses by game type: Main effects for change in attitudes and disregard for friend's opinion

	<i>Gender-neutral</i>		<i>Male-stereotyped</i>		<i>Female-stereotyped</i>	
	R^2	B	R^2	B	R^2	B
Change in attitudes towards males (females)	.02 (.11)		.14 (†)		† (.13)	
Play frequency		‡ (-.20)		-.27 (†)		† (-.39*)
Gender		.15** (-.14)		.33*** (†)		† (.35**)
Grade		.00 (-.16)		-.07 (†)		† (.01)
OK to play regardless of friend's opinion	.16		.20		.13	
Play frequency		-.09		.15*		-.03
Gender		.21*		.37***		.39***
Grade		.06		.09		.12*

Note: min $N = 356$. Values for gender were 0 = girls, 1 = boys; for grade 0 = 9th, 1 = 11th. "Attitude change" ranged from 1 = very negative to 5 = very positive; "OK to play" ranged from 1 = never all right to 5 = always all right. * $p < .05$, ** $p < .01$, *** $p < .001$. ‡ = variable was eliminated during the stepwise computation process. † = not applicable.

Maturity of Adolescents' Decisions about Games with Stereotypical Characters

"Are adolescents mature enough to choose which games are all right for them to play?" Participants were asked to assess whether adolescents 13 years old and up or their parents should decide whether a particular type of game is appropriate for adolescents to play (see analyses of governmental regulation below), and then offered four types of answers to justify their opinion: "adolescent is old/mature enough to choose," "adolescent has a right to choose," "parent knows best," and "parent has a right to choose." Stepwise multinomial logistic regression analyses, conducted with "maturity" as the reference category, revealed that for the MS game, significant predictors were play frequency, grade, and two interactions: play frequency by gender, and grade by gender [$\chi(27) = 86.112, p < .001$]. Compared to those who played "often," players who played "sometimes" were more likely to pick "adolescent has a right to choose" ($OR = 3.19, CI_{95} = 1.14 \text{ to } 8.95, p < .05$) over "adolescent is mature," which means that the most frequent players were more likely to use adolescent maturity as their justification.

Similarly, older players were more likely to refer to adolescent maturity: compared to eleventh graders, ninth graders were less likely to pick "adolescent has a right to choose" ($OR = .28, CI_{95} = .11 \text{ to } .73, p < .01$) over "adolescent is mature." Further, there were gender differences among those who played "never" or "sometimes": girls were less likely than boys to pick "adolescent has a right to choose" ($OR = .03, CI_{95} = .00 \text{ to } .61, p < .05$; and $OR = .03, CI_{95} = .00 \text{ to } .62, p < .05$) over "adolescent is mature." Lastly, among girls, ninth graders were more likely than eleventh graders to pick "adolescent has a right to choose" ($OR = 11.51, CI_{95} = 1.96 \text{ to } 67.59, p < .01$) and "parent knows best" ($OR = 8.72, CI_{95} = 2.12 \text{ to } 35.84, p < .01$) over "adolescent is mature," meaning that older girls were more likely to think that adolescents are mature enough to decide which male-stereotyped games are appropriate for them.

For the FS game, gender and a grade by gender interaction were the significant predictors [$\chi(9) = 22.377, p < .01$]. Girls were more likely than boys to choose the justification "parent has a right to choose" ($OR = 3.03, CI_{95} = 1.12 \text{ to } 8.22, p < .05$) over "adolescent is mature;" and among girls, ninth graders were again more likely than eleventh graders to pick "parent knows best" ($OR = 3.62, CI_{95} = 1.18 \text{ to } 11.16, p < .05$) over "adolescent is mature." Thus, younger girls supported parental jurisdiction more often than did older girls.

