

The Effects of Internet use on School Adjustment and Delinquency

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Abstract This study aimed to investigate the long-term relationships between the types of Internet use, school adjustment problems, and delinquent behaviors among Korean adolescents, using the longitudinal data of 7th–9th graders from the Korean Children and Youth Panel Survey (KCYPS). In particular, Internet use was divided into three types, viz. communication, information-seeking, and entertainment, and the effects of each type of Internet use on two types of delinquency (i.e., cyber and actual delinquency) were analyzed. Additionally, the indirect impact of Internet use on delinquency through school maladjustment was investigated. The results were as follows. Only the entertainment type was found to have significant direct positive effects on both actual delinquency and cyber delinquency. Furthermore, all three types of Internet use (communication, information seeking, and entertainment) were found to have significant indirect effects on actual delinquency mediated by school maladjustment. Whereas the communication and entertainment types were positively associated with school maladjustment and, in turn, with subsequent delinquent behaviors, the information seeking type was negatively associated with school maladjustment and, in turn, with subsequent delinquent behaviors.

Keywords Internet use types · Maladjustment in schools · Delinquent behaviors

With the rapid development of Internet Technology, adolescents' use of the Internet has dramatically increased and become a primary part of their lives. With the help of the Internet, adolescents now have access to worldwide information in real time, a convenience which brings with it diverse benefits. However, due to its anonymity, deindividuation, and the easy access to contacts that it provides, Internet use also has negative aspects, such as exposure to obscene materials, cyberbullying, and illegal acts (Kim 2001). Accordingly, inconsistent findings have been reported in the literature regarding the consequences of Internet use on adolescents; some studies highlighted its positive consequences on adolescents' behaviors (e.g., reduced aggression; Colwell and Kato 2003), while others pointed out its negative consequences (e.g., cyberbullying; Pujazon-Zazik and Park 2010), and still others reported no significant impacts (e.g., Ferguson 2015b & Furuya-Kanamori and Doi 2016).

The potential impact of the internet use on school maladjustment has been a source of controversy in previous literature. Some researchers argued that the use of the Internet could hinder adolescents' life functioning, such as by causing school maladjustment (e.g., Byun and Kim 2007; Cho and Kim 2009). Kim et al. (2002) showed that adolescents' Internet use was negatively correlated with their adjustment in school such as relationships with teachers and friends, active engagement and attention in class, behavioral regulation, and problem solving skills. When adolescents suffer from maladjustment in school, they may experience an imbalance, wherein they fail to conform to the school's educational values, norms, and order (Lee and Son 2005), and their problems may even extend beyond the psychological level and lead to normative

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problem behaviors (Hur and Lee 2006). For example, researchers reported that maladjusted adolescents were more likely to engage in delinquent behaviors, such as social aggression (Kawabata et al. 2014) and substance use (Henry et al. 2009). However, contrarily, a recent meta-analysis (Ferguson 2015a) found minimal relationship between violent online gaming and emotional and behavioral symptoms such as aggression, depression, and attention problems. Merritt et al. (2016) also reported that the consumption of violent media did not predict reduced emotional well-being of children, and argued that the impact of violent media use on child mood symptoms appears to be minimal. Thus, further investigation of the effects of Internet use on school maladjustment may be needed to better explain the paths to delinquency among adolescents.

Previous studies on the relationship between Internet use and delinquency reported inconsistent results. Some studies indicated that using the Internet for a long time was associated with an increase in delinquency among adolescents (e.g., Lee 2005). Lee (2008) reported that adolescents who engaged in excessive Internet use tended to commit more delinquent acts and exhibit greater problem behaviors, suggesting that the duration of Internet use was one of the primary predictors of delinquency. Additionally, problematic Internet use was found to be linked to adolescents' substance use (Rücker et al. 2015) and risk-taking behaviors (Oktan 2015). However, other recent studies argued that Internet use does not contribute to delinquency. For example, Markey et al. (2015) meta-analysis found no evidence to suggest that playing online video games is related to aggression. They also found unexpected results indicating a decrease in societal violence in response to violent video games. Similarly, Cunningham et al. (2016) found little evidence of an increase in crime associated with violent video games.

