

Frequent Internet Pornography Use: Korean Adolescents' Internet Use Time, Mental Health, Sexual Behavior, and Delinquency

Eunsuk Cho*

Assistant Professor, Sangmyung University

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Abstract

This study was to understand associated factors with frequent exposure to Internet pornography among Korean adolescents. We used data (N = 45,783) from the 2012 Korea Youth Risk Behavior Web-based Survey to examine demographics, family environmental variables, Internet use time, mental health indicators, sexual behavior, and delinquency among Korean adolescents identified as frequent users of Internet pornography. Multiple logistic regression analysis revealed that frequent users of Internet pornography were more likely to be older males with differences in living arrangements and perceived economic status of the family. They were heavy Internet users with mental health issues, such as a higher likelihood of sadness, suicidal ideation, suicide attempts, high stress, and a lower likelihood of feeling happiness. Their higher probability of exploratory (OR = 1.79–4.60), and high-risk sexual behavior (OR = 2.20–7.46), and other delinquencies (OR = 1.74–7.68) requires more attention from public health professionals.

Keywords

adolescent health, adolescent delinquency, Internet pornography, mental health, sexual behavior

Introduction

This study investigated the characteristics of the frequent users of Internet pornography among Korean adolescents. More researchers (Häggström-Nordin *et al.*, 2005; Svedin *et al.*, 2011) have studied the prominent deviation of the behavioral (sexual or delinquency) or mental health issues of Internet pornography addicts in regards to the healthy development of children and adolescents in the face of the alarming expansion of Internet pornography. However, limited knowledge has been accumulated in Korea on the subject. This study examined various aspects (demographics, family environmental variables, Internet use time, mental health indicators, sexual behavior, and adolescent delinquency) of the group identified as frequent users of Internet pornography.

Asia has the largest portion of the world's Internet population and Korea has the highest proportion of Internet use in Asia, followed by Japan and Hong Kong (Internet World Stats, 2014). The pervasive use of the Internet in the region has increased public and academic concern about the effect of Internet

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Corresponding Author:

Eunsuk Cho

Sangmyung University

Tel: +82-10-5696-1935

E-mail: Grace123@smu.ac.kr

use on children and adolescents in these Asian countries. The effect of Internet pornography has received attention because of its harmful influence on the attitudes and sexual behavior of adolescents in regards to physical and mental health (Braun-Courville & Rojas, 2009; Lo & Wei, 2005; Owens *et al.*, 2012). The Internet has become the most sexualized medium, having been “dumped” with sexually explicit materials (Griffith, 2000). Children and adolescents frequently visit pornographic sites unintentionally (Greenfield, 2004). Researchers estimate that at least half of all Korean adolescents have been exposed to Internet pornography (Ko & Yang, 2007; Nam & Lee, 2002). This estimate is similar to the results of several studies on adolescents in Hong Kong (41%) (To *et al.*, 2012), Taiwan (37.9%) (Lo & Wei, 2005), and the US (55.4%) (Braun-Courville, 2009).

The current exposure of children and adolescents to Internet pornography may be a global phenomenon. In interviews of teens in Morocco, Kadri *et al.* (2013) reported that half of those under 18 years of age had undressed in front of a webcam or sent naked photos of themselves to unknown cyber-interlocutors at least once. These shocking research results provoked alarm about the harmful influence of Internet pornography and cyber-sex in countries with limited means (i.e., safe sex education) of Internet protection. This concern also may be the case for some Asian countries equipped with high-speed Internet and smartphone devices that offer few protections for children and adolescents.

The impact of Internet pornography on adolescents' healthy development is controversial (Döring, 2009). Many researchers have reported the negative impact of Internet pornography on adolescents' sexual attitudes and sexual behavior (Lo & Wei, 2005; Nam & Lee, 2002; Ybarra & Mitchell, 2005); however, some researchers have argued for the possible benefit or the neutral effect of Internet sexual sites. They have argued that the Internet is the major source of information about sexuality for adolescents (Kanuga & Rosenfeld, 2004). They also depicted the “no influence” of Internet pornography to “ordinary” adolescents (Sabina *et al.*, 2008). The inconsistency possibly arises from the difference of the nature of “simple or infrequent exposure” and “frequent or habitual exposure” of Internet pornography. We can infer vulnerability and higher risk among “frequent users” of Internet pornography compared to “ordinary” adolescents.

