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Third-person effect and gender in online gaming by Lin Zhang

Abstract

This study explores gender differences in third-person effect in the context of online games based on a survey conducted with 574 online gamers. Not only has it confirmed the existence of self-other perceptual gap regarding the effect of online games, it has also validated the gender difference in effect perception as both genders are found to perceive the opposite-gender as more susceptible to the influence of negative effects of games, and the size of this gender-based third-person effect is larger for women than for men. Perceived exposure, *i.e.*, the fact that men are perceived by both genders to be more frequently engaged in game playing, are found to be the best predictor of the gender-based third-person effect. The level of play, or self-report real exposure, is negatively correlated with gender-based third-person effect. Consistent with previous studies, when the gamers are asked to evaluate positive impacts of online games, a reversed first-person effect is detected. The study has offered several insights into the relative power of the different explanations of third-person effect as well as gender differences in online game consumption and effects perception.

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Introduction

The online gaming industry has witnessed an exponential growth in the past decade (Schmierbach, *et al.*, 2011; Shen and Williams, 2011). Compared to the traditional media, online games provide a more social and interactive environment that has sparked discussion and debate about both its negative effects (Chen and Park, 2005; Golub and Lingley, 2008) and positive effects (Steinkuehler and Williams, 2006; Wellman, *et al.*, 2003). The apparent gender inequality in virtual play and gender biases in the design and production of online games have only complicated the social perception of online gaming effects (Beasley and Standley, 2002; Cassell and Jenkins, 2000; Jenkins, 1998; Provenzo, 1992; Scharrer, 2004). Third-person effect theory (Davison, 1983) provides a useful theoretical

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framework to unpack the different perceptions of effects and its underlying psychological mechanism, and to deepen our understanding of the linkage between gender difference in online games and its social implications.

People more often than not consider themselves to be less susceptible to harmful media effects than others (Davison, 1983). Indeed, in the past three decades, this self-other perceptual gap hypothesized in the theory of third-person effect has found consistent support in empirical research on the topic conducted in a variety of contexts with different types of media, including politics (Brubaker, 2011; Lee, 2011), entertainment (Schmidt, 2011), advertising (Barak-Brandes, 2011; Shin and Kim, 2011), and health (Wei, *et al.*, 2008). A recent meta-analysis of 106 studies confirmed the robustness of extant research that has tested the hypothesis (Sun, *et al.*, 2008).

Although third-person effect has attracted sustained scholarly attention over the years, most of the research has been conducted with regard to traditional media like newspapers (Lee, 2011) and television (Gibbon and Durkin, 1995), and fewer on the Internet and other emerging media and communication technologies like online games (Li, 2008). Even when new media are examined, their unique characteristics that differentiate them from traditional media are glossed over. This is observed by Li (2008) who argued that studies on third person effect and the Internet tend to focus on "activities similar to traditional media," and "effect from media content" alone [1], and neglect the fact that users also participate in information building and exchange. This need for specifying characteristics of target referents and media content is echoed by Sun, *et al.* (2008) in their comprehensive meta-analysis who observed that simply replicating self-other disparity in perceived effects "is not going to carry us much further" [2]. In addition, despite all the empirical findings that support the universality of such self-other asymmetries, relatively less attention has been directed at explaining the effect and its underlying psychological mechanism (Reid, *et al.*, 2007). Those that have attempted this have so far generated mixed results as to the validity and reliability of existing explanatory models (Paul, *et al.*, 2000; Sun, *et al.*, 2008).

Two characteristics of online games have made it an exciting new medium on which the third-person theory can be advanced. First, the inherent gender biases in the production, consumption and media portrayal of video games in general make it compelling and possible to reappraise theoretical models like the social distance corollary, media exposure explanation and self-categorization theory, and to see how the socially-significant target referent of gender might further our current understanding of third-person perceptual difference in media effects. This not only contributes to explicating whether and how men and women differ in their perception of media effects on self and other, a neglected dimension in the current third-person research (Lo and Wei, 2002; Chia, 2009), but also to the study of gender and online games, specifically how gender-specific perceptions of game effects influence gaming culture and community. Second, different from content like pornography or health information whose effects are generally considered unambiguously positive, negative or neutral, people disagree as to the effects of online games (Chen and Park, 2005; Schmierbach, *et al.*, 2011; Steinkuehler and Williams, 2006; Zhong, 2009), since gamers have greater autonomy in determining how they engage with the medium as compared to traditional media users. This coexistence of "pro-social" and "anti-social" effects of online gaming (Zhong, 2009) allows us to test the role that "message desirability" plays in mediating the third person effect, a comparatively under-studied variable whose influence remains unclear and inconsistent (Zhong, 2009; Eveland and McLeod, 1999).

