

Cyberbullying, Problematic Internet Use, and Psychopathologic Symptoms among Korean Youth

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To evaluate the associations between cyberbullying behaviors and problematic internet use, and to compare psychopathologic symptoms in victims, perpetrators, and victims-perpetrators of cyberbullying to those in youths who were not involved in cyberbullying. A total of 4531 youths (11-14 years of age) were recruited from elementary and middle schools. Among 4531 youths, 9.7% were involved in cyberbullying; 3.3% were only victims; 3.4% were only perpetrators; and 3.0% were victims-perpetrators. Cyberbullying behaviors were associated with problematic internet use as well as various psychopathologic symptoms. Depressive symptoms were associated with cyberbullying victimization, and rule-breaking behaviors and aggressive behaviors have relevance to cyberbullying perpetration. Greater attention needs to be paid to identify youths earlier who are involved in cyberbullying and prevent serious adverse consequences in them.

Key Words: Cyberbullying, problematic internet use, psychopathologic symptoms, Korean, youth

The use of online technologies including the internet has become a daily activity for the Korean youth.¹ The internet and other electronic media offer many benefits to the youth, such as allowing access to instant educational information and providing rapid social communication. However, despite these advantages, various problems have emerged due to the excessive or inappropriate use of these media.²

For the youth, the negative aspects of the internet include problematic internet use as well as online risks such as exposure to online harassment. Problematic internet use is characterized by excessive or poorly controlled preoccupations, urges or behaviors regarding computer use and internet access, which result in subjective

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distress and functional impairment.^{3,4} Psychiatric co-occurrence of problematic internet use is common, particularly in mood, anxiety, impulse control and substance use disorders.⁵⁻⁷ One of the more common forms of online harassment among the youth is cyberbullying, which is defined as intentional and repeated harm inflicted through the use of electronic devices, including phones and the internet (chat rooms, e-mail, and instant messengers).⁸ The evidence suggests that youths who perpetrate cyberbullying are more likely to engage in rule-breaking and to have problems with aggression. Also, depression, substance use and delinquency are significantly higher among youths who report experiencing cyberbullying.^{9,10}

This study focuses on cyberbullying behaviors among Korean younger youths (11-14 years old) who have bigger possibilities involved in school bullying and spend more time in internet use. It specifically investigates the associations between cyberbullying behaviors and problematic internet use, and compares the psychopathologic symptoms in victims, perpetrators, and victims-perpetrators of cyberbullying to those in youths who were not involved in cyberbullying.

Of a total of 4835 eligible youths, 4555 (94.2%) youths were recruited from five elementary schools (5th and 6th grades, age range: 11-12 years) and four middle schools (7th and 8th grades, age range: 13-14 years old) located in the Jeollabuk province, Republic of Korea. The target schools volunteered to participate in the study, and we selected them to represent typical Korean public schools in the urban area. After gaining the approval, researchers visited the schools, explained the purpose of the study to the students and teachers, and obtained their consent. The researchers also sent to the parents the letters introducing the purpose of the study. The letter included a statement that parents could freely refuse to respond if they did not agree with the purpose of the study. This study was approved by the Chonbuk National University Hospital Review Board.

Twenty-four subjects were excluded because their responses were incomplete, thus leaving a total of 4531 subjects for the analysis. All youths reported that they currently were using the internet.

This study used a self-report questionnaire developed by Patchin and Hinduja.¹¹ The youths were asked regarding their cyberbullying experiences during the preceding 6 months (e.g. 'Have you been a cyberbully?', 'Have you ever been cyberbullied by other people?'). It was explained to the youth that cyberbullying was considered to have occurred when someone was intentionally and repeatedly harmed,

bullied or teased using electronic devices, including phones and the internet (chat rooms, e-mail, and instant messengers). The following four groups of cyberbullying status were used in the study: youths who had been victims, but had not bullied others ("Victim only"); youths who had bullied others but had not been victimized ("Perpetrator only"); youths who had been both victims and bullies ("Victim-perpetrator"); and finally youths who had neither been victimized nor had bullied others ("Neither").

Problematic internet use was measured using the Internet Addiction Proneness Scale for Youth-Short Form (KS scale), developed by the Korean National Information Society Agency.¹² The validity and reliability of the KS scale were established for the elementary school (Cronbach's alpha score: 0.887) and junior and senior high school students (The Cronbach's alpha score: 0.909).¹² The KS scale consists of 20 items, each rated on a 4-point scale (1-4), to screen for youth who are prone to problematic internet use, and it consists of six domains: 'disturbance of adaptive function', 'positive anticipation', 'withdrawal', 'virtual interpersonal relationship', 'deviant behaviors', and 'tolerance'. It is defined as definite internet addiction is when the total scores ≥ 53 or satisfies all of the following criteria; 'disturbance of adaptive function domain' scores ≥ 17 , 'withdrawal domain' scores ≥ 11 , and 'tolerance domain' scores ≥ 13 . It is defined as probable internet addiction when it meets one of the following criteria; $48 \leq \text{total scores} \leq 52$, 'disturbance of adaptive function domain' scores ≥ 15 , 'withdrawal domain' scores ≥ 10 , or 'tolerance domain' scores ≥ 12 . In our study, "problematic internet use" included definite internet addiction and probable internet addiction.

