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Individual Differences in Intentional and Unintentional Exposure to Online Pornography Among Hong Kong Chinese Adolescents

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Abstract: The current study aimed to test how gender and religion affect unintentional and intentional exposure to online pornography in Chinese adolescents. A total of 1401 secondary school students (age range from 11 to 16 years) participated in the study. Findings from multivariate analyses show that males reported higher levels of unintentional and intentional exposure to online pornography than females. Significant differences were found in adolescents' religiosity, with students who had religious beliefs reporting a lower level of unintentional exposure to online pornography than their counterparts without religious beliefs. In terms of intentional exposure to online pornography, adolescents were more likely to be exposed if they were male and had religious beliefs. Such differences were not found in females. This study demonstrated the influence of demographic characteristics on exposure to online pornography among Chinese adolescents.

Keywords: Chinese adolescents; gender; online pornography; religion.

Introduction

The growing use of the Internet makes pornography more affordable and easier to access for adolescents [1–3]. Nowadays, adolescents are frequent users of the Internet for information, entertainment and communication [4–6]. Indeed, the Internet provides adolescents with an ideal way to search for sexual information anonymously [3]. This is particularly the case when they enter puberty and show more interest in sex [7]. Much of the previous research has focused on the negative impacts of pornography viewing, such as early sexual involvement [8], uncommitted sexual relationships [9], sexual victimization [8, 10], sexual permissiveness [11], objectification of women [12], substance abuse [13, 14], delinquency [10] and low self-worth and depression [15]. Research has been calling for identifying factors of pornography exposure in order to protect our adolescents against this behavior.

Gender is an important antecedent for exposure to online pornography [16]. Males were generally found to be more frequent users of pornography [13, 17, 18], discuss more often about pornography with their peers [19] and perceive greater peer pressure to use pornography [20] than their female counterparts. Although literature generally supports that gender is an antecedent for exposure to online pornography, little is known about the consumption of different types of pornographic material among males and females. Howard and colleagues found that males were more likely to participate in some online activities, such as joining a chat room and downloading a video or an audio clip [21]. Male Internet users might be at higher risk of engaging in sexual chats or viewing pornographic videos. It is possible that males and females might search for different information or material when using pornography. Therefore, systematic research on exposure to different types of pornographic material by gender is needed.

Besides gender, religion is another possible factor influencing exposure to pornography. Many studies showed that lower consumption of pornography was associated with adolescents who were studying in schools with religious backgrounds [15, 22–24] and attending religious services [15, 24]. Moreover, prior research had demonstrated that religiosity was linked to self-regulation and self-control [22], negative attitudes toward pornography [22, 25] and conformity to the social norms and expectations against watching pornography [22]. These findings are also reported in a study examining religious

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communities [26]. It seems that religion might promote more conservative attitudes toward sex [25] and protect adolescents against pornography use [27]. Nevertheless, prior studies addressing links between religion and pornography use are based on samples from Western contexts [22, 23]. It is not clear whether this result can be generalized in non-Western contexts. The aim of the present study was to explore how pornography use varies by religious background among Chinese adolescents.

Lastly, the nature of exposure has recently been studied in this area of research. Researchers suggested that as frequent users of the Internet, adolescents tend to be exposed to online pornography by chance [5, 18], such as some pop-up pornographic advertisements when browsing the Internet. Mitchell and colleagues [28] also noted that the wide availability of online pornography may lead to unintentional exposure to such material. Recently, Peter and Valkenburg [29] conducted a systematic review of the literature on adolescents' consumption of pornography and highlighted the importance of distinguishing between intentional and unintentional exposure of online pornography. It seems that factors linking exposure to pornography may vary with viewers' intentions when searching the Internet. Therefore, studies for identifying factors related to exposure to online pornography should examine intentional and unintentional exposure separately.

In sum, the prevalence of the Internet has led to an increase of exposure to online pornography. Adolescents are a high-risk population to be exposed to online pornography due to increased curiosity about sex and high frequency of Internet use. Some demographic factors, such as gender and religiosity, have significant impacts on the frequency of exposure to online pornography. Recent literature suggests that exposure to online pornography should be categorized as intentional and unintentional. Therefore, research on exposure to different types of pornographic material by gender and with or without religious background is needed. There were two purposes of the present study. First, we explored the prevalence of intentional and unintentional online pornography among a sample of Chinese adolescents. Second, we examined whether the two types of exposure differed by gender and religious background.