In this study, we will examine how third person effects are experienced differently by male and female online game players so as to test the relative power of the social distance corollary and exposure theory in explaining third-person effect. We endeavor to expand the dimension of exposure to include both real exposure and perceived exposure and see how they might moderate the perceptual gap. In addition, both the positive and negative effects of online games are tested to differentiate message desirability.

Lin Zhang

Doctoral student,
USC Annenberg
School for
Communication and
Journalism



Online gaming, gender and third-person effect

Although past research has established the consistency of third person perceptual difference, accounts for why it happens vary greatly. In recent years, scholars have been exploring the underlying psychological mechanism behind third-person effects. One prominent explanation is the social distance corollary, which states a positive relationship between the size of third person effect and the social distance between self and the referent others (Elder, *et al.*, 2006; Eveland and McLeod, 1999).

Extant research has confirmed the social distance corollary as a reliable explanation of third person perception (Cohen, *et al.*, 1988; McLeod, *et al.*, 1997; Eveland and McLeod, 1999; Chia, 2009, Schmierbach, *et al.*, 2011). In general, people are found to perceive dissimilar others as more susceptible to the negative effects of media content. Social distance has been operationalized, for instance, as the difference between self and friends (Chia, 2009), among self, family and strangers (Zhong, 2009), or among children, college students and older adults (Schmierbach, *et al.*, 2011). Compared to other identity labels, gender is a relatively neglected social construct. One plausible cause of this negligence of gender is the lack of male-female disparity in media consumption and effects with regard to most media like TV, newspapers and advertisement etc. However, online games stand as a case where considerable differences are both assumed and reported, which calls for a close examination of the relationship between gender and perception of effects.

Gender bias in online gaming culture and the video game industry have been widely observed and acknowledged. The fact that studies in recent years have started to debunk gender stereotypes in the online gaming world by offering empirical evidence only makes gender and online gaming a more compelling case to look at with regard to the social distance and exposure explanations of third-person effects. On the one hand, according to the third-person effect theory, the difference between self and the opposite gender is a potential source of third-person perception (Chia, 2009, Lo and Wei, 2002; Reid, *et al.*, 2007). On the other hand, exposure might stand as a competing explanation, that is, if men are generally believed to be more frequently exposed to games than females, it is likely that people will perceive men as more susceptible to the effects of online gaming, even though women might play as much as men in reality (Williams, *et al.*, 2008).

The prevalent view holds that the virtual world of online gaming is dominated by men, and that games are generally designed by men for male consumers, which directly leads to stereotypical portrayal by the media of both the industry and gamers. Recent research suggests that although online game players are still predominately male (Williams, *et al.*, 2008; Ivory, 2006; Griffiths, *et al.*, 2004), women are increasingly becoming the driving force behind game playing (Williams, *et al.*, 2008; Jones, 2003). For instance, Williams, *et al.* (2008) in their census of Ever Quest 2 players found that female gamers are more dedicated, spending more hours per week than their male counterparts ($F=29.31$ h/w Vs. $M=25.03$ h/w), and are less likely to quit once they are committed to a game. In addition, there's a steady rise in the number of female players in the general gamer population (Williams, *et al.*, 2008).

However, in spite of females' growing presence in the virtual world, males are still the industry's primary target consumer (Beasley and Standley, 2002; Cassell and Jenkins, 2000; Provenzo, 1992; Scharrer, 2004). Female characters are either under-represented or represented to reflect stereotypical male interests (Jansz and Martis, 2007). The industry's focus on male consumers is further sustained and fueled by the framing of games as male-oriented and male-dominated by the general media coverage (Jansz, *et al.*, 2010), game advertisement and reviews (Ivory, 2006), which only reinforced the already-existing gender differences in the game industry and the public's understanding of gaming culture.

The inherent and perceived biases in the culture of online gaming have significant implications for the third person effect theory. Compared to other media content, gender differences are magnified and made more visible in online gaming, which may lead to the observation of a more salient male-female discrepancy in effect perception. Similar findings were secured with media content like Internet pornography (Lo and Wei, 2002; Reid, *et al.*, 2007) and depiction of idealized body images (Chia, 2009). For

example, Lo and Wei (2002) found that both male and female respondents in their study tend to perceive Internet pornography to have greater negative effects on other males than on other females and the size of difference is larger for female respondents [3]. In her study of the third-person perceptions about idealized body image among Singaporean college women, Chia (2009) reported a larger third person effect when the comparison group is opposite-sex peer than same-sex. Based on the social distance explanation of third-person effect, we can predict that online gamers will perceive games to have greater negative effects on others than on selves. Similarly, given the gender gap, they will perceive games to have greater negative effects on the opposite-gender players than on same-gender players.

