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Perceived influence of negative and positive video game

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This study seeks to examine the perceived effects between self and others in terms of both positive and negative video game. One hundred and sixty-four participants participated in the study and filled out questionnaires. Following assumptions of the third-person effect, the results showed that participants perceived others as more vulnerable to the negative effects of video games. Social distance also has effect on the magnitude of the third-person effect. The positive effects of video games yielded mixed results. Possible explanations are provided in the discussion.

Key words: Video games, positive effects, perceived influence, negative effects, third person effect.

INTRODUCTION

Video games have rapidly grown as entertainment media, and are being offered in an array of content such as sports, fighting, simulation, role-play and shooting, among others. Lachlan et al. (2000) suggested nine different game genres, including adventure, flight simulator, fighting, music, role-playing, racing, shooter, sports, and strategy/puzzle. In a later work, Haninger and Thompson (2004) categorized ten genres in their study. Games also include various features that people could choose to play offline or online, either as a single player or as part of a massively multiplayer (MMP) environment. From the perspective of the Uses and Gratifications Approach, people perceive that video game use has brought various positive effects, such as increasing social interaction, controlling or stimulating emotions, or improving cognitive skills (Sherry et al., 2006). However, media use is also well recognized for its negative effects. Depression, anxiety, and psychological disorders are reported to be associated with computer or Internet use (Kraut et al., 1998). Game users are reported having aggressive thoughts or being overly aroused after use (Lee and Peng, 2006).

It is well documented that people perceive others as more vulnerable to negative media effects than themselves (Gunther, 1995). Brosius and Engel (1996) have explored the underlying psychological mechanisms for this effect. They suggested that people generally have more positive image for themselves, thus people would believe that others are influenced more by negative media content. Since Davison (1983) first termed this self-other perceptual bias as "third-person effect," it has been widely adopted to examine media effects. People are found to exhibit third-person perception toward various media contexts, including television (Salwen and Dupagne, 1999), the Internet (Lo and Wei, 2002), advertising (Henriksen and Flora, 1999; Huh and Langteau, 2007), reality shows (Cohen and Weimann, 2008), first-person shooter games (Scharrer and Leone, 2008), violent games (Gilkins, 2007), and music (Sun et al., 2008).

A number of studies have examined several moderators of the third-person effect (Sun et al., 2008). Social desirability, for example, tends to influence third-person perception. When media messages are negative or deemed socially undesirable, people believe that they are less vulnerable than others to such messages. When a message is regarded as desirable, however, people do not hold this perception; in this instance, they perceive themselves to be more easily influenced by the media messages than others (Cho and Boster, 2008; Duck et al., 1995; Gunther and Thorson, 1992). Duck et al. (1995) found that when judging the influence of high-quality

AIDS advertisements, participants tended to report that they were more easily influenced by (rather than less influenced by) positive advertisements than others.

Social distance also moderates the third-person effects. The third-person effect increases when the social relationship between self and others are more distant. Studies show that people consider distant others, such as the public, to be more easily influenced by cigarette advertisements than their close friends (Meirick, 2005). In a study exploring adolescents' third-person perception on first-person shooter video games, Scharrer and Leone (2008) found that, like adults, 6th and 7th graders did exhibit third-person perception on the negative impacts of video games. These adolescents believe that others, especially those younger others, are more susceptible to the impacts of video games. They also believe that they should be allowed to play video games more than others.

Scharrer and Leone (2008) study focused mainly on the third-person perception of negative video game effects, yet studies on positive video game effect and the third-person perception remain scarce. The present study expected to explore both of the perceived positive and negative effects of video games of college students and others with different social distance (e.g., other college students as closer others, and high school students as distant others). According to the literature on third-person effects, people perceive others as more vulnerable to undesirable media effects (Cho and Boster, 2008; Duck et al., 1995; Gunther and Thorson, 1992). Socially distant others are considered more vulnerable to negative media effects than closer ones.

H_1: Participants will perceive other college students as more vulnerable to the negative effects of video games.

H_2: Participants will perceive high school students as more vulnerable to the negative effects of video games than other college students.

When the effects are regarded as desirable or positive, people perceive themselves to be influenced by the positive effects more than others.

H_3: Participants perceive themselves to be influenced more by the positive effects of video games.

Finally, hypotheses were proposed to compare the levels of third-person effects between the positive and negative effects, and between referent others of different social distances.