Young et al. (2000) argued that there are different types of Internet use and that they may each have different effects on the psychological, social, or school dimensions. Similarly, Kardefelt-Winther (2015) expressed concerns regarding a symptomatic focus in research on online gaming, and suggested a transition to a deeper understanding of “why” some people spend so much time using internet. He argued that a good starting point to understand the impact of excessive internet use is the assessment of purposes and motivations because the consequences of using internet are largely dependent on them. Some specific types of Internet use have been frequently evaluated, including the entertainment type (e.g., video gaming; King et al. 2013) and communication type (e.g., messenger and social networking sites; Mazer and Ledbetter 2012). However, some specific types of Internet use have rarely been evaluated (e.g., information seeking; Laconi et al. 2015). For example, although the information seeking type of Internet use may promote adolescents' knowledge and active information processing skills, little research has been done to support this relationship.

There are inconsistent findings regarding the effects of the entertainment and communication types of Internet use on adolescents' behaviors. For example, some studies reported that online video gaming was related to life dissatisfaction, low self-esteem (e.g., Griffiths 2012; Van Rooij 2011), reduced social engagement (Chung 2000), and aggressive behaviors (Ballard and Lineberger 1999). However, Gross (2004) reported only slight effects of Internet use on the psychosocial well-being of adolescents. Moreover, Colwell and Kato (2003) found reduced aggression among students in response to using Internet for entertainment (e.g., online video games). The effects of the communication and social networking types of Internet use on adolescents' behavior are also controversial. Whereas some researchers reported potential negative effects, such as cyberbullying, online risk-taking behavior, and sexual predators (Pujazon-Zazik and Park 2010), other studies suggested potential positive effects of online socialization and communication. For example, adolescents who use the Internet for communication can strengthen their existing offline relationships (Subrahmanyam and Greenfield 2008), as well as find a social outlet that is otherwise unavailable for those who feel isolated (Moreno et al. 2009). Given these inconsistent findings for different types of Internet use in the literature, the current study aims to investigate how each type of Internet use is associated with adolescents' life functioning.

Many of the previous studies conducted so far failed to consider the different types of Internet use and their unique influences on adolescents. For example, socially or academically appropriate online activities, such as social networking, emailing and messaging, or information seeking may be beneficial to adolescents. As there are still inconsistent findings related to exposure to physically or sexually violent materials through the Internet and its impacts on adolescents, a longitudinal investigation of the relationship would provide meaningful information which might contribute to the improvement of adolescents' positive development. Therefore, the current study divided Internet use into three types – communication, entertainment, and information-seeking – and investigated their long-term effects on two different types of delinquency – actual and cyber delinquency.

Method

Participants

The data used in the present study are from the Korean Children and Youth Panel Survey (KCYPs), a six-year longitudinal study of students' school life experiences conducted by the National Youth Policy Institute, with funding from the national government. The survey design includes a clustered, stratified national probability sample of about 78 middle schools. The analyses in the current study are based on only

three years of the data (i.e., the first to the third year of middle school). In 2011, 2351 students in their seventh grade participated in the survey; among them, 2280 and 2259 responded to the survey in 2012 and 2013, respectively. We used a longitudinal sample of 2075 participants, comprised of 1062 (51.2%) male and 1013 (48.8%) female students.

Measures

Internet use

To measure Internet use, the answers to eight questions on the frequency of Internet use with a 4-point Likert scale (1 = *very frequently* to 4 = *very rarely*) were reverse-coded. As in Lee and Jun (2012), a factor analysis with the items led to three factors – communication, information-seeking, and entertainment. Communication included four items: ‘chatting and messaging’, ‘emailing’, ‘acting in clubs/cafes/communities’, and ‘uploading posts (replies)’. Information-seeking included a further two items: ‘searching information related to study’ and ‘searching and reading information other than school materials.’ Entertainment included two items: ‘games’ and ‘adult websites.’ The reliability coefficients (Cronbach’s α) were .76 for communication, .82 for information-seeking, and .74 for entertainment.