H1a: Online gamers will perceive games to have greater negative effects on other players than on themselves.

H1b: Online gamers will perceive games to have greater negative effects on other opposite-gender players than on other same-gender players.

Nevertheless, many researchers argue that social distance sometimes fail to fully account for the third-person perceptual gap, and instead, the concept of media exposure might be a better explanation (Eveland and McLeod, 1999; Peiser and Peter, 2000). The media exposure hypothesis has two components. On the one hand, third-person perceptions are said to be driven by "general media exposure" (Reid, *et al.*, 2007; Innes and Zeitz, 1988), which in subsequent tests have generated mixed results (Duck *et al.*, 1995; Schmierbach, *et al.*, 2011). On the other hand, third-person perceptions may result from people's assumption about the relative exposure of others to negative messages (Eveland and McLeod, 1999; McLeod, *et al.*, 1997). But this model does not make provision for exposure to positive messages.

The most comprehensive account of the psychological mechanism of third person effect is offered by the self-categorization theory (Reid, *et al.*, 2007; Turner, *et al.*, 1987), which has combined social distance explanation with the exposure hypothesis. According to self-categorization theory, "people represent categories as prototypes" that are "self referential and context dependent", and prototypes are the basis for making social judgment [4]. Therefore, "normative fit" becomes a central criterion when making decisions about effects. When media content is considered normative for a dissimilar group, third-person perceptions should be high, but when it is more normative for the respondents' ingroup than the comparison group, a reversed effect or a first person effect might result (Schmierbach, *et al.*, 2011).

Some studies have been done to validate the effects of content exposure on third-person perceptual gap with regard to video games. Boyle, *et al.* (2008) compared the influence of both perceived and self-reported exposure on self and other and discovered that though people in general judge the negative effects of video game playing based on their perception of other people's exposure to games, when it comes to the self, reported exposure generates reversed effects. They attributed the result to people's ego-defensive reaction [5]. In a more recent study, Schmierbach, *et al.* (2011) examined the issue of exposure with a sample of college students and confirmed the negative correlation between the level of exposure and third person effects. Interestingly, by comparing college students' perception of negative game effects on three groups, namely children, college students and adults over 40, their results failed to substantiate the exposure theory and instead pointed towards an alternative explanation of perceived vulnerability [6]. The exposure hypothesis leads us to speculate that female online gamers will be more likely than male to perceive that games will exert negative effects on other opposite-gender players than on other same-gender players. This male-female perceptual gap, according to the exposure theory, can be attributed to the popular belief of men as more engaged and spend more time playing games online than women.

H1c: Female online gamers will be more

likely than male to perceive that games will exert negative effects on other opposite-gender players than on other same-gender players.

However, in face of newer and more nuanced empirical studies that have argued against the belief, it is important to not take exposure for granted, and instead test whether men are indeed more frequently exposed to video games, and if the perception of online games as normative for men and non-normative for women still rings true with the online gamer population. In addition, gender differentiation in online game allows examination of the exposure explanation in relation to the social distance corollary to test the relative power of the different explanatory accounts of the third-person perceptual gap in the current context.

H2a: Gamers believe that males are being more frequently exposed to online games than females.

H2b: Males are more frequently exposed to online games than females.

RQ1: Gender, self-report real exposure to games, and perceived exposure to games, which will be a better predictor of the gender-based third-person perceptual bias?

Another popular explanation of third-person effect is optimistic bias or people's need for self-enhancement (Gunther and Mundy, 1993; Weinstein, 1980). According to self-enhancement theory, third person perceptions are driven by people's attempts to maintain or enhance a positive self-image (Gunther and Mundy, 1993). Optimistic bias refers to people's tendency to believe that negative events are more likely to happen to others whereas positive events tend to favor themselves [7]. Gunther and Mundy (1993) used the theory of self-enhancement to explain how message desirability relates to self-other perceptual difference, and suggested that third person effect would be more salient with harmful outcomes and is not likely to be detected with beneficial messages [8].

Indeed, a survey of literature reveals that studies of third-person perception are mostly limited to negative media effects (Schmierbach, *et al.*, 2011). Those that have attempted to test the hypothesis on positive effects have produced mixed results (Reid, *et al.*, 2007). Whereas some evidence for first person perceptions for socially desirable messages is secured with regard to video game effects (Schmierbach, *et al.*, 2011) and other media (David, *et al.*, 2002; Duck, *et al.*, 1995), others detect no significant self-other difference (Chia, *et al.*, 2004; Eveland and McLeod, 1999). In a meta-analysis of 106 published studies, Sun, *et al.* (2008) discovered "message desirability" to be the most robust moderator. However, they also noted that first person perception regarding presumed desirable influence is not well established, partly due to a lack of extant literature [9]. Obviously, more research needs to be conducted to determine whether and how the desirability of message content has an impact on third person perception.

