Title: Family poly-victimization and cyberbullying among adolescents in a Chinese school sample

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Abstract: The sustained increase in their use of social networking facilitates the development of adolescents but comes with the risk of cyberbullying, which creates new challenges in regard to adolescent protection. Past evidence shows that family victimization may play an essential role in the way adolescents learn cyberbullying behaviors. Yet, research on the co-occurrence of family victimization and cyberbullying is limited. This study aims to investigate the associations between cyberbullying and family victimization among adolescents, and to examine the health correlates of cyberbullying and family poly-victimization. A large sample of 18,341 students, aged 15-17, from six cities in China, collected between 2009 and 2010 is employed in the present study, which investigated the association between various kinds of family victimization and adolescent cyberbullying. Data analysis was conducted in 2017. In-law conflict, intimate partner violence, elder abuse and neglect, and child maltreatment were associated with a higher possibility of children becoming internet victims. Parents' divorce and separation, low family income, mother's low level of education, and father's unemployment were all associated with cyberbullying victimization. Cyber victimization was positively correlated to symptoms of PTSD and depression, self-harm, and other physical and mental health variables. Possible explanations for the relationships found in this study are discussed and implications for future research and services are provided. Proactive screening for family poly-victimization and cyberbullying is suggested. Schools are highly recommended to cooperate with parents to promote cyber safety.

Running head

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All authors have no conflicts of interest to disclose.

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CKL and IP developed the study design and conceptualization. CKL and CQ contributed to the data collection and analysis. CKL, CQ, LC, ZY, CA and IP prepared and reviewed the manuscript. All authors read and approved the final manuscript.

Abstract

The sustained increase in their use of social networking facilitates the development of adolescents but comes with the risk of cyberbullying, which creates new challenges in regard to adolescent protection. Past evidence shows that family victimization may play an essential role in the way adolescents learn cyberbullying behaviors. Yet, research on the co-occurrence of family victimization and cyberbullying is limited. This study aims to investigate the associations between cyberbullying and family victimization among adolescents, and to examine the health correlates of cyberbullying and family poly-victimization. A large sample of 18,341 students, aged 15-17, from six cities in China, collected between 2009 and 2010 is employed in the present study, which investigated the association between various kinds of family victimization and adolescent cyberbullying. Data analysis was conducted in 2017. In-law conflict, intimate partner violence, elder abuse and neglect, and child maltreatment were associated with a higher possibility of children becoming internet victims. Parents' divorce and separation, low family income, mother's low level of education, and father's unemployment were all associated with cyberbullying victimization. Cyber victimization was positively correlated to symptoms of PTSD and depression, self-harm, and other physical and mental health variables. Possible explanations for the relationships found in this study are discussed and implications for future research and services are provided. Proactive screening for family poly-victimization and cyberbullying is suggested. Schools are highly recommended to cooperate with parents to promote cyber safety.

Keywords

Cyberbullying, adolescent, health, family victimization, intimate partner violence, elder abuse, in-law conflict.

Introduction

Adolescents, who have been exposed to a cyber-saturated environment, can have a dynamic grasp of information technology and develop their digital capacities and citizen participation through this new platform (United Nations Children`s` Fund, 2014). In 2009, 28.9% of the youth population (under the age of 25) in China had access to Internet. The internet coverage among this group increased rapidly to 50.3% in 2016. Internet-access rate appeared to be even higher as 85.3% (China Internet Network Information Center, 2010; CNNIC, 2016).

The development of smartphones and tablets has diversified youths' access to cyberspace. In China, 95.1% of adolescents under the age of 18 had access to the internet at home with access to mobile phones or laptops (CNNIC, 2016). In the US, a total of 75% teenagers have a smartphone with access to the internet and 92% report that they go online on a daily basis (Lenhart, 2015). Social interactions have been significantly transformed by the increasing use of social network sites such as Facebook, Twitter, Weibo, and other forums (Kwan & Skoric, 2013). The disclosure of personal data, broadcasting of adolescents' own lives, and leaving comments on others' posts have improved the efficiency of social interactions. Yet, it also inevitably facilitated the risks of cyberbullying (Hong *et al*., 2016).