Sensitivity towards Those Offended by the Stereotyped Gender Portrayals

"Is it OK to keep playing the game if a friend is upset about how the characters are portrayed?" Participants' responses to this question were scored on a five-point scale (1 = never all right; 2 = rarely all right; 3 = sometimes all right; 4 = usually all right; 5 = always all right). For the MS game, play frequency and gender were the two significant predictors [$F(3, 353) = 30.455, p < .001, R_a^2 = .20$], with boys ($B = .37, p < .001$) and those who played video games more often ($B = .15, p < .05$) being more likely to rate that it was all right to keep playing the game. For the FS game, gender and grade were the two significant predictors [$F(3, 353) = 18.949, p < .001, R_a^2 = .13$], with boys ($B = .39, p < .001$) and older adolescents

($B = .12, p < .05$) saying more often that it was all right to keep playing. Table 4 shows a summary of findings for the main effects for this question. Overall, boys judged it more all right to keep playing even if a friend was upset about the portrayals in the game than did girls.

Participants' evaluations across the three types of games were tested with repeated measures ANOVA. Results indicated that there was a significant effect for the type of game, [$F(2, 698) = 118.542, p < .001, \eta_p^2 = .25$]; and also a significant interaction between game type and play frequency [$F(6, 698) = 2.316, p < .05, \eta_p^2 = .02$]. Follow-up tests revealed that participants thought it was all right to keep playing the GN game ($M = 3.37, SD = 1.13$) more often than they did for the MS and FS games ($M = 3.25, SD = 1.24$ and $M = 2.60, SD = 1.32; p < .001$), and that participants also thought that it was the least appropriate to keep playing the FS game ($p < .01$). With respect to the type of game by play frequency interaction, for the GN and MS games, participants who played "often" ($M = 3.89, SD = 1.07$ and $M = 3.90, SD = 1.07$) were more likely to say that it was all right to keep playing regardless of a friend's opinion than those who played "never" ($M = 3.13, SD = .97$ and $M = 2.80, SD = 1.11$), "rarely" ($M = 3.16, SD = 1.20$ and $M = 3.06, SD = 1.33$) or "sometimes" ($M = 3.39, SD = 1.06$ and $M = 3.30, SD = 1.13$), ($p < .01$). However, for the FS game, only participants who said they "never" play ($M = 2.36, SD = 1.31$) differed from the participants who play "often" ($M = 2.90, SD = 1.31; p < .05$). In general, the more often participants played video games the more likely they were to judge that it is all right to keep playing the game even if a friend is bothered by the images.

Evaluation of Authority Jurisdiction over Video Games

"Who should control which games are all right for adolescents to play?" Participants' answers about who should decide whether a particular type of game is appropriate for adolescents were analyzed using stepwise logistic regression. For analyses, the four possible response categories in the survey, "always adolescent," "usually adolescent," "usually their parent," and "always their parent," were recoded into a binomial variable (1 = adolescents, 0 = parents). Results revealed that for the GN game, the only significant predictor was play frequency [$\chi(3) = 18.752, p < .001$]. Compared to less frequent players, those who played more often were more likely to pick adolescent jurisdiction over parental jurisdiction ($OR = 1.51, CI_{95} = 1.03$ to $2.20, p < .05$). For the MS game, gender was the single significant predictor [$\chi(2) = 32.338, p < .001$], with girls being less likely to support adolescent jurisdiction ($OR = .36, CI_{95} = .21$ to $.61, p < .001$). For the FS game, gender and grade were significant [$\chi(2) = 12.312, p < .01$], with girls again being less likely to support adolescent jurisdiction over parental supervision ($OR = .50, CI_{95} = .32$ to $.77, p < .01$), and with older adolescents favoring adolescent jurisdiction ($OR = 1.56, CI_{95} = 1.01$ to $2.41, p < .05$). Thus, girls were more likely to view parental jurisdiction as more appropriate than adolescent jurisdiction for the stereotyped games but not for the non-stereotyped game, showing that they differentiated among games based on content when making judgments regarding parental jurisdiction.