However, there is limited research on this risk group.

The impact of Internet sexual material is more evident in the population of frequent users (Häggström-Nordin *et al.*, 2005; Peter & Valkenburg, 2006; Svedin *et al.*, 2011). Compared to infrequent users of Internet pornography, frequent users have more liberal and permissive sexual attitudes (Braun-Courville & Rojas, 2009), higher levels of self-reported sexual desires, and more positive attitudes toward pornography (Svedin *et al.*, 2011). They have a greater tendency to act out sexual behavior seen on the Internet (Häggström-Nordin *et al.*, 2005) and their sexual behavior tends to be more risky and aggressive (Häggström-Nordin *et al.*, 2005; Peter & Valkenburg, 2006; Svedin *et al.*, 2011). However, an understanding of sexual attitudes and behavior has not been detailed in Korea.

More males than females are included in the group associated with the demographic aspects of frequent Internet pornography users (Braun-Courville & Rojas, 2009; Häggström-Nordin *et al.*, 2005; Svedin *et al.*, 2011); however, limited information on their profiles (such as their family environment) has been reported in previous research. Lower socio-economic status, lower levels of parental education, not living with parents, and non-intact families were seen as significant associated factors of high-risk internet addiction (Sung *et al.*, 2013). Being male, of a lower or higher perceived family economic status, non-intact family were significant factors to increase risky sexual behavior by adolescents (Brown & L'Engle, 2009; Jo & Kim, 2006). However, a review by Kotchick *et al.* (2001) argued that the effects of family structure of single parenting, socioeconomic status, parental education, and living with parents were controversial due to a covariance with other variables. Therefore, the demographic and family environment factors associated with the frequent use of Internet pornography need further investigation in this study.

There is a possible association of Internet use time and excessive Internet pornography usage. It is possible for adolescents who stay online for longer hours to frequently encounter and become immersed in Internet pornography due to the powerful 3A engine (anonymity, accessibility, and affordability) (Cooper *et al.*, 2000) of Internet pornography. A relationship of Internet use time and frequency of exposure to Internet pornography among adolescents was implied in Ybarra & Mitchell (2005)'s national

study on the USA; however, the transportability of the results to Korea has not been analyzed.

Current literature indicates that an overall severity of psychiatric symptoms (Brand *et al.*, 2011) and life satisfaction (Peter & Valkenburg, 2006) were significantly associated with cybersex addiction or excessive pornography use among adults. Among adolescents, depression and weak emotional bonding to the parents (Ybarra & Mitchell, 2005) could be related to increased pornography use (Ybarra & Mitchell, 2005). Poor communication with parents was reported as a significant predictor for risky sexual behavior by adolescents (Jo & Kim, 2006). However, the mental health status of adolescents who are frequent Internet pornography users is unclear.

The relationship of frequent use of Internet pornography and adolescent delinquency is also unknown. Mesch (2009) investigated the social characteristics of this population and found weak ties to mainstream social institutions (home, school, and religion) and a higher risk of deviant behavior. Based on Mesch (2009)'s results, we suspect a stronger likelihood of delinquent behaviors in this group. Studies supported the possible influence that deviant pornography has on aggressive behavior (Alexy *et al.*, 2009) and other delinquent behaviors (including substance abuse) among children and adolescents (Ybarra & Mitchell, 2005). However, there is limited information on the Korean adolescent population.

Therefore, this study has five research questions based on previous research.

Question 1. Are age, gender and family environmental characteristics associated with the frequent use of Internet pornography among Korean adolescents?

Question 2. Is recreational Internet use time associated with the frequent use of Internet pornography among Korean adolescents?

Question 3. Are mental health indicators associated with the frequent use of Internet pornography among Korean adolescents?

Question 4. Are risky sexual behaviors associated with the frequent use of Internet pornography among Korean adolescents?

Question 5. Are delinquent behaviors associated with the frequent use of Internet pornography among Korean adolescents?