Methods

A total of 1401 Chinese secondary school students including 753 males (54%) and 639 females (46%) were recruited from 13 secondary schools [age range from 11 to 16 years, mean (M) = 12.43, standard deviation (SD) = 0.70]. Nine respondents failed to indicate their gender. Before data collection, students and their parents were contacted and informed about the purpose, procedures and confidentiality safeguards of the study. Ethical approval was obtained from the Hong Kong Polytechnic University Review Board. In general, it took around 15 min to complete the survey.

Exposure to online pornography

Six items were used to determine the frequency of unintentional exposure to six different types of online pornographic material, including (a) stories, (b) pictures, (c) videos, (d) pornographic advertisements, (e) websites and (f) chat rooms over the past half year. The same questions were asked about the frequency of intentional exposure to online pornographic material. The responses were 0 = never, 1 = less than once a month, 2 = once to three times a month, 3 = once a week, 4 = several times a week and 5 = everyday. The internal consistency of both scales was satisfactory (unintentional: $\alpha = 0.78$; intentional: $\alpha = 0.83$).

Demographic information

Students answered three items to indicate their gender (0 = male; 1 = female), age and religiosity (0 = yes; 1 = no).

Data analysis

Independent t-tests were conducted to determine gender differences in a mean score of 12 items of unintentional and intentional exposure to online pornography. The same analysis was performed to find whether religiosity caused any differences in the items. To examine whether gender and religiosity jointly affected the two types of exposure to online pornography, a series of multivariate analyses of covariance (MANCOVA) were carried out by including an interaction term with two dichotomous variables (gender and religiosity) and age as a covariate. All analyses were performed by SPSS for Windows (version 22.0).

Results

The prevalence rates of the two types of exposure to online pornography are shown in Tables 1 and 2. About 4% (ranging from 2% to 6%) had unintentionally exposed themselves to online pornography (see Table 1), while 9% (ranging from 4% to 14%) of the respondents had intentionally exposed themselves to online pornography (see Table 2). In terms of intentional exposure, 14% (n = 197) had viewed pornographic pictures and around 13% had watched pornographic advertisements (n = 179) in the past 6 months.

In Table 3, males reported higher levels of both types of exposure to online pornography (unintentional: 5%–16%; intentional: 2%–8%) than females (unintentional: 4%–11%; intentional: 1%–5%). In Table 4,

Table 1: Frequencies of intentional exposure to online pornography.

Over the past 6 months, have you ever intentionally searched the Internet to	Never	Less than once a month	1–3 times a month	About once a week	Several times a week	Daily
1. Read erotic stories (including comic stories)?	90.1%	6.7%	1.8%	0.7%	0.4%	0.4%
2. View pornographic pictures (showing genital areas/naked bodies)?	85.9%	10.1%	2.1%	1%	0.6%	0.2%
3. View pornographic videos (including cartoon videos)?	89.6%	7.2%	1.9%	0.6%	0.4%	0.2%
4. Engage in sexual chats?	95.8%	3%	0.5%	0.4%	0.2%	0.1%
5. View pornographic advertisements?	87.2%	9.4%	2.1%	0.7%	0.4%	0.2%
6. Browse pornographic websites?	93.8%	4.4%	1%	0.4%	0.4%	0.1%

Table 2: Frequencies of unintentional exposure to online pornography.

Over the past 6 months, while online, have you ever unintentionally been exposed to	Never	Less than once a month	1–3 times a month	About once a week	Several times a week	Daily
1. Erotic stories (including comic stories)?	94.9%	2.9%	1.1%	0.3%	0.5%	0.3%
2. Pornographic pictures (showing genital areas/naked bodies)?	94.7%	3.3%	1.1%	0.4%	0.4%	0.1%
3. Pornographic videos (including cartoon videos)?	93.6%	3.6%	1.7%	0.5%	0.5%	0.1%
4. Sexual chat rooms?	97.9%	1.4%	0.1%	0.1%	0.3%	0.1%
5. Pornographic advertisements?	98.4%	1.4%	0.1%	0.1%	0.1%	0.1%
6. Pornographic websites?	96.1%	2.3%	0.9%	0.3%	0.4%	0.1%

Table 3: Frequencies of unintentional and intentional exposure to online pornography by gender.