Online games, which are considered both pathological (Chen and Park, 2005; Golub and Lingley, 2008) and beneficial (Steinkuehler and Williams, 2006; Wellman, *et al.*, 2003) to players, provide a good opportunity to look into the relationship between content desirability and self-other perceptual gap (Schmierbach, *et al.*, 2011; Zhong, 2009). With regard to third person effect and the positive and negative effects of video games, Zhong (2009) tested Chinese Internet users' third person perceptions of the prosocial and antisocial effects of video games. She confirmed the message desirability plays in moderating the self-other perceptual gap, and specifically, the perceptual bias was reversed when respondents were asked to evaluate prosocial game effects [10]. However, she adopted a rather narrow and vague conceptualization of the pros and cons of online gaming, and focused exclusively on addiction and making friends in her measurement to the negligence of a battalion of other effects. In comparison Schmierbach, *et al.* (2011) used a more exhaustive list of

positive and negative effects of video games in their research and confirmed "individuals are much more willing to embrace the positive effects and less willing to acknowledge negative effects on themselves" [11]. Yet it would be interesting to carry the self-enhancement theory further in the current context and see how it plays out with a broad range of acknowledged positive and negative effects of online gaming.

H3: Gamers will perceive games to have a greater positive effect on themselves than on others (first-person or desirability message effect).



Methodology

Participants and sampling procedure

An Internet-based survey was conducted with a probability sample of online gamers in China. The sampling frame for the study is a major online gaming guild in China with thousands of registered players all over the country and about one thousand active players. The guild is one of the largest and most well-known online gaming guilds in China with active gamers of all ages throughout the country. First, a list of the regular guilders' QQ account numbers (the most popular online instant messenger platform in China) was obtained through contacting the guild leader, which contained 792 cases. Then an online survey was distributed by sending an instant message to each account that included a short invitation for participation and a link to the online survey. The online survey began with an informed consent page, the participants were directed into the content of the survey after they had read the informed consent. Of the 610 surveys started, 574 were completed, which yielded a final response rate of 77.02 percent and a final sample size of 574, with 355 males and 219 females.

Effects of online games on self

The effects of online games on self were assessed in two ways with regard to both the positive and negative effects. The positive effects of online gamers on self were measured by asking the participants to indicate to what extent they agree/disagree with a series of questions about the specific effects on themselves using a seven-point scale ranging from one to seven, with one indicating strongly disagree and seven to strongly agree. The same scale was used for all measures of effects in this study. The measure of perceived positive effects of online gaming included five items: participants were asked to indicate to what extent they agree or disagree with the following statements about playing online games: 1. It helps me make friends; 2. It helps me learn about different cultures and history with the storyline; 3. It provides me with a social outlet; 4. It helps me improve my hand-eye coordination; and, 5. It helps me learn more about computers and the Internet ($M=22.10$, $SD=8.26$, Cronbach's $\alpha=.97$). The first question was taken from Zhong's (2009) study of online gaming and third-person effect in China and the last three were adapted from the research conducted by Schmierbach, *et al.* (2011) on third-person effect and video games. While Zhong's study had a narrow focus on "making friends" in his measure, some of the items included in Schmierbach, *et al.*'s measure were only applicable to video games. So a combination of the two generated a more valid and reliable measure for the current study. The measure of perceived negative effects of online gaming also contained five items: participants were asked to indicate to what extent they agree or disagree with the following statements about playing online games: 1. It causes me to waste money; 2. It causes me to interact less often with family and friends; 3. It causes me to exercise less than needed; 4. It makes it difficult for me to concentrate on work or study; and, 5. It causes me to rest or sleep less than needed ($M=18.63$, $SD=7.87$, Cronbach's $\alpha=.97$).

Effects of online games on others

The effects of online games on others were measured using the same items as above. However, participants were asked to indicate their

perception of effects on other same gender players, *i.e.*, males were asked about their perception of other males and females were asked about other females, and then on opposite gender players, *i.e.*, males were asked about their perception of females and females were asked about males. The approach of differentiating between same and different genders has also been attempted in Lo and Wei's (2002) and Chia's (2009) studies. Thus, a total of four scales were calculated: positive effects on the same gender ($M=21.28$, $SD=7.27$, Cronbach's $\alpha=.96$), positive effects on the different gender ($M=21.28$, $SD=7.27$, Cronbach's $\alpha=.96$), negative effects on the same gender ($M=20.61$, $SD=7.85$, Cronbach's $\alpha=.91$), and negative effects on the different gender ($M=22.60$, $SD=7.45$, Cronbach's $\alpha=.91$).