A large database from the 8th Korea Youth Risk Behavior Web-based Survey (KYRBWS-VIII) provided a representative study

sample that was used to answer these five questions. A frequent Internet pornography user was defined as "individuals who use Internet pornography as one of their top three most used Internet services." Pornography was defined as, "sexually explicit media primarily intended to sexually arouse the viewer" (Malamuth & Huppert, 2005).

Subjects & Methods

Participants

This study used data collected from the KYRBWS-VIII school-based survey conducted in 2012 by the Korea Centers for Disease Control and Prevention to evaluate adolescent health-related problems and risk behavior such as mental health issues, Internet use, sex-related behavior, and adolescent delinquency. Nationally representative samples from 800 middle and high schools were selected based on stratification, clustering and multistage sampling methods.

Participating students were assigned identification numbers before they accessed the survey Web page at the school PC room using their ID numbers. First, they responded to a question about their willingness to participate in the study. Willing participants self-administered the questionnaire anonymously (those unwilling to participate did not progress). Ethical approval and parental consent were not required for the KYRBWS-VIII because it was administered by a national institution that did not collect private information. The response rate was high (96.4%: N=74,186), which might be due to the guarantee of participant anonymity towards sensitive questions and answers in regards to sexual behavior. Web-based surveys also are more reliable for this reason (Peter & Valkenburg, 2006; Mustanski, 2001).

Measures

Frequent Internet pornography user: The top three Internet services most frequently used were assessed by asking adolescents to choose Internet services they most frequently used from a list of 13 activities. The choices included study, information searching, e-mail, Internet games, watching or downloading movies, music (and other video materials), instant messaging, blogging, Social Network Services, and "sexually explicit Internet material only for

those over age 19.” Adolescents who selected Internet pornography as one of their top three Internet activities were classified as a “frequent Internet pornography user.”

Family environment: Perceived economic status of family was questioned as “What do you think your family’s economic status?”. The answers in the five categories ranged from “very low” to “very high”; subsequently, these were re-categorized into three that ranged from “low” to “high”. A family was categorized as an “intact family” if the participant lived with both biological parents (i.e., in the absence of parental divorce, remarriage or death). Table 1 classifies and describes the living arrangements in four categories.

Internet use time: Adolescents reported their daily amount of time (30 min segments; 7 days a week) for recreational use of the Internet. Table 3 presents the average amount of daily recreational use of Internet time calculated and classified into five categories. The average use time delivered a more accurate picture of the association when it was made into a category variable instead of a continuous one, because Internet use time showed a non-linear correlation with the dependent variable.

Mental health indicators: This study included recent episodes of sadness/hopelessness, suicidal ideation and suicidal attempts as mental health indicators. The level of stress and happiness were also included as mental health indicators. The construct validity of mental health was insufficient due to limited data. Data were collected based on responses (either yes or no answers) to the following three questions: “Have you had serious sadness or hopeless feelings for the past 2 weeks which hindered your daily life?”, “Have you had serious suicidal ideation in the past 12 months?”, and “Did you attempt suicide in the past 12 months?”. Stress and happiness during the past 12 months were assessed on a scale of 1 to 5 with 1 = very likely to 5 = very unlikely; the response categories were collapsed to form three groups for this study.

Sexual behavior: Lifetime sexual behaviors were assessed by checking yes or no to the given items listed in Table 4.

Delinquent behavior: Delinquent behaviors within the past 30 days (alcohol consumption, smoking, and drug use) were assessed.

Statistical analysis

The association between frequent use of Internet pornography

and the demographic and family environment variables was examined using multiple logistic regression. Most demographic and family environment variables were included as covariates in the later multiple logistic regression analysis of the associations among Internet use time, mental health status, sexual and delinquent behavior with the excessive use of Internet pornography because they showed significant associations with frequent Internet pornography use.