When participants' responses across games were compared, it was found that there was a significant effect for both the type of game [$F(2, 671) = 80.218, p < .001, \eta_p^2 = .19$] and for the interaction between the game type and grade [$F(2, 671) = 4.195, p < .05, \eta_p^2 = .01$]. Follow-up analyses showed that for the GN game ($M = .73, SD = .44$) and the FS game ($M = .51, SD = .49$), adolescent jurisdiction was preferred more often than for the MS game ($M = .39, SD = .50$); the MS game was rated by participants as a game that should be under parental jurisdiction most often ($p < .001$). Regarding the interaction between game type and grade, follow-up analyses revealed that ninth- and eleventh-graders rated the MS game similarly ($M = .38, SD = .49$ and $M = .39, SD = .49$). The difference in ratings between the MS and FS games was not statistically significant for ninth grade ($M = .47, SD = .50$, for FS game), whereas in eleventh grade, more participants afforded adolescent jurisdiction over the FS game than over the MS game ($M = .55, SD = .50$, for FS game), ($p < .05$). Thus, by eleventh grade, adolescent jurisdiction was judged okay for the FS game more than the MS game.

"Should government control which games are appropriate for teenagers?" For governmental regulation in general (1 = yes, 0 = no), stepwise logistic regression revealed that for all three games, GN [$\chi(2) = 14.206, p < .001$], MS [$\chi(2) = 20.071, p < .001$] and FS [$\chi(2) = 6.975, p < .05$], only gender was significantly related to participants' judgments, with girls being consistently more likely to support governmental regulation ($OR = 2.13, CI_{95} = 1.05$ to $4.34, p < .05$; $OR = 2.36, CI_{95} = 1.41$ to $3.96, p < .001$; and $OR = 1.77, CI_{95} = 1.02$ to $3.07, p < .05$). (See Table 5 for the summary of the regression results.)

Table 5. Logistic regression analyses by game type: Main effects for governmental jurisdiction

	<i>Gender-neutral</i>			<i>Male-stereotyped</i>			<i>Female-stereotyped</i>		
	<i>OR</i>	<i>95% CI</i>		<i>OR</i>	<i>95% CI</i>		<i>OR</i>	<i>95% CI</i>	
Need for governmental control									
Play frequency	.79	.57	1.09	.91	.72	1.15	.97	.75	1.24
Gender	2.13*	1.05	4.34	2.36**	1.41	3.96	1.77*	1.02	3.07
Grade	‡	†	†	‡	†	†	‡	†	†
OK for anyone to play without rating system?									
Play frequency	1.02	.78	1.33	.96	.71	1.31	‡	†	†
Gender	.55*	.31	.97	.25**	.10	.62	.59*	.38	.91
Grade	.51**	.30	.85	‡	†	†	1.90**	1.23	2.94

Note: min $N = 345$. OR = Odds ratio. CI = Confidence interval. Values for gender were 0 = boys, 1 = girls; for grade 0 = 9th, 1 = 11th; for outcome variables 0 = no, 1 = yes. * $p < .05$, ** $p < .01$, *** $p < .001$. ‡ = variable was eliminated during the stepwise computation process. † = not applicable.

Comparisons across games, performed with repeated measures ANOVA, confirmed that participants' ratings varied significantly by game type [$F(2, 664) = 67.940, p < .001, \eta_p^2 = .17$]. Follow-up tests showed that the MS game ($M = .44, SD = .50$) was viewed as the most likely to need governmental regulation ($p < .001$); by comparison, fewer participants saw the GN and FS games as needing governmental jurisdiction ($M = .16, SD = .37$ and $M = .32, SD = .47; p < .001$).

"Would it be OK for anyone to play a game like this if there were no rating system?" Table 5 summarizes the findings for participants' responses to this question (1 = yes, 0 = no). For the GN game, gender and grade were the two significant predictors [$\chi(3) = 16.565, p < .001$], with girls ($OR = .55, CI_{95} = .31$ to $.97, p < .05$) and eleventh graders ($OR = .51, CI_{95} = .30$ to $.85, p < .01$) were less likely to say "yes." For the MS game, gender was the single significant predictor [$\chi(3) = 19.088, p < .001$], with girls less likely to say "yes" ($OR = .25, CI_{95} = .10$ to $.62, p < .01$). For the FS game, gender and grade were the significant predictors [$\chi(2) = 11.939, p < .01$]: girls ($OR = .59, CI_{95} = .38$ to $.91, p < .05$) were less likely to say that without any rating system in place, it would be okay for any player to play this type of game, whereas older adolescents were more likely ($OR = 1.90, CI_{95} = 1.23$ to $2.94, p < .01$).