Psychopathologic symptoms were measured using the Korean Youth Self Report (K-YSR). The K-YSR consists of 112 problem items, each to be rated on a 3-point scale (0-2), based on the occurrence of the behavior during the preceding 6 months. The K-YSR have adequate psychometric properties.¹³ Eight subscales were used to measure the psychopathologic symptoms: "Anxious/depressed", "Somatic complaints", "Withdrawn/depressed", "Social problems", "Thought problems", "Attention problems", "Rule-breaking behaviors", and "Aggressive behaviors". The K-YSR yields age- and gender-based T-scores for empirically derived subscales during the last 6 months, and a T score ≥ 65 on the scale was considered to be clinically significant for the presence of psychopathologic symptoms.^{13,14}

The Pearson chi-square test, t-test, and analysis of variance with Turkey HSD Post Hoc analyses were used to compare

the proportions and means of the independent variables versus dependent variables. The effect sizes of variables significantly differed were calculated using the Cohen's *d* statistic. To investigate the associations between cyberbullying status and psychopathologic symptoms, odds ratios (ORs) and 95% confidence intervals were derived from a series of logistic regression analyses. In these regression models, the outcome variables were the presence of psychopathologic symptoms including problematic internet use, and the predictor variable was the presence of cyberbullying. All statistical analyses were performed using SPSS (version 18.0; SPSS Inc., Chicago, IL, USA), and statistical significance was determined using an alpha level of 0.05 (two-tailed tests).

Among the total 4531 youths, there were 2317 males (51.1%) and 2214 females (48.9%). There were 2108 elementary school students (5th and 6th grades, age range: 11-12 years) and 2423 middle school students (7th and 8th grades, age range: 13-14 years). Most of youths lived with father and mother together (89.4%), and reported that they belonged to the middle class in the socioeconomic status (94.4%). Sixty-two percent of fathers and 53% of mothers were college graduates.

A total of 9.7% (*n*=443) youths were involved in cyberbullying: 3.3% were only victims; 3.4% were only perpetrators;

and 3.0% were victims-perpetrators. A significantly more number of male youths (*n*=330, 14.2%) were involved in cyberbullying than female youths (*n*=113, 5.1%) (*p*<0.001). The group effect sizes of psychopathologic symptoms that significantly differed between cyber-bullying group (*n*=443) and neither group (*n*=4088) were medium (Cohen's *d*=0.43-0.74). There were significant differences among the four groups (defined according to the cyberbullying status) in the KS scale as well as in all of the K-YSR problem scale scores. The youths who were involved in cyberbullying reported more psychopathologic symptoms than those who had neither been victimized nor had bullied others ("neither" group). Especially, with respect to problematic internet use, the KS scale scores were the highest in the "victim-perpetrator" group and lowest in the "neither" group (Table 1).

Being a victim, perpetrator, and victim-perpetrator significantly increased the likelihood of the presence of problematic internet use (adjusted OR: 2.36, 1.66 and 2.38, respectively). The "victim" group was significantly associated with the presence of depression (adjusted OR: 4.20), and the "perpetrator" group and "victim-perpetrator" group were significantly associated with the presence of rule-breaking behaviors (adjusted OR: 2.52 and 2.15, respectively) and the presence of aggressive behaviors (adjusted OR: 2.93 and 2.91, respectively) (Table 2).

Table 1. Comparison of Cyberbullying Status with the Clinical Characteristics

Variables	Cyberbullying status				<i>p</i> value
	Neither ^a (<i>n</i> =4088)	Victim only ^b (<i>n</i> =151)	Perpetrator only ^c (<i>n</i> =154)	Victim-perpetrator ^d (<i>n</i> =138)	
Gender (%)					<0.001
Male	1987 (48.6)	96 (63.6)	124 (80.5)	110 (79.7)	
Female	2101 (51.4)	55 (36.4)	30 (19.5)	28 (20.3)	
School grade (%)					0.001
5-6th	1917 (46.9)	82 (54.3)	52 (33.8)	57 (41.3)	
7-8th	2171 (53.1)	69 (45.7)	102 (66.2)	81 (58.7)	
KS scale scores	27.8±7.3	33.2±9.1	33.3±9.1	35.9±9.8	<0.001, a<b<c<d
K-YSR problem scale scores					
Anxious/depressed	47.9±8.6	52.3±9.2	52.4±7.7	54.6±9.6	<0.001, a<b=c=d
Somatic complaints	48.3±10.3	52.0±10.1	51.9±7.7	54.2±9.6	<0.001, a<b=c=d
Withdrawn/depressed	48.2±8.9	50.9±8.6	51.6±7.0	53.7±8.1	<0.001, a<b=c=d
Social problems	49.9±7.7	53.3±8.2	52.2±6.6	54.6±7.5	<0.001, a<b=c=d
Thought problems	49.0±7.4	52.3±7.3	53.2±6.3	54.1±8.0	<0.001, a<b=c=d
Attention problems	47.7±8.8	51.4±7.8	52.0±6.8	53.6±9.0	<0.001, a<b=c=d
Rule-breaking behavior	51.0±7.0	53.4±6.4	55.7±7.1	56.4±8.0	<0.001, a<b<c=d
Aggressive behavior	49.2±8.6	52.8±7.7	55.6±7.7	56.5±10.3	<0.001, a<b<c=d

KS, the Internet Addiction Proneness Scale for Youth-Short Form; K-YSR, Korean Youth Self Report; ANOVA, analysis of variance.