Results

Characteristics of the respondents

A total of 45,783 (61.7% of the entire sample) adolescents were included in the study after excluding the responses with missing data (most missing data was about Internet use time). Missing data in the Chi-square test indicated that the excluded group had significantly more females, a higher number of frequent Internet pornography users, and more experience with sexual behavior than the group included in the study. Table 1 indicates that the ages of the participants were evenly distributed from 12 to 18 years of age (middle school grade 1 through high school grade 3) and more males (54.4%) were included. The number of frequent Internet pornography users was 1,833 (4% of the entire sample). Table 1 shows the additional characteristics of the sample.

Age, sex, and family environment

Table 2 shows significant differences in the prevalence of frequent Internet pornography users according to gender (OR = 18.19) and age (OR = 1.21) which reveals that more males and older adolescents were included in the frequent Internet pornography users group than the reference group. The likelihood of being a frequent Internet pornography user increased for adolescents living in an orphanage (OR = 3.48) compared to those living with a family. Adolescents living in mid-level income households (OR = .80), dormitories or boarding house settings (OR = .61) were less likely to be frequent Internet pornography users compared to the reference group when age, sex, and other family environment variables were controlled. However, being raised in an intact family (or not) did not make a significant difference in the prevalence of being a frequent Internet pornography user.

Table 1. Characteristics of Respondents

Variables		N	%	
Demographic	Sex	Female	20882	45.6
		Male	24901	54.4
	Age	14.87 ^a	1.75 ^b	
Family environment	Family income	Low	10592	23.1
		Mid	21798	47.6
		High	13393	29.3
	Intact family ^c	No	2933	6.4
		Yes	42850	93.6
	Living arrangements	With family	44156	96.4
		With relatives	421	.9
Dormitory/Boarding		1105	2.4	
Orphanage		101	.2	

a: Mean, b: Standard deviation, c: Living with both biological parents in the absence of parental divorce, remarriage or death

Table 2. Age, Sex, Family Environment Variables and the Prevalence of Frequent Internet Pornography Users^a

Variables		Frequent Internet Pornography Users in Each Category, N (%)	Adj. OR	CI
Sex	Female	86 (0.4)	Ref	
	Male	1747 (7.0)	18.19***	14.64 – 22.61
Age			1.21***	1.18 – 1.25
Perceived economic status	Low	486 (4.6)	Ref	
	Mid	756 (3.5)	.80***	.71 – .90
	High	591 (4.4)	1.02	.89 – 1.15
Intact family ^b	Yes	1715 (4.0)	Ref	
	No	118 (4.0)	.87	.71 – 1.06
Living arrangement	With family	1770 (4.0)	Ref	
	With relatives	15 (3.6)	.87	.51 – 1.48
	Dormitory/Boarding	34 (3.1)	.61**	.43 – .86
	Orphanage	14 (13.9)	3.48***	1.91 – 6.33
Whole sample		1833 (4.0)		

a: Result of multiple logistic regression including sex, age, and three family environment variables as predictors

b: Living with both biological parents in the absence of parental divorce, remarriage or death

Abbreviations: Ref (Reference group); Adj OR (Adjusted Odds Ratio); CI (Confidence Interval at 95% confidence level)

***: p < .001 **: p < .01

The perceived economic status of the family did not make a significant difference in the likelihood of being a frequent Internet pornography user compared to a high or low economic status.

Recreational Internet use time

Table 3 shows that the amount of recreational Internet use time can

be associated with the excessive use of Internet pornography because Internet is the medium of choice for Internet pornography use. Table 3 also shows that using the Internet for 3–4 hours (OR=1.28) or over 4 hours (OR=1.88) for recreational use increased the likelihood of being a frequent Internet pornography user after age, sex, and family environment variables were controlled.

Table 3. Recreational Internet Use Time, Mental Health Status and the Prevalence of Frequent Internet Pornography Users