	Unintentionally		Intentionally	
	Male	Female	Male	Female
1. Reading erotic stories (including comic stories)	11.2%	8.3%	5.3%	4.7%
2. Viewing pornographic pictures (showing genital areas/naked bodies)	16.4%	11.4%	6.4%	4.1%
3. Viewing pornographic videos (including cartoon videos)	12.0%	8.5%	8.3%	4.4%
4. Engaging in sexual chats	4.7%	3.8%	2.4%	2.7%
5. Viewing pornographic advertisements	14.5%	11.0%	1.9%	1.4%
6. Browsing pornographic websites	7.6%	4.5%	5.2%	2.5%

Table 4: Frequencies of intentional exposure to online pornography by religiosity.

	Unintentional		Intentional	
	Yes	No	Yes	No
1. Reading erotic stories (including comic stories)	6.8%	10.7%	4.2%	5.0%
2. Viewing pornographic pictures (showing genital areas/naked bodies)	11.0%	15.5%	4.0%	6.2%
3. Viewing pornographic videos (including cartoon videos)	8.9%	11.2%	5.4%	6.7%
4. Engaging in sexual chats	3.5%	5.0%	0.7%	2.7%
5. Viewing pornographic advertisements	10.1%	14.2%	0.9%	2.3%
6. Browsing pornographic websites	4.2%	7.6%	3.5%	4.6%

students with religious beliefs reported lower levels of both types of exposure to online pornography (unintentional: 4%–11%; intentional: 1%–5%) than their counterparts with no religious beliefs (unintentional: 5%–16%; intentional: 2%–7%).

For unintentional exposure to online pornography, males reported significantly higher levels in all materials than females ($p < 0.05$), except visiting the chat room [t (1387) = 1.13, $p > 0.05$, Table 5]. Similarly, more males intentionally exposed themselves to pornographic pictures [t (1388) = 2.33, $p < 0.05$, Table 5], videos [t (1387) = 3.03, $p < 0.01$, Table 5] and websites [t (1387) = 3.13, $p < 0.01$].

Adolescents' religiosity was significantly associated with their unintentional exposure to erotic stories [t (1126) = – 2.27, $p < 0.05$, Table 6] and pornographic pictures [t (1126) = – 2.42, $p < 0.05$, Table 6]. No significant difference was found in intentional exposure to online pornography, regardless of the sources ($p > 0.05$).

The interaction effect of gender and religion was not significant in unintentional exposure to online pornography ($F_{(1, 1111)} = 0.05$, $p > 0.05$). Significant differences were found in gender ($F_{(1, 1112)} = 5.55$, $p < 0.05$, $\eta^2 = 0.005$, Table 7) and religiosity ($F_{(1, 1112)} = 6.49$, $p < 0.05$, $\eta^2 = 0.006$, Table 8). As expected, the majority of the males reported a higher level of unintentional exposure to online

Table 5: Independent t-test results among the two types of exposure to pornographic material by gender.

	Unintentional			Intentional		
	Male M (SD)	Female M (SD)	t	Male M (SD)	Female M (SD)	t
1. Erotic stories (including comic stories)	0.18 (0.64)	0.12 (0.45)	2.19[a]	0.11 (0.54)	0.08 (0.40)	1.10
2. Pornographic pictures (showing genital areas/naked bodies)	0.25 (0.69)	0.16 (0.51)	2.64[b]	0.11 (0.51)	0.06 (0.32)	2.33[a]
3. Pornographic videos (including cartoon videos)	0.18 (0.60)	0.12 (0.48)	1.99[a]	0.15 (0.59)	0.07 (0.37)	3.02[b]
4. Sexual chat rooms	0.08 (0.41)	0.05 (0.31)	1.13	0.05 (0.41)	0.02 (0.21)	1.59
5. Pornographic advertisements	0.22 (0.65)	0.14 (0.45)	2.52[a]	0.03 (0.25)	0.01 (0.12)	1.27
6. Pornographic websites	0.12 (0.50)	0.06 (0.32)	2.38[a]	0.10 (0.51)	0.03 (0.23)	3.13[b]

[a]$p < 0.05$; [b]$p < 0.01$.

Table 6: Independent t-test results among the two types of exposure to pornographic material by religiosity.