H_4: Third-person effect will be stronger for the negative effects of video games than for the positive effects.

H_5: The magnitude of the third-person effect will be greater as the perceived others become more socially distant.

METHODS

Participants and procedures

Students were recruited from communication classes and general science courses in a large university in Taiwan. Research assistants obtained permissions from instructors of each class and announced the recruitment at the end of class. Participants signed up for the study voluntarily. Participants from general science courses belonged to different colleges including liberal arts, engineering, business, and social sciences.

One hundred and sixty-four participants participated in the survey and earned extra credits for the class from which they were recruited. The average age of the participants is 20 years. About eighteen percent of the participants were freshmen, thirty-three percent were sophomores, twenty percent of the participants were juniors and the rest were seniors. Among them, forty-three percent (n=70) were male, and 57 percent (n=94) were female. In a typical week, participants reported playing video games for an average of 5 h (SD=6.6). The participants were diverse video game users – from those who reported 0 h of video game playing in a week to those who spend 35 h playing video games in a typical week. Participants filled out questionnaires in the same room including the following measurements: perceptions of video game effects, attitudes toward video games, video game use in a typical week, age, and gender.

Measures

The perceptions of video game effects were assessed by 11 items (see Appendix), which included both negative and positive effects that has been discussed in the academic literature (Lee and Peng, 2006; Nikken and Jansz, 2006). The items were rotated in the questionnaire. Participants were asked to report their perception on how each effect influences themselves and two different others, "other college students," and "high school students" (1= strongly disagree, 7= strongly agree).

Attitudes toward video games were assessed by asking participants whether playing video games is important to them (that is, playing video games is important to me), and whether playing video games is entertaining to them (that is, playing video games is entertaining). The participants rated the two attitude items on a 5-point scale (1= strongly disagree, 5= strongly agree). Participants also reported how many hours in a typical week they play video games. Age and gender were assessed at the end of the questionnaire.

Data analysis

An exploratory factor analysis with principle axis factoring (Russell, 2002) was conducted to examine the underlying structure of the 11 items of perceived effects of video games. Furthermore, direct oblimin rotation was used to help interpret the results (Fabrigar et al., 1999). A scree plot with parallel analysis (Cattell, 1966) was used to examine the dimensions of the scale[a]. The result shows that there are two factors in the data, as there are two eigenvalues above the generated random data. The two factors resulting from the factor solution accounted for 54.20% of the variance. Factor 1 includes items that assessed the positive effects of video games, including emotional-related effects (e.g. relaxing and learning to control emotions), physical or intellectual-related effects (e.g. training intellectual capacity and practicing eye-hand coordination), and social aspects (e.g. expanding circle of friends). Factor 2 includes items that described explicit negative aspects of video game effects, including body discomfort, such as experiencing dizziness and nausea, or effects caused by negative content of

Table 1. Descriptive statistics and significance tests of perceived negative effects of video games.

Items		S	C	H	F(2,161)	t_{S_C}	t_{C_H}	t_{S_H}
Negative effects								
1. Experiencing dizziness and nausea	M	2.38	2.84	3.01	16.19**	-3.39*	-1.43	-4.22**
	SD	1.48	1.61	1.77	(.091)			
2. Becoming violent	M	2.05	3.34	4.84	450.22**	-10.58**	-14.58**	-21.16**
	SD	1.40	1.56	1.52	(.737)			
3. Becoming excited or hyperactive	M	2.69	4.01	5.12	314.54**	-10.56**	-10.85**	-18.23**
	SD	1.66	1.64	1.44	(.661)			
4. Obtaining wrong notions about gender relations	M	1.73	3.18	4.83	494.455	-11.60**	-14.46**	-22.44**
	SD	1.16	1.64	1.65	(.754)			
5. Considering violence a normal way of solving problems	M	1.62	3.28	4.97	646.62**	-13.10**	-15.86**	-25.82**
	SD	1.09	1.69	1.60	(.798)			
6. Obtaining wrong ideas about erotica	M	1.75	3.28	4.96	627.76**	-12.17**	-15.85**	-25.53**
	SD	1.14	1.64	1.51	(.796)			

S: Perceived effect on self. C: Perceived effect on other college students. H: Perceived effect on high school students. t_1= self vs. other college students. t_2=other college students vs. high school students. t_3=self vs. high school students.**=p<.001. *=p<.05. Values in the parentheses represent η^2.