Variables ^a		Frequent Internet Pornography Users in Each Category, N(%)	Adj. OR	CI
Recreational Internet use time (per day)	≤1 hour	385 (2.9)	Ref	
	>1 – ≤2 hrs	544 (3.6)	1.03	.90 – 1.18
	>2 – ≤3 hrs	400 (4.3)	1.11	.96 – 1.29
	>3 – ≤4 hrs	205 (5.0)	1.28**	1.08 – 1.54
	over 4 hrs	299 (7.5)	1.88***	1.60 – 2.21
Stress	Low	326 (4.3)	Ref	
	Mid	727 (3.8)	.99	.86 – 1.13
	High	780 (4.1)	1.33***	1.16 – 1.52
Happiness	Low	302 (5.1)	Ref	
	Mid	503 (3.6)	.66***	.57 – .77
	High	1028 (4.0)	.68***	.59 – .78
Sadness/hopelessness ^b	No	1220 (3.8)	Ref	
	Yes	613 (4.6)	1.49***	1.34 – 1.65
Suicidal ideation ^b	No	1455 (3.9)	Ref	
	Yes	378 (4.7)	1.69***	1.50 – 1.90
Suicidal attempt ^b	No	1726 (3.9)	Ref	
	Yes	107 (6.5)	2.81***	2.26 – 3.48
Whole sample		1833 (4.0)		

a: Each variable was included as a predictor in a separate multiple logistic regression with the covariate variables of sex, age and three family environment variables.

b: Experience in the past 12 months

Abbreviations: Ref (Reference group); Adj OR (Adjusted Odds Ratio); CI (Confidence Interval at 95% confidence level)

***: $p < .001$ **: $p < .01$

Mental health indicators

Table 3 presents the mental health indicators for frequent Internet pornography users. Individuals were more likely to use Internet pornography frequently if they had experienced higher level of stress and lower happiness (OR=1.33, OR=.66-.68) compared to the reference group. The probability of being a frequent user of Internet pornography also increased (OR=1.49-2.81) when they experience sadness/hopelessness, suicidal ideation, and attempts within the past 12 months than other adolescents, after age, sex, and family environment variables were controlled.

Sexual behavior

Various sexual behaviors and high-risk sexual behaviors were associated with the frequent Internet pornography users as compared to other adolescents (Table 4). They were more likely to

use Internet pornography frequently (1.79-5.20 times) if they have done a certain sexual behavior. Homosexual kiss/caress (OR=5.20) and intercourse behavior (OR=4.60), which are considered explorative, revealed stronger associations with the prevalence of frequent Internet pornography use than heterosexual kiss/caress (OR=2.14) and intercourse (OR=1.79). The probabilities of being frequent Internet pornography users increased 4.27 times when they were victims of a sexual assault and 5.76 times if they were perpetrators of a sexual assault. Individuals were more likely to use Internet pornography frequently (2.56 and 2.20 times more) if they engaged in sex under the influence of alcohol (2.56 times more) and unprotected sex (2.20 times more). Adolescents who have acquired sexually transmitted diseases (STDs) were 7.46 times more likely to be frequent users of Internet pornography, after age, sex, and family environment variables were controlled.

Table 4. Adolescents' Sexual behavior, Delinquent Behaviors and the Prevalence of Frequent Internet Pornography Users

Variables ^a		Frequent Internet Pornography Users in Each Category, N(%)	Adj. OR	CI
Sexual Behavior				
Heterosexual kiss/caress	Yes	476 (7.9)	1.79***	1.80 – 2.53
	No	1357 (3.4)	Ref	
Heterosexual intercourse	Yes	179 (12.0)	2.14***	1.60 – 2.01
	No	1654 (3.7)	Ref	
Homosexual kiss/caress	Yes	75 (17.6)	5.20***	3.95 – 6.83
	No	1758 (3.9)	Ref	
Homosexual intercourse	Yes	49 (21.7)	4.60***	3.28 – 6.43
	No	1874 (3.9)	Ref	
Risky Sexual Behavior				
Sexual assault victimization	Yes	51 (9.5)	4.27***	3.10 – 5.87
	No	1782 (3.9)	Ref	
Sexual assault perpetration	Yes	61 (23.4)	5.76***	4.24 – 7.83
	No	1772 (3.9)	Ref	
Sexual intercourse under the influence of alcohol	Yes	92 (15.4)	2.56***	2.02 – 3.24
	No	1741 (3.9)	Ref	
Unprotected sexual intercourse ^c	Yes	116 (12.5)	2.20***	1.79 – 2.71
	No	1717 (3.8)	Ref	
Sexual Transmitted Diseases	Yes	20 (29.4)	7.46***	4.21 – 13.24
	No	1813 (4.0)	Ref	
Delinquent Behavior				
Drinking alcohol ^b	Yes	626 (7.6)	1.74***	1.56 – 1.93
	No	1207 (3.2)	Ref	
Smoking ^b	Yes	506 (10.9)	2.14***	1.91 – 2.39
	No	1327 (3.2)	Ref	
Lifetime drug use	Yes	25 (23.4)	7.68***	4.62 – 12.75
	No	1808 (4.0)	Ref	
Whole sample		1833 (4.0)		