Maladjustment in School

In order to measure adolescents’ maladjustment in school, the items of adjustment in school that Kim (2000) developed for elementary school students were used. The measure of maladjustment in school consisted of a total of 20 items, made up of five items each on learning activities (e.g., ‘not bringing books, notebooks or other materials to class’), school rules (e.g., ‘throwing things in class’), relationship with peers (e.g., ‘saying bad things about a classmate’), and relationship with teachers (e.g., ‘derogatory remarks toward the teacher’). Higher scores for items indicated a higher degree of maladjustment in school. For the current study, Cronbach’s α was .82 for learning activities, .79 for school rules, .81 for relationship with peers, and .86 for relationship with teachers.

Adolescent Delinquency

Adolescent delinquency was measured by ten items of the actual delinquent experience (e.g., smoking, drinking, truancy and running away from home) and five items of the cyber delinquent experience (i.e., spreading rumors, illegal downloading, stealing IDs, hacking, and verbal violence). Each item was expressed as the number of delinquent acts that a student committed within one year. Cronbach’s α for the total adolescent delinquency scale was .71 and those for the actual and cyber delinquent scales were .73 and .83, respectively.

Analysis

Structural equation modeling (SEM) was used to assess the hypothesized structural relationships among latent variables. SEM was selected because it represents an appropriate analytic approach for dealing with issues of specifying directionality among variables of interest and generating flexibility with which to test causal relationships.

Model fit was assessed based on several criteria: non-normed fit index (NNFI; Bentler and Bonett 1980), comparative fit index (CFI; Bentler 1990), and root mean square error of approximation (RMSEA; Steiger and Lind 1980). Values lower than .08 for the RMSEA and values close to .95 for the NNFI and CFI were used to determine a good-fitting model. All analyses were conducted using Amos 15.0.

Results

The correlations, mean, standard deviation, skewness, and kurtosis of the variables in the study are provided in Table 1. Significant correlations were found among the study variables for relation between Internet use and delinquency behavior. According to the guidelines of severe non-normality (i.e., skewness > 3; kurtosis > 10) proposed by Curran et al. (1996), the normality assumption of all the variables was well met, where the skewness values were less than 3 and kurtosis values were less than 10.

Testing the Measurement Models

Before conducting the SEM, the overall measurement model was examined. The model yielded good fit with the data ($\chi^2_{(209)} = 1300.683$, CFI = .957, NNFI = .954, RMSEA = .050). The factor loadings for the measurement model ranged from .56 to .73 for communication, from .47 to .49 for entertainment, and from .46 to .56 for information-seeking Internet use. The factor loadings ranged from .66 to .75 for socio-psychological problems, from .56 to .74 for adjustment in school, from .78 to .85 for actual delinquency and from .73 to .76 for cyber delinquency (Fig. 1).

Testing the Mediation Model

To assess the plausibility of the hypothesis that the relationship between Internet use and delinquency behaviors is mediated by students’ school adjustment problems, we tested the hypothesized mediational model. Individual background variables (i.e., gender, age, and family income) from Time 1 were used as control variables in the structural modeling. The results indicated that the model showed a good fit for the sample: the model yielded an overall $\chi^2(215)$ value of 1497.162, with CFI = .961, NNFI = .964, and RMSEA = .053. The fit of

Table 1 Descriptive Statistics for study variables and correlation

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Communication type	-					
(2) Entertainment type	.062**	-				
(3) Information-seeking type	.219***	-.096***	-			
(4) Maladjustment in school	.005	.178***	-.167***	-		
(5) Actual delinquency	.064**	.191***	-.054*	.193***	-	
(6) Cyber delinquency	.002	.140***	-.003	.053*	.108***	-
Mean	12.089	4.492	5.973	42.209	.291	.230
SD	3.713	1.304	1.288	7.770	.712	.553

* $p < .05$, ** $p < .01$; *** $p < .001$

the final model was deemed acceptable in terms of the three fit indices. We tested whether there were significant direct and indirect effects using Preacher and Hayes (2008) nonparametric bootstrapping approach. The standardized parameter estimates for this model are presented in Fig. 2.

Figure 2 shows that the communication type did not exert significant effects on either actual delinquency or cyber delinquency, while the entertainment type exerted significant effects on both of them (actual delinquency $\beta = .372$, $p < .001$; cyber delinquency $\beta = .282$, $p < .001$). All three types – Communication, information-seeking, and entertainment – had a significant effect on maladjustment in school (communication $\beta = .117$, $p < .001$; information-seeking $\beta = -.354$, $p < .001$; entertainment $\beta = .125$, $p < .001$). School maladjustment had significant effects on actual delinquency behaviors ($\beta = .295$, $p < .001$), while school maladjustment did not exert any significant effect on cyber delinquency behaviors.