Table 2. Descriptive statistics and significance tests of perceived positive effects of video games.

Items		S	C	H	F(2,161)	t_{S_C}	t_{C_H}	t_{S_H}
Positive effects								
1. Training intellectual capacity	M	3.45	3.43	2.87	18.62**	.11	5.09**	4.10**
	SD	1.68	1.65	1.79	(.104)			
2. Practicing eye-hand coordination	M	4.43	4.16	3.86	25.25**	2.27*	2.99*	4.53**
	SD	1.67	1.67	1.77	(.136)			
3. Relaxing	M	4.85	4.97	4.16	30.91**	-0.97	7.27**	5.01**
	SD	1.55	1.68	1.67	(.161)			
4. Learning to control emotions	M	3.05	3.04	2.51	128.94**	0.17	4.85**	4.66**
	SD	1.51	1.53	1.30	(.445)			
5. Expanding my (their) circle of friends	M	3.57	5.12	5.18	86.27**	-11.10**	-0.57	-9.30**
	SD	1.92	1.61	1.67	(.349)			

S: Perceived effect on self. C: Perceived effect on other college students. H: Perceived effect on high school students. t_1= self vs. other college students. t_2=other college students vs. high school students. t_3=self vs. high school students.**=p<.001. *=p<.05. Values in the parentheses represent η^2.

video games, such as becoming violent or obtaining wrong ideas from what's portrayed in the video games. The items were loaded on two factors as expected (Tables 1 and 2). The reliability of items of Factor 1 was alpha=0.77, and the reliability of items of Factor 2 was alpha=0.80.

To examine hypotheses 1 and 2, a series of ANOVAs were run with perceived negative effects of video games on the self, on other college students, and on high school students as within-subjects factors. Gender was entered as a between-subjects factor. Paired sample t-tests were employed to compare means among three referent groups after significant overall F values were found.

To examine hypothesis 3, ANOVAs were run with the perceived

Table 3. Third-Person effects and t-Tests for mean comparison.

	M	*SD*	*t*(163)
Negative (self vs. other college students)	1.54	1.39	12.14
Positive (self vs. other college students)	-0.04	0.95	
Negative (high school vs. other college students)	1.56	1.18	18.14
Positive (high school vs. other college students)	-0.55	0.83	
Negative (self vs. high school students)	3.10	1.49	24.12
Positive (self vs. high school students)	-.59	1.18	

positive effects on the three referent groups entered as within-subjects factors, and gender as a between-subjects factor.

To test hypotheses 4 and 5, items loaded on the negative and positive dimensions were averaged into negative perceived-effect index and positive perceived-effect index specific to each referent. Indexes of third-person effect were further calculated by subtracting the self perceived-effect index from each of the two referent perceived-effect indexes, and then subtracting the other college student perceived-effect index from those of high school students for the positive and negative effects, respectively. Higher values obtained indicate a stronger third-person effect.

Hypothesis 4 proposed that the third-person perception toward negative effects will be stronger than third-person perception toward positive effects. By using paired samples *t*-tests, negative perceived-effect index were compared with positive perceived-effect index for comparisons of the three referent groups: self-other college students, self-high school students, and other college students-high school students.

To examine hypothesis 5, paired samples *t*-tests were adopted to examine differences between third-person effects on the self/other college students and self/high school students.

RESULTS

Most of the participants reported that playing video games is entertaining (*M*=4.12; *SD*=.71), while 29.2% thought playing video games is important to them (*M*=2.84; *SD*=1.02).

The results of H1 and H2 show that there are significant main effects for the within-subjects factor[b]. Of the negative-effect items (Table 1), the mean values of perceived negative effects on the self were the lowest among the three groups, followed by means of other college students, and high school students. Paired samples *t*-tests results showed that the perceived effects between the three referent groups were significantly different from one another, except for item 1 in Table 1, in which perceived effects on the self were not significantly larger than other college students. Hypothesis 1 and 2 were both supported.