a: Each variable was included as a predictor in a separate multiple logistic regression with the covariate variables of sex, age and three family environment variables.

b: Experience within the past 30 days

c: Sex without condom

Abbreviations: Ref (Reference group); Adj OR (Adjusted Odds Ratio); CI (Confidence Interval at 95% confidence level)

***: $p < .001$ **: $p < .01$

Delinquent behavior

Delinquency problems also exhibited higher probabilities of being excessive Internet pornography users (Table 4). The group who used alcohol or smoked in the last 30 days revealed a higher (1.74 times and 2.14 times) likelihood of frequent Internet pornography use. The group who had used drugs in their lifetime were 7.68 times more likely to be frequent Internet pornography

users, after age, sex and family environment variables were controlled.

Discussion

This study explored the association of age, gender, family environment, Internet use behavior, mental health status,

sexual behavior and delinquency with the frequent use of Internet pornography by Korean adolescents. Frequent Internet pornography users comprised 4% of the sample. Previous studies have indicated that the percentage of adolescents who viewed Internet pornography nearly every day was 1–10%, depending on age and region (Ma & Shek, 2013; Peter & Valkenburg, 2006; Svedin *et al.*, 2011; To *et al.*, 2012).

Consistent with previous studies, more males and older adolescents were included among frequent Internet pornography users (Braun-Courville & Rojas, 2009; Lo & Wei, 2005; Svedin *et al.*, 2011). Being a frequent Internet pornography user varied by living arrangement and perceived economic status. This result suggests the importance of the family and living environment for adolescents and the habitual use of Internet pornography. Dormitory or boarding houses may provide more structured supervision to adolescents than others that lack the supervision such as an orphanage. More structured supervision on adolescents' daily life can be a protective factor from the frequent use of Internet pornography.

Mid-level perceived economic status of the family showed a lower association with the prevalence of frequent Internet pornography users than the low or high-level group. It might be inferred that the perceived economic status of the family is important; however, further study is needed to understand the effect of economic status of the family as sufficient condition to protect adolescents from the habitual visitation of Internet pornography. The significance of living in an intact family, as indicated in a previous study (Svedin *et al.*, 2011), was not replicated in this study. In the Korean cultural context, couples value marital stability regardless of their marital satisfaction, "intact family" per se may not guarantee a high quality of family life. It is possible that there are more intact families with low family life satisfaction in Korea compared to western society and may be an explanation of the discrepancy in the study results versus those of previous research.

More than three hours of daily recreational Internet use was significantly associated with being an excessive Internet pornography user. This result is consistent with previous research (Ybarra & Mitchell, 2005). The curiosity of adolescents and the accessibility of pornographic sites during Internet activity predisposes them to becoming excessive Internet pornography

users. The amount of Internet time on erotica induces the compulsive use of the Internet over time (Meerkerk *et al.*, 2006). A greater amount of time online is significantly associated with more time on erotica. However, three or fewer hours of Internet use did not make a significant difference in the excessive use of Internet pornography. This finding suggests that a low or moderate amount of Internet use might be acceptable for adolescents in the risk of becoming a frequent Internet pornography user.

In this study, the frequent visitation of Internet pornography showed a high association of vulnerabilities towards mental health indicators. Lower levels of happiness and higher levels of stress, sadness, and hopelessness (possibly connected to the higher rates of suicidal ideation and suicidal attempts) seemed to be increasing factors for the frequent use of Internet pornography by adolescents. Researchers argue that Internet sex addicts are escaping from real-life tensions to erotica and desire prompt appeasement and satisfaction through sexual arousal (Brand *et al.*, 2011). The compulsive use of sex materials on the Internet can exacerbate existing problems in real life and individuals might return to an online situation to escape difficulties. Therefore, interventions for mental health issues in adolescents may help prevent the excessive use of Internet pornography and its harmful consequences.