Analyses of participants' answers across game types were conducted as well. Results of repeated measures ANOVA indicated that participants' ratings varied by type of game [$F(2, 676) = 116.234, p < .001, \eta_p^2 = .26$] and that there was a significant interaction between type of game and grade [$F(2, 676) = 11.097, p < .001, \eta_p^2 = .03$]. Follow-up tests revealed that in the absence of the rating system, allowing anyone to play the MS game was judged as the least appropriate ($M = .30, SD = .46$), followed by the FS game ($M = .44, SD = .50$) and the GN game ($M = .74, SD = .44$), which was rated as the most appropriate for anyone. Regarding the interaction between type of game and grade, participants' ratings of the MS game were similar for ninth and eleventh grade ($M = .30, SD = .46$ and $M = .31, SD = .46$); however, more ninth-graders rated the GN game as appropriate for anyone ($M = .82, SD = .39$ and $M = .67, SD = .47; p < .001$), while more eleventh-graders rated the FS game as appropriate for all players ($M = .37, SD = .48$ and $M = .51, SD = .50; p < .01$).

Discussion

In this study, adolescents evaluated video games with and without negative stereotypic portrayals of gender roles differently, and made a number of social cognitive differentiations between negative male-stereotypic content and negative female-stereotypic content, as was hypothesized. Moreover, there were significant gender and age-related differences in these judgments. Not surprisingly, younger adolescent boys played video games the most, and video game playing decreased with age from ninth to eleventh grade. Consistent with the literature, boys preferred violent games more than did girls, and this decreased with age as well.

What has not been demonstrated before is how boys and girls, and adolescents who play games frequently, evaluate images in video games that have been categorized

as “stereotypic” in the literature (Dill et al. 2005). We found that girls were more likely than boys to recognize stereotypes in the games, and particularly for the female-stereotypic games in which females were portrayed in sexually explicit ways. Further, girls were more likely than boys to view the male-stereotypic games, which depicted male characters as aggressive and violent, as negative. Overall, though, all participants viewed the images in the female-stereotypic games as more negative than in the male-stereotypic games. This suggests that violent and aggressive images are viewed in more positive light than are sexually exploitive images by adolescents. This finding raises a number of questions about why this is the case, and whether this negatively affects adolescent player attitudes about gender roles and expectations.

In fact, girls were more likely than boys to view the images as having harmful consequences. In contrast, boys were more likely to view the portrayal of males in the male-stereotypic game as positive. In general, boys were less critical about gender-stereotyped images in video games than were girls. After accounting for gender, though, interactions between play frequency and grade revealed that among older adolescents, more frequent playing was associated with increased likelihood of viewing stereotyped images as having positive influence on players’ attitudes, suggesting that more frequent players become less critical of (and potentially more desensitized to) the negative content of the games.

Extensive findings in the adolescent literature indicate that, with age, adolescents assert autonomy for decision-making about extracurricular activities (Smetana and Turiel 2003). This pattern was modified in the present study. While adolescents on the whole viewed video-game playing as within adolescents’ decision-making jurisdiction, girls and adolescents who did not play games frequently viewed games as requiring parental and governmental regulation more often than did boys and frequent players. This finding was more pronounced for the gender-neutral game and the game with negative female-stereotypic content than for the male-stereotypic game.

Adolescents were asked whether it was all right to play a game if a friend was upset about the character portrayal. This assessment was a measure of adolescents’ view about “harmfulness” and was developed from pilot data in open-ended interviews in which some female participants claimed that they were bothered when friends played games that depicted females in a negative light. Gender differences arose for this assessment, with boys more likely to judge playing a game even if a friend was upset as more legitimate than did girls. This raises an area for further inquiry to determine why this is the case, and how video-game playing bears on adolescent social relationships. One of the concerns about video-game playing is the extent to which playing video games replaces actual peer interaction, particularly during childhood and adolescence (Anderson and Bushman 2001). Another dimension of concern is the extent to which video-game playing creates conflict between friends, which potentially disrupts social relationships.