In addition to these direct effects, the bootstrap results indicated that communication, information-seeking, and entertainment had significant indirect effects on actual delinquency behaviors via the school maladjustment mediator (see Table 2). Specifically, there are indirect effects of communication ($\beta = .035$, $p < .05$), information-seeking ($\beta = -.104$, $p < .01$), as well as entertainment ($\beta = .037$, $p < .01$) on actual delinquency behavior via school maladjustment.

Discussion

Noting the necessity to investigate the influence of Internet use on adolescents, the present study aimed to examine the effects of the different types of Internet use on adolescents'

maladjustment in school and two types of delinquency. The results of the study were as follows.

The results of this study suggest that different types of Internet use have different effects on maladjustment in school. Specifically, the information-seeking type was shown to have a significant, negative relationship with maladjustment in school, which means that the more the adolescents used the Internet to find information, the less they reported school maladjustment. Although statistically significant, the communication and entertainment types of Internet use and their relationships with school maladjustment were small (less than .20), indicating cautious interpretations of the results. These different outcomes depending on the type of Internet use may explain the inconsistent findings reported by previous studies regarding the effects of Internet use on school maladjustment. Based on these results, it would be incorrect to conclude that the use of the Internet, regardless of how it is used, is associated with negative outcomes among adolescents. Findings of this study particularly emphasize that the information seeking type seems to have a very clear purpose and involve less emotional intensity; once adolescents find the information they are looking for, the purpose of using the Internet is satisfied. These findings suggest that parents, educators, and policy makers need to better understand the different types of Internet use and their potential positive and negative outcomes, and advise students to use the Internet wisely. Further studies could examine more diverse types of Internet use and their effects on school maladjustment to provide a more comprehensive picture of the links between Internet use and adolescents' maladjustment in schools.

The results also indicated that the entertainment type of Internet use has a direct relationship with both actual and cyber delinquency. That is, adolescents who spend more time

Fig. 1 Research model to be tested

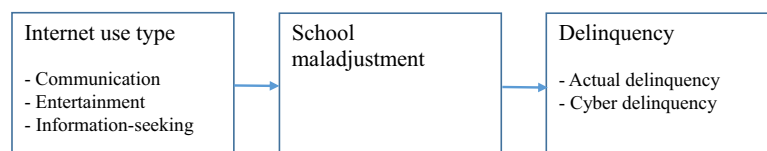
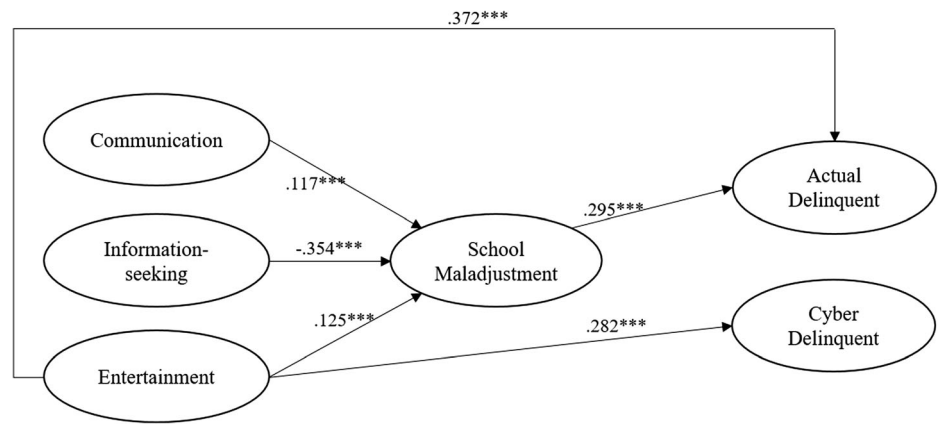