Exposure to online games

Exposure to online games was measured in terms of both self-report real exposure and perceived exposure. Real exposure was assessed by asking participants to self-report the average time that they spent playing games online on an average day in the past year on a 12-point scale, with options ranging from rarely, less than 10 minutes to more than 80 hours ($M=5.71$, $SD=2.95$). The same scale was used to measure perceived exposure, but participants were asked to evaluate the average daily gaming time of same gender players, *i.e.* males were asked to evaluate that of other males and females were asked about the other females ($M=6.57$, $SD=3.15$) and opposite gender players, *i.e.*, males were asked to evaluate that of females and females were asked about males ($M=5.78$, $SD=3.00$).

Control variables

Apart from the independent variables under examination, previous studies have identified paternalism (Schmierbach, *et al.*, 2011) and Internet self-efficacy (2009) as contributing to third-person perceptual difference, both of which were included as control variables in the current study. The measure of *paternalism* was based on the scale developed by Schmierbach, *et al.* (2011). Only three out of the four original items were included in the index for paternalism to reduce survey length: 1. The world would be a better place if more people thought like me; 2. I wish I had more power to get people to act the way I do; and, 3. I'm smarter than most people ($M=14.08$, $SD=4.94$, Cronbach's $\alpha=.93$). Measures of *Internet self-efficacy* were borrowed from Zhong's (2009) study of third-person effect and gaming in China, which contained five items adapted from the scale developed by LaRose and Eastin (2004). Each item was measured by a three-point Likert scale from one (strong disagree) to five (strongly agree). The questions are: 1. I feel confident in understanding terms/words relating to the Internet; 2. I feel confident in trouble shooting Internet problems; 3. I feel confident in using the Internet to gather data; 4. I feel confident in learning advanced skills within a specific Internet program; and, 5. I feel confident in turning to an online discussion group when help is needed ($M=20.84$, $SD=8.57$, Cronbach's $\alpha=.96$).



Results

The analyses were focused on testing if there is any gender difference in third-person perception among gamers, if and how this relationship is influenced by real and perceived level of exposure to games, and what is the role of message desirability in predicting third-person perception. Hypothesis H1a predicted an overall third-person effect among online gamers, that is, online gamers will perceive games to have greater negative effects on other players than on themselves. As is shown in [Table 1](#), paired-sample *t*-test was conducted and the result shows clear evidence in support of the hypothesis ($t=-7.49$, $p<.001$, $\eta^2=0.09$). Hypothesis 1b conceptualized social distance in terms of gender and stated that online gamers will perceive games to have greater negative effects on other opposite-gender players than on other same-gender players. More specifically, the study expected that men would consider women as more prone to the harmful effects of games than their fellow male players, and similarly women would believe men to be more affected by negative effects of games than other female players. Paired-sample *t*-test was conducted to test the hypothesis, and the result supported the hypothesis ($t=7.82$, $p<.001$, $\eta^2=0.10$). Indeed, both men and women demonstrated

gender-based third-person perceptual biases when negative effects of online games are under consideration.

In hypothesis H1c, we pushed the question further to see if the size of gender-based perceptual biases will be larger for females than for males, that is, female online gamers will be more likely than males to perceive that games exert negative effects on other opposite-gender players than on same-gender players. Results of independent-sample *t* test shows some evidence for the hypothesis ($t=-2.93$, $p=.004$, $\eta^2=0.02$). As is demonstrated in [Table 1](#),

Table 1: Mean estimates of perceived effects on self, other males and other females.				
Note: Figures in parentheses are standard deviations. Numbers under <i>N</i> are sample sizes, and the rest are mean scores of perceived effects for each group.				
		Comparison Groups		
Samples	<i>N</i>	Self	Other males	Other females
All	574	3.73(1.58)	4.25(1.54)	4.17(1.56)
Males	355	3.81(1.53)	3.99(1.54)	4.43(1.52)
Females	219	3.59(1.64)	4.67(1.44)	3.75(1.54)

As demonstrated by Table 1, even though both males and females perceive the opposite gender as more easily victimized by games, for all of the 574 gamers surveyed, other males are thought of as mostly affected by the negative effects of online games ($M=4.25$, $SD=1.54$), followed by other females ($M=4.17$, $SD=1.56$), and self is perceived as most invincible to games' harmful effects ($M=3.73$, $SD=1.58$).