The results of this study replicated the findings of previous research (Häggström-Nordin *et al.*, 2005; Peter & Valkenburg, 2006; Svedin *et al.*, 2011) on frequent Internet pornography users' sexual behavior and high-risk sexual behavior. In this study, exploratory and aggressive sexual behavior were more likely to be associated with the frequent Internet pornography use. The occurrence of STDs (which might be a natural consequence of sexual intercourse), sex under the influence of alcohol, and unprotected sex showed a significant association with the frequent Internet pornography use. Previous studies (Braun-Courville & Rojas, 2009; Greenfield, 2004) report that pornography exposure affects adolescents' sexual permissiveness and hedonistic view of sexuality. The current results only revealed the associations of the variables; however, the findings might account for the frequent users' exploratory sexual behavior, such as anal sex, sex with multiple partners, and sex under the influence of alcohol or drugs (Lo & Wei, 2005; Owens *et al.*, 2012; Svedin *et al.*, 2011; To *et al.*, 2012). They also tend to accept the rape myth that females provoke

unwanted sexual advances and sexual assaults (Flood, 2009). This notion might be related to the higher rates of sexual assaults and victimization.

A higher rate of delinquent behaviors were associated with adolescents' higher tendency of using Internet pornography habitually. Mesch (2009) suspected the higher likelihood of deviant behavior among frequent Internet pornography users based on their weak ties to mainstream social institutions. Svedin *et al.* (2011) argued that frequent users' greater exposure to advanced or deviant forms of pornography (such as violence, bestiality, or child pornography) might influence a tendency to break rules or engage in antisocial activities. Alexy *et al.* (2009) reported that pornography consumers (among the juvenile sexual offenders) were more likely to display aggressive behavior such as theft, truancy, manipulating others, arson, and sexual assault. The results suggest a tendency of frequent Internet pornography users to ignore social or school norms that result in a higher probability of delinquent problems. This study did not explore the causal direction of the relationship of the variables. However, the results revealed a clear correlation between delinquency among Korean adolescents and the frequent exposure to Internet pornography.

Conclusion

Adolescents who use the Internet excessively have a higher probability to use Internet pornography frequently. Recreational Internet use time is one factor we can control for the protection of adolescents from sexually explicit Internet material. This study indicated that the perceived economic status of households and living arrangements were related to the prevalence of adolescents' frequent Internet pornography use. The factors may be related with the structured supervision of adolescents' recreational Internet use; however, the current results only show an association of the variables. More research is needed to understand the protective factors of adolescents' frequent use of Internet pornography.

Adolescents' vulnerabilities (such as mental health problems, committing premature or high-risk sexual behavior, or minor delinquent behavior) were shown to be increasing factors for the frequent use of Internet pornography. These results implied an importance in managing adolescents' vulnerabilities to prevent

the excessive use of Internet pornography. Previous results have consistently implied the un-healthy consequence of the excessive Internet pornography use; consequently, more practical efforts should be given to intervene in adolescents' vulnerabilities in regards to mental health, sexual behavior and delinquent behavior. More attentive supervision and services for their enhanced mental health status are recommended. More practical sexual health education is essential to prevent risky sexual behavior. Proper and timely interventions of juvenile delinquencies are also required.

This research is one of the first studies in Asia to explore frequent Internet pornography users' characteristics, Internet use behavior, mental health, and behavior problems. The findings replicate previous studies and expand the limited amount of knowledge about this group of adolescents. However, more detailed studies are required to examine possible mediators and moderators of the associations in this study. The results of this study should be interpreted with caution due to its limitations. Many variables included in this study were assessed using one item questions. A few terms used in the questions (such as the "sexually explicit Internet material" or "sexual harassment") were not defined specifically in the survey. Data were also collected 4 years ago and can present a limitation on the detection of present phenomenon. These accumulated limitations might decrease the overall validity of the measurements in this study.

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