Fig. 2 The results from the final model. Note. * $p < .05$, ** $p < .01$; *** $p < .001$, only significant path coefficients are shown in the model



playing online games are more likely to commit delinquent acts, whether online or offline. These results provide support for previous studies which reported a connection between online video games and delinquency (e.g., Ballard and Lineberger 1999), but are inconsistent with other studies which reported no significant links between them (e.g., Markey and Scherer 2009). Given that recent studies have continued to report inconsistent findings, the current study’s results should be interpreted with caution. According to our findings, frequent exposure to video games is highly associated with adolescents’ delinquent behaviors, suggesting the need to carefully monitor adolescents’ use of the Internet for entertainment. However, it is possible that there are other interrelated factors that are closely associated with both the entertainment type of Internet use and delinquency. Thus, further investigation of the relationship between Internet use and Korean adolescents’ behavior is needed, considering potential covariates, to understand the paths to delinquency.

Maladjustment in school was found to mediate the relationship between all of the types of Internet use and actual delinquency. Although all three types of Internet use were statistically significantly associated with maladjustment in school, the communication and entertainment types had small direct effects on school maladjustment, and thus, their indirect relationships with delinquency through maladjustment need cautious interpretations. However, the information seeking type

of use was found to have a relatively strong significant, positive relationship with school maladjustment, which in turn was also positively associated with actual delinquency. In other words, those students who used the Internet more frequently for seeking information were more likely to report maladjustment problems, resulting in increased actual delinquency. It is possible that students who spend more time using the Internet tend to satisfy their needs through online rather than offline resources; this tendency to rely on online rather than offline resources may be associated with their lack of positive relationships with peers and teachers at school. In the literature, school maladjustment has been frequently linked to delinquent behaviors among adolescents (e.g., Kawabata et al. 2014), which is consistent with the present study’s findings. Maladjusted students tend to experience emotional problems and fail to follow school norms and rules (Lee and Son 2005) and thus may engage in more maladaptive behaviors.

Another important consideration is that a computer or laptop is not the only way to access the Internet. Adolescents nowadays have access to the Internet through various forms of technology such as smartphones and tablets. Especially, smartphones are easy for them to carry around everywhere they go and provide constant and easy access to the Internet, which may increase adolescents’ overall use of the Internet. Furthermore, whereas a computer or laptop at home or school is often shared with other family members and peers,

Table 2 Results for direct and indirect effect in final model

			Unstandardized coefficient		S.E.	Standardized coefficient	95% C.I. (bootstrap with bias correction)
Communication	→	Actual delinquent	.021	**	.010	.035	(.017, .081)
	→	Cyber delinquent	.000		.000	.006	(−.002, .016)
Information	→	Actual delinquent	−.135	***	.069	−.104	(−.326, −.055)
	→	Cyber delinquent	−.002		.006	−.018	(−.050, .001)
Entertainment	→	Actual delinquent	.060	**	.033	.037	(.015, .076)
	→	Cyber delinquent	.001		.003	.007	(−.002, .019)

* $p < .05$, ** $p < .01$; *** $p < .001$

smartphones provide greater privacy, which may promote different types of Internet use and in turn have different consequences for adolescents. For example, a recent study by Rice et al. (2015) found that students with cell phone Internet access were more likely to report being solicited online for sex, being sexually active, and having sex with a partner they met via the Internet than those without cell phone Internet access. Therefore, different forms of technology should be considered in future studies to better reflect the effects of the current technology on adolescents' use of the Internet.

Overall, the results of the current study suggest that Internet use itself should not be regarded as simply good or bad. Instead, students, parents, and educators need to understand that its effects can vary depending on the type of use. For example, when incorporating technology in the classroom, which is often emphasized and recommended in today's educational practice, it is critical for teachers to teach students about the potential positive and negative effects of the different types of Internet use. Policies regarding the use of technology in the classroom should incorporate adequate training on the developmentally appropriate use of the Internet prior to their implementation. Parents could also provide their children with guidance on the use of the Internet and carefully monitor their type of use. Additionally, researchers need to take the different types of Internet use into consideration when attempting to understand the impact of Internet use and develop interventions to prevent and reduce adolescent delinquency.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