Hypothesis 2a focused on perceived exposure and stated that gamers believe that males are being more frequently exposed to online gamers than females. Results of paired-sample *t*-test support the statement ($t=10.51$; $p<.001$, $\eta^2=0.16$). Hypothesis H2b predicted that males are more frequently exposed to online gamers than females. Independent samples *t*-test was conducted and the hypothesis was rejected ($t=.62$; $p=.86$). Therefore, although gamers who responded to our survey believed that males are more frequently exposed to games than females, in reality, there's no significant difference between males and females regarding the average amount of time spent playing games.

RQ3 asked about the relative power of gender, self-report real exposure to games and perceived exposure to games in predicting the gender-based perceptual bias. A hierarchical regression analysis was performed. In the first block, basic demographic information like age and education, and the two control variables of paternalism and Internet self-efficacy were entered. In the second block, gender, self-reported real exposure, perceived exposure of same gender and perceived exposure of opposite gender were entered.

Table 2: Hierarchical regression analysis predicting third-person effect in gender.	
Note: $p<.1$; $*p<.05$; $**p<.01$; $***p<.001$.	
	Regression (B)
Independent variables	
Block 1: Demographics and control variables	
Age	-.02
Education	-.01

Paternalism	.11**
Internet self-efficacy	.21**
Adjusted R^2	.11
Block 2:	
Gender	.13***
Self-reported real exposure	-.17**
Perceived exposure of same gender	.01
Perceived exposure of opposite gender	.39***
Incremental adjusted R^2	.10
Total adjusted R^2	.21

Results of the regression analysis revealed that the perceived exposure of opposite gender was the most powerful predictor of third-person effect ($B=.39, p<.001$), followed by self-reported real exposure ($B=-.17, p=.002$) and gender ($B=.13, p=.001$). This particular finding indicates that females are more likely than males to have a gender-based third-person perception, and the fact that both females and males consider males to be more frequently exposed to games is a better explanation of this perceptual gap than gender itself. Also, level of real exposure to games is negatively correlated with third-person effect, which means that heavy players are less likely than light players to perceive games as harmful to other people, and players' third-person perception decreases as the time they spent playing games increases.

Hypothesis H3 deals with the desirability of message, and predicted a first-person effect when the content of the message is desirable, that is, gamers will perceive games to have a greater positive effect on themselves than on others. Overall, the hypothesis was supported ($t=3.36, p=.001, \eta^2=0.02$). As illustrated in [Table 3](#), if we look at the average score of all respondents, positive effects on self is rated highest ($M=4.42, SD=1.65$), followed by that on other females ($M=4.35; SD=1.50$) and other males ($M=4.02, SD=1.52$) respectively. However, a close examination reveals that for male respondents, only partial first-person effect was detected between self ($M=4.47; SD=1.68$) and other males ($M=4.49, SD=1.54$).

Table 3: Mean estimates of perceived positive effects on self, other males and other females.
Note: Figures in parentheses are standard deviations. Numbers under *N* are sample sizes, and the rest are mean scores of perceived effects for each group.

		Comparison Groups		
Samples	<i>N</i>	Self	Other males	Other females
All	574	4.42(1.65)	4.03(1.52)	4.35(1.50)
Males	355	4.47(1.68)	4.33(1.48)	4.49(1.54)
Females	219	4.35(1.61)	3.53(1.45)	4.14(1.40)

Male gamers obviously believe that other females are more likely to benefit from games ($M=4.49, SD=1.54$) than both themselves and other male gamers. For female respondents, the size of positive effects for other females ($M= 2.14, SD=1.40$) is also bigger than that for other males ($M=2.53, SD=1.45$). So we can conclude that though first-person effect exists for all respondents, females are considered to be more prone to the positive effects of online gaming than their male counterparts in general.

Discussion and conclusion

The current study explores gender differences in third-person effect, a relatively neglected dimension in third-person effect research, in the context of online games. It offers several insights into the relative power of the different explanations of third-person effect with regard to the population and context examined, as well as gender differences in online game consumption and effects perception. Not only has the study confirmed the existence of self-other perceptual gap regarding the effect of online games, it has also validated the gender difference in effect perception as both genders are found to perceive the opposite-gender as more susceptible to the influence of negative effects of games, and the size of this gender-based third-person effect is larger for women than for men. Perceived exposure, *i.e.*, the fact that men are perceived by both genders to be more frequently engaged in game playing, are found to be the best predictor of the gender-based third-person effect. The level of play, or self-report real exposure, is negatively correlated with gender-based third-person effect, which means that despite of gender, the more time a gamer spent playing online games, the less likely he/she is to perceive the opposite gender as negatively influenced by games. However, when the gamers are asked to evaluate positive impacts of online games, a reversed first-person effect is detected.