Hypothesis 3 proposed that the self is perceived to be influenced more by the positive effects of video games than others. Results are shown in Table 2. For items 1, 2, 3, and 4, the perceived positive effects on the self were significantly higher than the perceived effects on high

school students. Moreover, the perceived positive effects on other college students were also higher than high school students. With respect to training intellectual capacity, relaxing, and learning to control emotions, the perceived effects on the self and other college students were not significantly different from each other. Item 5, "expanding circle of friends", contradicts what was expected. The perceived effects of video games on expanding one's circle of friends were highest for high school students, followed by other college students, and by the self.

Hypothesis 4 proposed that the third-person perception toward negative effects will be stronger than third-person perception toward positive effects. The results of paired samples *t*-tests showed that there were significant differences on third-person effects between the negative and positive dimensions (Table 3). The magnitude of the third-person effects was higher for the negative effects than the positive effects.

The results supported hypothesis 5, showing that the disparities between the self and high school students are larger than those between self and other college students (for negative effects: *t*(163)=16.99, *p*<0.001; for positive effects: *t*(163)=-8.52, *p*<0.001).

DISCUSSION

The popularity of video gaming as an entertainment medium has attracted significant attention. More and more studies have attempted to explore how people perceive and respond to this entertainment medium. Although video games have attracted attention of parents and scholars by its negative effects (Lachlan, 2000), studies have recognized positive effects of video games on young people (Lee and Peng, 2006). This study attempted to examine the perceived influence of video game effects, including both positive and negative effects, among college students and asked whether the perceived effects were different among self, related others, and distant others.

The present study supported the view that people exhibit the third-person perception toward video game

effects. Consistent with Scharrer and Leone's (2008) findings, participants in this study believed that others are more susceptible to negative video game effects than they are.

The results also show that social distance moderates the third-person perception toward negative video game effects. The susceptibility of negative video games effects is stronger on distant others. In this study, high school students were perceived to be influenced more by negative video game effects than other college students, who belong to the same age group as the participants. Discrepancies of self-other perceptions were also larger when the referent others are more distant from the participants.

The perceived differences between self and others in terms of positive video game effects yield mixed findings. Participants believed that they are more easily influenced by video games as video games could enable them to enhance intellectual capacity, practice coordination, as well as relax and control their emotions than younger students. However, except for the effect on practicing eye-hand coordination, there are no perceptual differences between self and others of the same age.

Expanding circles of friends, which would be desirable for participants, did not correspond with what was expected. Participants considered younger others to be more easily influenced than they were. It is well documented that peer relationship is very important during adolescence (Buhrmester and Furman, 1987; Youniss and Haynie, 1992). The perception of effects may be estimated from one's experience as suggested by earlier research (Cho and Boster, 2008). It appears that the third-person effect on negative video game effects is robust as found by previous studies. The results of the positive effects of video games indicate that the perceptual differences between self and others largely depend on how distant the others are from the self, as well as the specific aspect of positive effects being analyzed.

There are limitations in this study. This study only measured perceptions of video games in general. As addressed in the introduction, there are many genres of video games that might contribute to different effects. The perception of game effects may be different across games of different types. For example, online games may provide a better platform to expand players' circles of friends than other games, whereas shooters games may lead to desensitization of violent behaviours because of the violent content. Future research should explore the perceived influence of game effects by different game genres.

There are no gender differences on perceptions of video game effects on self or others in this study. In Scharrer and Leone's (2008) study, only T-rated shooter games demonstrated significant gender differences. It is likely that the results might be different by different game types. Future research should explore how game genres

might influence different perceptions of game effects by gender.

Notes

a) In the scree plot, the eigenvalues generated from the factor analysis are compared with eigenvalues from random generated data by the same number of cases. See Horn (1965) for guidelines on using scree plot to examine dimensionality.
b) The main effect for gender was not significant for all 11 items.

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Appendix

Questionnaire Items

<u>Perceptions of Video game effects</u>

The following items include different effects that video games may have on you. Indicate the degree to which each effect would influence you on a scale ranging from "1" for "not affected at all" to "7" for "very affected."

1. Training intellectual capacity
2. Practicing eye-hand coordination
3. Relaxing
4. Learning to control emotions
5. Expanding circles of friends
6. Experiencing dizziness and nausea
7. Becoming violent
8. Becoming excited or hyperactive

9. Obtaining wrong notions about gender relations
10. Considering violence a normal way of solving problems
11. Obtaining wrong ideas about erotica
("Other college students" and "high school students" were used to replace "you" to measure perceptions of video game effects on other college students and high school students.)