- Ballard, M. E., & Lineberger, R. (1999). Video game violence and confederate gender: Effects on reward and punishment given by college males. *Sex Roles, 41*, 541–558. <https://doi.org/10.1023/A:1018843304606>.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238–246.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness-of-fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588–600.
- Byun, S. H., & Kim, J. M. (2007). The relationships among children's/adolescents' frequency levels of playing Internet games, motives for playing Internet games and adaptation to school. *Journal of Korean Home Management Association, 25*, 47–58.
- Cho, Y. K., & Kim, Y. S. (2009). Adolescents' media use and academic achievement. *Korean Journal of Media and Communication, 23*, 380–417.
- Chung, K. S. (2000). Social and psychological impact on Adolescents' Internet use. *Korean Journal of Information and Society, 2*, 183–207.
- Colwell, J., & Kato, M. (2003). Investigation of the relationship between social isolation, self-esteem, aggression and computer game play in Japanese adolescents. *Asian Journal of Social Psychology, 6*, 149–158. <https://doi.org/10.1111/1467-839X.t01-1-00017>.
- Cunningham, S., Engelstätter, B., & Ward, M. R. (2016). Violent video games and violent crime. *Southern Economic Journal, 82*, 1247–1265. <https://doi.org/10.1002/soej.12139>.
- Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods, 1*, 16–29.
- Ferguson, C. J. (2015a). Do angry birds make for angry children? A meta-analysis of video game influences on children's and adolescents' aggression, mental health, prosocial behavior and academic performance. *Perspectives on Psychological Science, 10*, 646–666. <https://doi.org/10.1177/1745691615592234>.
- Ferguson, C. J. (2015b). Pay no attention to that data behind the curtain: On angry birds, happy children, scholarly squabbles, publication bias, and why betas rule metas. *Perspectives on Psychological Science, 10*, 683–691. <https://doi.org/10.1177/1745691615593353>.
- Furuya-Kanamori, L., & Doi, S. R. (2016). Angry birds, angry children, and angry meta-analysts: A reanalysis. *Perspectives on Psychological Science, 11*, 408–414. <https://doi.org/10.1177/1745691616635599>.
- Griffiths, M. D. (2012). Facebook addiction: Concerns, criticism, and recommendations—A response to Andreassen and colleagues. *Psychological Reports, 110*(2), 518–520. <https://doi.org/10.2466/01.07.18.PR0.110.2.518-520>.
- Gross, E. F. (2004). Adolescent Internet use: What we expect, what teens report. *Journal of Applied Developmental Psychology, 25*, 633–649. <https://doi.org/10.1016/j.appdev.2004.09.005>.
- Henry, K. L., Stanley, L. R., Edwards, R. W., Harkabus, L. C., & Chapin, L. A. (2009). Individual and contextual effects of school adjustment on adolescent alcohol use. *Prevention Science, 10*, 236–247. <https://doi.org/10.1007/s1121-009-0124-2>.
- Hur, E. K., & Lee, K. N. (2006). The impact of individual, family, friend and school variables on deviant behaviors among adolescents. *Family and Environment Research, 44*, 111–122.
- Kardefelt-Winther, D. (2015). A critical account of DSM-5 criteria for internet gaming disorder. *Addiction Research & Theory, 23*, 93–98. <https://doi.org/10.3109/16066359.2014.935350>.
- Kawabata, Y., Tseng, W. L., & Crick, N. R. (2014). Adaptive, maladaptive, mediational, and bidirectional processes of relational and physical aggression, relational and physical victimization, and peer liking. *Aggressive Behavior, 40*, 273–287. <https://doi.org/10.1002/ab.21517>.
- Kim, Y. (2000). An analysis on the validation of school learning motivation scale & school adjustment scale. *Korean Journal of Educational Research, 17*, 3–37.
- Kim, H. W. (2001). Analysis on the characteristics of Internet use and Internet addiction among adolescence. *Korean Journal of Youth Studies, 8*, 91–117.
- Kim, K. S., Chang, S. H., Cho, B. M., & Im, E. M. (2002). The relationship between adolescents' Internet addiction and school adjustment. *Korean Journal of Education Research, 4*, 301–333.
- King, D. L., Delfabbro, P. H., Zwaans, T., & Kaptis, D. (2013). Clinical features and axis I comorbidity of Australian adolescents