	Unintentional			Intentional		
	Yes M (SD)	No M (SD)	t	Yes M (SD)	No M (SD)	t
1. Erotic stories (including comic stories)	0.10 (0.42)	0.17 (0.59)	– 2.27[a]	0.08 (0.42)	0.09 (0.50)	– 0.61
2. Pornographic pictures (showing genital areas/naked bodies)	0.15 (0.51)	0.24 (0.70)	– 2.42[a]	0.09 (0.48)	0.10 (0.45)	– 0.44
3. Pornographic videos (including cartoon videos)	0.14 (0.52)	0.18 (0.60)	– 1.13	0.10 (0.50)	0.12 (0.52)	– 0.51
4. Sexual chat rooms	0.05 (0.30)	0.08 (0.39)	– 1.22	0.02 (0.28)	0.04 (0.32)	– 1.17
5. Pornographic advertisements	0.15 (0.55)	0.21 (0.60)	– 1.58	0.01 (0.17)	0.03 (0.25)	– 1.19
6. Pornographic websites	0.07 (0.40)	0.12 (0.48)	– 1.62	0.08 (0.48)	0.07 (0.40)	0.33

[a]$p < 0.05$.

Table 7: Differences in unintentional exposure to online pornography by gender.

Gender		F	η^2
Male M (SD)	Female M (SD)		
0.17 (0.43)	0.11 (0.30)	5.55[a]	0.005

[a]$p < 0.05$.

Table 8: Differences in unintentional exposure to online pornography by religiosity.

Religious		F	η^2
Yes M (SD)	No M (SD)		
0.11 (0.29)	0.16 (0.42)	6.49[a]	0.000

[a]$p < 0.05$.

Table 9: MANCOVA results of the two types of exposure to online pornography by religiosity and gender.

	Yes		No		*F*	η^2
	Male M (SD)	Female M (SD)	Male M (SD)	Female M (SD)		
1. Unintentional	0.13 (0.34)	0.19 (0.47)	0.08 (0.22)	0.13 (0.35)	0.05	0.000
2. Intentional	0.11 (0.40)	0.08 (0.36)	0.01 (0.08)	0.07 (0.26)	4.32[a]	0.004

[a]$p < 0.05$.

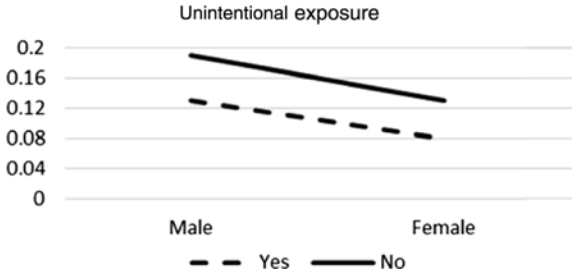

Figure 1: Unintentional exposure to online pornography by gender and religiosity.

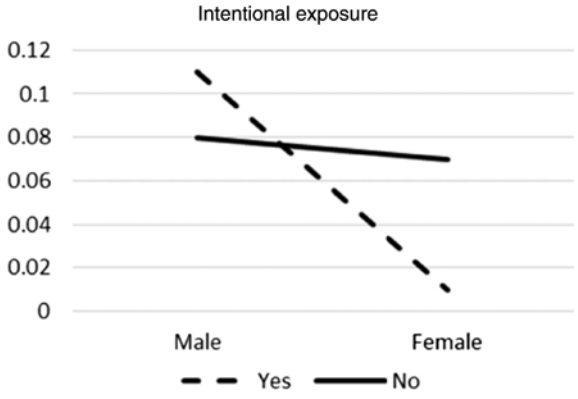

Figure 2: Intentional exposure to online pornography by gender and religiosity.

Table 10: Linear regression models predicting unintentional and intentional exposure to online pornography by religiosity.

Predictor	Unintentional			Intentional		
	R	R^2	β[a]	R	R^2	β[a]
Gender			– 0.08[c]			– 0.07[b]
Religiosity			– 0.07[b]			– 0.02
Model	0.11	0.01		0.07	0.01	

[a]Standardized coefficients. [b]$p < 0.05$, [c]$p < 0.01$.

pornography [M = 0.16, standard error (SE) = 0.02] than females (M = 0.11, SE = 0.02). Also, students with religious backgrounds had a lower level of such exposure (M = 0.10, SE = 0.02) than those without religious backgrounds (M = 0.16, SE = 0.02).