Consistent with our expectations, our hypothesis that play frequency would be related to a decreased awareness of the presence of stereotyped gender images in

the games was confirmed for the assessment about changes in players' attitudes based on what they see in the games. There also was a significant finding for the evaluation of maturity of adolescent players, with frequent players being more likely to judge that adolescent players are mature enough to understand which video games contain images that are inappropriate for them. Further, adolescents who played games more often showed a decreased concern about an opinion of a friend upset about stereotypical character portrayal. The last two findings were significant only for the male-stereotypic game, however. This indicates that the content of the games (i.e., presence of either male or female characters) was an important factor in adolescents' evaluations of stereotypical gender portrayals in video games. The explanation for why the association between play frequency and video game evaluations was observed for games containing male images more often than for games containing female images may be related to the fact that game categories with similar male characters, such as first-person shooter and sports games, are very popular among those who play games frequently. Therefore, frequent players may have stronger opinions about these types of games.

With respect to authority jurisdiction, the male-stereotypic game was evaluated most often as a game that should be under parental control; it was also rated as the game most likely in need of governmental regulation. In the absence of the rating system, allowing anyone to play the male-stereotypic game was judged as the least appropriate, followed by the other two games. Thus, adolescents do not view video-game playing as solely within the "personal" domain (Nucci 2001; Smetana and Turiel 2003). Aspects of video-game playing were viewed as having negative consequences for players and others by the majority of adolescents sampled in this study, indicating that more scrutiny of the regulation and monitoring of video-game playing is warranted.

While older adolescents opposed the idea of authority regulation more strongly than did younger adolescents, older adolescents viewed female-stereotyped images in video games as negative more often than did younger participants. Thus, older adolescents are more likely to view video-game playing as a personal decision than younger adolescents, but they also view stereotypic portrayals more negatively.

Other age-related findings were in contrast to our predictions, however. Specifically, we found that older adolescents who played games often (three or more times per week) expected players to have a more positive change in attitudes towards men and women in real life after playing video games. Additionally, for the game containing stereotyped portrayals of females, older adolescents were more likely to think that in the absence of the age restrictions it would be okay for anyone to play such a game. Also, compared to younger adolescents, older adolescents were more likely to think that it should be players' personal choice whether to play this type of game because "people can decide" themselves what to play, and because "there are no rules" preventing players from playing it, than to express a concern that negatively-stereotyped images of females could be harmful. Thus, we found that in many instances older adolescents were less rather than more critical of gender stereotypes in video games. One possible explanation for

this finding is that older adolescents have had more exposure to video games over their lifetimes and became less critical of them; however, further research is needed to confirm or disprove this interpretation.

It is important to emphasize here that the findings of gender differences in evaluations of stereotypes in video games do not imply that males are inherently more insensitive than females in their evaluations of stereotypical images. Rather, we believe that both gender and age differences reflect the greater long-term exposure to stereotyped video game content. Given that males typically play video games more often and that video game playing usually begins at a young age, these findings may represent the cumulative effects of playing video games for some period of time. While differences in video game playing habits between males and females did not permit us to reliably differentiate the effects of play frequency from the gender effects in this study, we suggest that future studies also examine the nature of gender differences by including greater numbers of less-frequently playing males and more-frequently playing females in their samples. Further, societal messages and expectations about gender stereotypes clearly play a role in how boys and girls evaluate stereotypic images ([Dill et al. 2005](#)). This aspect of gender stereotyping was beyond the scope of this study, but should be included in future research.