First, consistent with previous research on gender and third person, the study confirms the existence of gender difference in terms of third person perceptual differences (Chia, 2009; Lo and Wei, 2002; Reid, *et al.*, 2007). Indeed, not only do gamers perceive others as more prone to the harmful effects of playing online games, they also believe the opposite gender to be more vulnerable to negative effects. This particular finding provides support for the social distance corollary (Cohen, *et al.*, 1988; McLeod, *et al.*, 1997; Eveland and McLeod, 1999; Chia, 2009, Schmierbach, *et al.*, 2011), which states that people tend to perceive dissimilar others as more susceptible to negative media messages. More important, the current study provides support for the robustness of gender, a relatively understudied construct, as a referent other in predicting third-person perceptual differences, which lays the ground for future research on gender and third-person effects.

Second, the study has carried the gender hypothesis further in examination of whether male and female gamers differ in the size of their perceptual gap between same-gender other and opposite-gender other. Consistent with the previous study on Internet pornography (Lo and Wei, 2002), gender and third-person effect, the current research finds that female gamers are more likely than male gamers to believe their opposite-gender as more susceptible to negative game effects. This result establishes perceived media exposure as a plausible explanation of the third-person effect (David, *et al.*, 2002; Chia, 2009). That is, women demonstrate a bigger gender-based perceptual gap than men because men are generally believed to be more engaged and spend more time playing online games, thus a "normative fit" for this particular media type (Reid, *et al.*, 2007). Indeed, our subsequent test of perceived exposure confirms the hypothesis of men as a normative fit for online games since gamers of both genders believe that males are more frequently exposed to online games than their female counterpart. Though no causal relationship can be established between perceived exposure and third-person effect, the current research is one of the first studies to put the assumption of normative fit to test, and thus has further substantiated the linkage between perceived exposure and third-person effect.

Interestingly, when asked to report their real frequency of exposure to games, no significant difference is found between female and male gamers. This piece of evidence leads us to speculate that the gender difference in exposure to online games may be totally perception-based, and in reality female players spend just as much time on online games as male players. This finding is consistent with recent studies of the gaming population in the U.S. that found women to be as dedicated, if not more than men to online games once they start playing (Williams, *et al.*, 2008). This gender-based discrepancy between self-report and perceived exposure to online games have implications for both third-person effect

studies and gender and technology. On the one hand, it confirms that third-person effect can be based totally on perception of exposure, even though such perception might be false and in contrary to reality. On the other hand, it supports the argument that gender stereotype still exists in the gaming world. The perception of online games as a "particularly masculine pursuit" [12] is still with us despite the fact that more women are spending more time playing online games. And men are generally believed to bear the brunt of the undesirably effects of technology. The fact that the respondents of the research are guild gamers shows that gender misunderstandings about online gaming are prevalent not just among the general public but also within the gamer community where gamers of different genders play and communicate together on a daily basis.

Third, gender, self-report real exposure, perceived exposure of same gender, and perceived exposure of opposite gender are examined together in relation to the gender-based third-person effect to gauge the relative power of the four variables in predicting individuals' third-person perceptual gap between same-gender and opposite gender gamers. The results demonstrate that perceived exposure is the best predictor of third-person effect, followed by real level of exposure and gender. So the fact that men are perceived by all gamers as spending more time playing online games has more explanatory power than social distance or gender difference alone in accounting for the gender-based perceptual gap, which establishes perceived exposure as a robust explanation of third-person effect in the context of games (Boyle, *et al.*, 2008). The result has put in doubt Schmierbach, *et al.*'s (2011) speculation of perceived vulnerability as a better predictor than perceived exposure of third-person effect, since women, who are often believed to be more vulnerable and less strong-willed than men (Vogel, *et al.*, 2003), should be considered as more prone to the harmful effects of gaming if the vulnerability explanation is more powerful than exposure. In addition, the result shows that real exposure, or real level of play, is negatively correlated with third-person effects, and the more people play games, the less likely they will perceive games as harmful to other people, which is consistent with Boyle, *et al.* (2008) and Schmierbach, *et al.*'s (2011) findings.