Based on the MANCOVA results, a significant interaction effect of gender and religious beliefs was found in intentional exposure ($F_{(1, 1111)} = 4.32$, $p < 0.05$, $\eta^2 = 0.004$, Table 9). For intentional exposure, females with religious beliefs reported a lower level of mean score (M = 0.01, SE = 0.02) than their non-religious counterparts (M = 0.07, SE = 0.02). Conversely, males with religious beliefs showed a higher level of intentional exposure to online pornography (M = 0.11, SE = 0.02) than their counterparts with no religious beliefs (M = 0.08, SE = 0.02). These results are shown in Figures 1 and 2. Linear regression models were performed to test the predictive effects of gender and religion on both types of exposure to online pornography. In Table 10, the results showed that gender was significantly associated with both unintentional (β = – 0.08, $p < 0.01$) and intentional exposure (β = – 0.07, $p < 0.05$) to online pornography. Regardless of the nature of exposure, females were less likely to be exposed to this material than males. Religion had a significant predictive effect on unintentional exposure (β = – 0.07, $p < 0.05$) but not on intentional exposure (β = – 0.02, $p > 0.05$) to online pornography. Adolescents, particularly those with religious beliefs, were more likely to be unintentionally exposed to pornographic material than those without religious beliefs.

Discussion

The current study extends the scientific literature on consumption of pornographic material in three ways. First, contrary to prior studies [10], adolescents reported more unintentional exposure to pornography than intentional exposure. However, it is important to note that the prevalence rates for intentional and unintentional exposure are generally low (unintentional: 4%–14%; intentional: 2%–6%), compared to studies conducted in Australia [84% males, 60% females (aged 16–17 years) were unintentionally exposed] [8], Taiwan (41% unintentional,

59% intentional among Grade 10–12 students) [30] and the United States (63% intentional and 32% unintentional among 15–18-year-old adolescents) [22].

One possible reason might be related to the age of our sample. Sex is considered as taboo in Chinese society. Viewing pornography, even unintentionally, is undesirable and contradicts traditional Chinese values [31]. Given that the majority of the participants of the present study were early adolescents, they might be embarrassed to admit that they were intentionally exposed to pornographic material. More research in exploring the prevalence of both types of online pornography use is suggested.

Second, adolescents with religious beliefs reported a lower level of unintentional exposure to online pornography than their counterparts without religious beliefs. Uecker [26] suggested that religion might serve as another way of social control against negative behavior. Prior studies showed that religious youth have a higher level of self-regulation [32], greater self-control [33], lower level of risky sexual behavior [34, 35] and are less likely to use pornography (intentionally or unintentionally) [15, 22, 23]. Religious beliefs also help adolescents to form "correct" sexual values such as respecting the body of the opposite sex and "inappropriateness" of seeing the bodies of the opposite sex outside marriage. The present findings extend the literature by demonstrating the protective effects of religion against negative behavior in a non-Western culture.

Third, interestingly, the link between intentional exposure to online pornography and religiosity varied with gender. Aligned with previous literature, the protective effect of religiosity was found in females. In contrast, compared to males without a religious background, males with religious beliefs showed a greater level of being intentionally exposed to online pornography. Religiosity has long been posited as a factor contributing to a more conservative attitude toward sexuality [25]. Although males with religious beliefs are being stimulated by their sexual interest and curiosity, they face social pressure to abstain from their sexual needs. Instead of exploring their sexual identity in real life, they actively search for online pornography, which provides them with "a protective cloak of anonymity" [36] and emotional support from others [37]. The present study highlights the interaction of demographic characteristics when studying the antecedents of this behavior. Future research should explore the effects of different combinations of demographic factors on the use of online pornography.

Several limitations should be noted for this study. First, as our findings were based on a cross-sectional design, causal relationships between the antecedents and exposure to online pornography cannot be concluded. A future study using a longitudinal design would help uncover the correlates and their influences on both types of exposure to online pornography. Second, the nature of Internet activity might affect the frequency of intentional and unintentional exposure to online pornography. Ševčíková and colleagues [38] found that gender was significantly related to unintentional exposure to online pornography when adolescents visited X-rated and peer-to-peer sharing websites, but not social networking sites. The nature of online activities should perhaps be included when studying how gender is related to exposure to online pornography. The present study did not examine their involvement and internalization of religiousness. A prior study found that these factors exerted protective effects on adolescents' consumption of pornography [22]. More work is warranted to investigate the influence of different aspects of religiousness on pornography viewing.

In conclusion, the current study showed lower levels of unintentional and intentional exposure to online pornography at a younger age among Chinese adolescents. Regarding the frequency of exposure, male adolescents with a religious background were likely to be more frequently exposed to online pornography. Perhaps, the secrecy and solitary nature of the Internet provided an ideal place to satisfy this target population's needs and curiosity due to their higher interest in sexuality. Further, this study provides support for arguments on the necessity to differentiate the nature of exposure to online pornography [22, 23]. Lastly, the present findings identified the protective role of religion and suggested the possibility of using religion when designing sexual prevention programs for Chinese adolescents.

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