Values are presented as number (%) or mean±standard deviation. Pearson chi-squared test and ANOVA with post hoc analysis were performed to examine the difference in demographic and clinical characteristics according to the cyberbullying status.

Table 2. Associations of Cyberbullying Status with Problematic Internet Use and Psychopathologic Symptoms

	Cyberbullying status					
	Victim only		Perpetrator only		Victim-perpetrator	
	OR (95% CI)*	<i>p</i> value	OR (95% CI)*	<i>p</i> value	OR (95% CI)*	<i>p</i> value
Problematic internet use	2.36 (1.58-3.54)	<0.001	1.66 (1.09-2.53)	0.018	2.38 (1.58-3.60)	<0.001
Anxious/depressed	4.20 (2.11-8.35)	<0.001	1.12 (0.47-2.65)	0.804	1.88 (0.86-4.12)	0.116
Somatic complaints	1.16 (0.60-2.22)	0.661	0.82 (0.40-1.69)	0.597	0.91 (0.45-1.84)	0.800
Withdrawn/depressed	0.48 (0.21-1.11)	0.085	1.29 (0.60-2.78)	0.515	0.92 (0.43-1.99)	0.841
Social problems	1.57 (0.82-3.01)	0.173	0.39 (0.15-1.02)	0.054	1.67 (0.85-3.28)	0.136
Thought problems	0.84 (0.35-2.00)	0.693	1.46 (0.69-3.09)	0.317	1.79 (0.88-3.63)	0.109
Attention problems	0.96 (0.42-2.18)	0.919	1.42 (0.64-3.15)	0.390	0.68 (0.29-1.60)	0.375
Rule-breaking behaviors	1.31 (0.67-2.59)	0.433	2.52 (1.42-4.45)	0.002	2.15 (1.20-3.87)	0.010
Aggressive behaviors	0.74 (0.33-1.67)	0.471	2.93 (1.62-5.27)	<0.001	2.91 (1.60-5.34)	0.001

OR, odds ratio; CI, confidence interval.

*The OR was calculated using a binary logistic regression analysis and adjusted for sex and grade. The “neither” group constituted the reference group.

In the present study, a total of 9.7% of youths from the 11-14 year community sample were found to be involved in cyberbullying, and boys showed a higher rate of involvement than girls. The prevalence rate for cyberbullying in this study was lower than that reported for traditional bullying (physical, verbal, and relational) in a previous study on Korean youths in a similar age range.¹⁵

Evidences indicate that the indirect and technological nature of cyberbullying may produce age trends different from traditional bullying. Ybarra and Mitchell¹⁶ found that older youths (over 15 years of age) were more often internet aggressors than younger youths (10-14 years of age), and Smith, et al.⁸ found an increase in the incidence of cyberbullying among youths in the 11-16 years age range. More large-scale research is needed, including more youths from a wide age range, to clarify the age patterns of cyberbullying.

Cyberbullying has clearly relevance to increased problematic internet use. In this study, the fact that the boys showed a higher rate of involvement in cyberbullying than girls may have relevance to the observation that the prevalence of problematic internet use was higher in boys (16.1%) than in girls (8.1%). The “victim” group was associated with the presence of depression, and the “perpetrator” group was associated with the presence of rule-breaking behaviors and aggressive behaviors. Yang, et al.¹⁷ also found that depression was associated with victimization from and later perpetration of cyberbullying in a school-based 2-year longitudinal study in Korean youth. Victims may experience repeated anonymous attacks through large social networks, and victims may be more likely to feel isolated, dehumanized, or helpless at the time of attack.⁸ In addition, perpetrators may

be related to involvement in school problems and delinquent behaviors offline.¹⁸

The present study had several limitations. Cyberbullying behaviors were assessed via self reporting by the youths without the use of structured assessment tools. Measures of psychopathologic symptoms were also based on the self-report rather than clinical evaluation. The cross-sectional nature of the study design limits the interpretation of the results. The target schools were conveniently selected, therefore, the study findings may not represent all Korean youths. These findings should be considered as preliminary findings, and they should be replicated in future studies.

In conclusion, cyberbullying among Korean youths is a serious problem in the community; and it is associated with various types of psychopathologic symptoms, such as problematic internet use, depression, and delinquent behaviors. Increased awareness among parents, educators, and public health officials is important to early identify youths who are involved in cyberbullying and prevent serious adverse consequences in them.

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