Last but not least, message desirability indeed plays a significant role in third-person perception (David, *et al.*, 2002; Schmierbach, *et al.*, 2011; Sun, *et al.*, 2008), and a first-person effect is detected when gamers are asked to evaluate the positive effects of online gaming on self and other, that is, gamers in general perceive games to have greater positive effects on themselves than on others. This result has provided support for self-enhancement optimistic bias theories as underlying psychological explanation for third-person effect (Gunther and Mundy, 1993; Weinstein, 1980). However, if we break down the results by gender, the size of the first-person effect is larger for females than for males. Compared to males, females are perceived as more prone to the positive effects of online games. Given the previous result about the male-female discrepancy in perception of exposure, this particular finding might be explained by the fact that females are perceived to be moderate gamers, and thus in a better position to benefit from online gaming than heavy or "addicted" players-images often associated with male players. So far, only one study (Zhong, 2009) has examined the relationship between message desirability and third-person effect in the context of online gaming. However, the study suffered from a narrow conceptualization of both the positive and the negative effects of online gaming because only two items, "making new friends" and "causing Internet addiction", were measured. In comparison, the current study has constructed a more comprehensive multiple-item measurements of the positive and negative effects with high reliability.

Several limitations of the study warrant careful consideration. First, the result of the study relied on cross-sectional data, which prevents the study from assessing causality. Second, the sample of the study was based on one large online gaming guild in China, which might not be representative of the Chinese gaming population, not to mention online gamers in other countries and regions where gaming culture might be divergently different from that of China, therefore, the generalizability of the study is limited. Future research could compare gamers from different cultures and geographical regions who play the same game like the *World of Warcraft*, and see how cultural factors, for instance, collective versus individualist,

interplay with gender and effects perception. Third, the data of the study were self-reported by online gamers by filling out Internet-based surveys, which is found to often suffer from under-estimations, and thus might not be an accurate reflection of reality (Shen and Williams, 2011). Future study could also consider combining demographic and attitudinal data collected from survey with behavioral data recorded with unobtrusive server logs to see if there is a gender-based discrepancy between perceptual and behavioral data.

Despite the limitations, the study has provided many insights into the gender-based difference in third-person effects in the context of online gaming, which has implications for both advancing media effects studies in the era of interactive media, and improving people's understanding of gender and technology use. The study has demonstrated that gender — as a demographic factor, and level of exposure, as a behavioral measure — have considerable influence on how people perceive the impacts that interactive media have on self and other. So depending on different user groups and specific uses, patterns of technology appropriation vary widely and result in divergent effects (Lee, 2009; Shen and Williams, 2011).

Future research could delve further into the specific characteristics of games and virtual play by, for instance, differentiating types/genres of games and player motivations (Yee, 2006) and see if and how the content and usage of interactive media influence effect perception. It is very likely that people who play causal games such as chess and *Farmville* online will have different opinions of their effects than those who play more intense and event violent games like car racing and the *World of Warcraft*. Similarly, gamers who play for "achievement" and those who play to "socialize" might also differ in their perception of game effects (Yee, 2006). The study also proves the existence of perception-based gender stereotype towards technology use as men are considered both the normative fit for online games and the primary victims of its negative effects, whereas in reality female gamers spend as much time playing as male. More studies should be conducted with different gamer populations to validate this finding. Moreover, if this particular finding proves to be an accurate reflection of the status of virtual play, it calls for measure to be taken to ensure that both genders benefit equally from the positive effects of games, and are given equal attention when help is needed to combat the negative impacts of virtual entertainment. 

About the author

Lin Zhang is a doctorate student at the Annenberg School for Communication & Journalism at the University of Southern California. Her research focuses on social, political, economic and cultural impacts of new media technologies.
E-mail: Zhan370 [at] usc [dot] edu

Notes

- [1.](#) Li, 2008, p. 570.
- [2.](#) Sun, *et al.*, 2008, p. 295.
- [3.](#) Lo and Wei, 2002, p. 28.
- [4.](#) Reid, *et al.*, 2007, p. 146.
- [5.](#) Boyle, *et al.*, 2008, p. 181.
- [6.](#) Schmierbach, *et al.*, 2011, pp. 324–323.
- [7.](#) Weinstein, 1980, p. 807.
- [8.](#) Gunther and Mundy, 1993, p. 61.
- [9.](#) Sun, *et al.*, 2008, p. 294.
- [10.](#) Zhong, 2009, p. 299.
- [11.](#) Schmierbach, *et al.*, 2011, p. 323.

[12](#). Selwyn, 2007, p. 533.

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Editorial history

Received 4 July 2012; accepted 5 December 2012.



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Third-person effect and gender in online gaming
by Lin Zhang
First Monday, Volume 18, Number 1 - 7 January 2013
<http://firstmonday.org/ojs/index.php/fm/article/view/4157/3385>

doi:10.5210/fm.v18i1.4157



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