The purpose of this study was to explore the relationship between the amount and content of adolescent video game playing and attitudes towards stereotyped gender images in the games. To date, most of the research on the effects of playing video games has focused mainly on evaluating whether playing aggressive games leads to aggressive behavior in children and adolescents ([Anderson and Dill 2000](#)). Only recently have researchers begun to explore other areas of social development that may also be affected by exposure to the violence present in many popular video games. For example, [Gentile et al. \(2004\)](#) found that playing violent video games was related to poor school performance and getting into arguments with teachers, and [Funk et al. \(2004\)](#) discovered that frequent exposure to media violence, including aggressive video games, was related to lower empathy to real-life violence and stronger pro-violence attitudes. Further, several reviewers pointed out that many popular video games send incorrect messages to the players about gender roles and appearance of males and females in society ([Dietz 1998](#); [Dill et al. 2005](#); [Dill and Thill 2007](#); [Provenzo 2000](#)). Until now, however, virtually no studies have examined the connection between frequency of engagement in video game playing and adolescents' attitudes towards gender-stereotypical images in the games.

The unique contribution of the current study, then, pertained to demonstrating a relationship between video-game playing and decreased concern about the effects of negative gender stereotypes in the games using a social cognitive domain approach. Social cognitive domain theory ([Smetana 2006](#); [Turiel 1983](#); [1998](#); [2006](#)) provided the framework for the assessments in this study, which included measuring adolescents' judgments about the harmful consequences (if any) of video-game playing (the "moral" domain), the extent to which authority and the government should regulate game playing (the "societal" domain), and the ways

that game playing is viewed as a personal decision (the “personal” domain). The findings indicated that adolescents made a number of social-cognitive distinctions when evaluating video games, and age, gender, and frequency of play were significant and contributing factors to the pattern of findings.

Another important contribution of this study was that the content of the games—specifically, stereotypic images—was a central variable. Since not all games are violent nor do all games contain stereotypic images, it was important to separate the evaluations of video games with gender-neutral images from the games with male- and female-stereotyped characters. At the same time, although many popular video games contain stereotypical messages about gender roles in society, not all games do, so it is suggested that future studies use more specific indicators of exposure to gender-stereotyped material in the games than simply play frequency. Another recommended direction for future research is to explore the relationship between adolescents’ attitudes towards gender stereotypes and their video-game playing habits by using other measures of adolescents’ attitudes and/or playing tendency in addition to self-report measures, such as assessing change in their attitudes following participation in video-game playing session. Finally, the methodology of the present study was limited in that only verbal descriptions of the content and purpose of video games were presented to participants. Thus, the readers are cautioned that findings of the study may be reflective more of how adolescents respond to written marketing literature and descriptions of video games. Future studies are necessary to confirm whether current findings are generalizable to how adolescents respond to the games when they play them.

In this study we focused on gender stereotypes. Yet, given the additional prevalence of negative racial and ethnic stereotypes in many popular video games, it is possible that excessive exposure to such games can lead to desensitization to racial and ethnic stereotypes as well; racial and ethnic stereotypes emerge during childhood and adolescence and thus are most likely influenced by media portrayals (Killen 2007). This important issue warrants further investigation as it affects not only the development of adolescent players and their parents, but society as a whole. Further research should evaluate the long-term effects of playing video games that frequently depict ethnic minorities as well as other characters (e.g., police officers, teachers, older people, etc.) in an unflattering manner and/or encourage violence towards these characters.

In conclusion, our findings indicate that more frequent playing of video games is associated with greater acceptance and less critical evaluation of gender stereotypes. This finding supports the growing body of literature suggesting that exposure to the violent content of popular games can be detrimental to adolescents’ social development (Dill et al. 2005). Unfortunately, despite researchers’ attempts to bring attention to the negative consequences of children and adolescents playing video games that are overly aggressive and stimulating, many parents and legislators remain uneducated about the potentially harmful consequences of unsupervised video game play (Anderson and Bushman 2001). Our goal is that the current study will help to draw society’s attention to the need to be educated about the content of the games that children and adolescents are

playing, and to engage in discussions with youth about what type of content is reflected in the games they are playing, how they evaluate it, and who should decide which games adolescents play.

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