- pathological Internet and video game users. *Australian and New Zealand Journal of Psychiatry*, 47, 1058–1067.
- Laconi, S., Tricard, N., & Chabrol, H. (2015). Differences between specific and generalized problematic internet uses according to gender, age, time spent online and psychopathological symptoms. *Computers in Human Behavior*, 48, 236–244. <https://doi.org/10.1016/j.chb.2015.02.006>.
- Lee, S. S. (2005). The relationship between Internet addiction and juvenile delinquency. *Korean Journal of Policy on Information*, 12, 35–47.
- Lee, S. J. (2008). Testing the reciprocal relationship between Internet addiction and problematic behavior tendency among adolescences. *Korean Journal of Youth Studies*, 15, 237–257.
- Lee, S. S., & Jun, S. H. (2012). Internet usage, strain, and delinquency: Analyzing youth panel data. *Korean Criminological Review*, 23, 293–318.
- Lee, K. H., & Son, W. K. (2005). Linear structural relationships children's school maladjustment and related variables. *Korean Journal of Child Studies*, 26, 157–171.
- Markey, P. M., & Scherer, K. (2009). An examination of psychoticism and motion capture controls as moderators of the effects of violent video games. *Computers in Human Behavior*, 25, 407–411. <https://doi.org/10.1016/j.chb.2008.10.001>.
- Markey, P. M., Markey, C. N., & French, J. E. (2015). Violent video games and real-world violence: Rhetoric versus data. *Psychology of Popular Media Culture*, 4, 277–295. <https://doi.org/10.1037/ppm0000030>.
- Mazer, J. P., & Ledbetter, A. M. (2012). Online communication attitudes as predictors of problematic Internet use and well-being outcomes. *Southern Communication Journal*, 77, 403–419.
- Merritt, A., LaQuea, R., Cromwell, R., & Ferguson, C. J. (2016). Media managing mood: A look at the possible effects of violent media on affect. *Child & Youth Care Forum*, 45, 241–258. <https://doi.org/10.1007/s10566-015-9328-8>.
- Moreno, M. A., Parks, M. R., Zimmerman, F. J., Brito, T. E., & Christakis, D. A. (2009). Display of health risk behaviors on MySpace by adolescents: Prevalence and associations. *Archives of Pediatrics & Adolescent Medicine*, 163(1), 27–34.
- Oktan, V. (2015). An investigation of problematic Internet use among adolescents in terms of self-injurious and risk-taking behavior. *Children and Youth Services Review*, 5263–5267. <https://doi.org/10.1016/j.childyouth.2015.03.009>.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40, 879–891.
- Pujazon-Zazik, M., & Park, M. J. (2010). To tweet, or not to tweet: Gender differences and potential positive and negative health outcomes of adolescents' social Internet use. *American Journal of Men's Health*, 4, 77–85. <https://doi.org/10.1177/1557988309360819>.
- Rice, E., Winetrobe, H., Holloway, I. W., Montoya, J., Plant, A., & Kordic, T. (2015). Cell phone Internet access, online sexual solicitation, partner seeking, and sexual risk behavior among adolescents. *Archives of Sexual Behavior*, 44, 755–763. <https://doi.org/10.1007/s10508-014-0366-3>.
- Rücker, J., Akre, C., Berchtold, A., & Suris, J. (2015). Problematic internet use is associated with substance use in young adolescents. *Acta Paediatrica*, 104, 504–507. <https://doi.org/10.1111/apa.12971>.
- Steiger, J. H., & Lind, J. C. (1980). *Statistically-based tests for the number of factors*. Paper presented at the Annual Spring Meeting of the Psychometric Society, Iowa City, IA.
- Subrahmanyam, K., & Greenfield, P. M. (2008). Virtual worlds in development: Implications of social networking sites. *Journal of Applied Developmental Psychology*, 29(6), 417–419. <https://doi.org/10.1016/j.appdev.2008.07.004>.
- Van Rooij, A. (2011). Online video game addiction. Exploring a new phenomenon (Doctoral dissertation). Erasmus University Rotterdam, Netherlands. <<https://hdl.handle.net/1765/23381>>. Retrieved 17.05.13.
- Young, K. S., Pistner, M., O'Mara, J., & Buchanan, J. (2000). Cyber-Disorders: The mental health concern for the new millennium. *Cyber Psychology and Behavior*, 3(5), 475–479.