Cyberbullying is the most common risk of cyberspace for adolescents (UNICEF, 2014). It has attracted increasing attention and has been documented in various countries and districts. Studies reported that the prevalence rates of cyberbullying among adolescents varied from 10%

to 53% globally, depending on the variance on definitions and methodologies (Smith et al.,

2008; Finkelhor, Turner, Hamby & Ormrod, 2011; Wolak, Chan & Cheng, 2014; Robers, Kemp,

Rathbun & Morgan, 2014). A recent systematic review on studies published between 2007 to

2014 found that around 25% of adolescents reported a history of being cyberbullied and at least

16% reported that they had cyberbullied others (Hutson, 2016).

The definition of cyberbullying is changing with the transition of social interactions

from electronic text to various mediums, such as pictures, videos, and chatrooms, through

computers, smartphones, and other electronic devices (Hinduja & Patchin, 2007; Patchin &

Hinduja, 2015). We adopted the definition by Patchin and Hinduja (2015) and defined

cyberbullying as willful and repeated harm inflicted through computers, cell phones, and other

electronic devices. Cyberbullying differs from the traditional form of bullying in some ways.

Compared to traditional bullying, cyberbullying is mostly anonymous and based on cyberspace,

which make it easier to occur but more difficult to identify the perpetrator than bullying through

face-to-face contact. Cyberbullying can take place online 24/7, leaving the victims no escape

from the victimization (Patchin & Hinduja, 2015). An imbalance of power between bullies and

victims is hard to determine in cyberspace, where power is not necessarily related to anything

physical. Both cyber victims and perpetrators are found to have higher risks of depressive

symptoms (Gamez-Guadix, Orue, Smith & Calvete, 2013), anger and sadness, low self-esteem,

self-harm, suicidal ideation, academic difficulties, and problems with peer relations (Daine *et al.*,

2013).

Cyber and real-world bullying share some common characteristics and may overlap on the prevalence, where real-world violence victims may also use Internet-based tools to take revenge (Smith et al., 2008). Similar to the traditional forms of bullying, cyberbullying is a social-ecological phenomenon. Understanding the protective and risk factors within both individual and family contexts should be the preliminary step (Espelage, 2014). On an individual level, prior victimization offline, long-term psychological problems, negative social attitudes, and low self-concept are found correlated with cyberbullying (Sanzone-Goodrich, 2013; Espelage, 2014). Research on traditional bullying reports that girls have a higher risk of victimization involving relational aggression, such as spreading rumors. Similarly, literature on cyberbullying documents the way in which girls are more frequently bullied than boys online (Hong et al., 2016; Smith et al., 2008; Wang, Iannotti & Nansel, 2009). Wang and colleagues (2009) also found that boys were more likely to be cyberbullying perpetrators, whereas girls were more likely to be victims.

External environment may bring risks of bullying and victimization to adolescents (Bandura, 1986). Victimization within the family environment may bring greater risk for children to "learn" violent behaviors and internalize their weakness as a stable personal trait, which may then increase future possibilities of being cyber-bullied (Wilczenski et al., 1997). Child victims of bullying tend to come from families with extensive conflicts, poor parental supervision, or emotional deprivation (Finkelhor et al., 2011). Cross-sectional investigations also found significant associations between direct and indirect exposure to family violence and

bullying behaviors (Hong et al., 2016). The majority of elderly people aged 65 years or above

often live with their children in China. Married women may receive help from co-residing

elders in regard to chores and childcare, but caregiving for elderly parents is found to be

associated with lower marital quality, which may lead to more conflict or violence with elders in

the same house.

Children in violent families may spend more time in cyberspace, where they can find

more social support than they do at home. Cyberspace is one of the places where bullies are able

to gain self-control; and long internet usage was found to be related to a higher possibility of

cyberbullying (Sanzone-Goodrich, 2013). Family victimization, including direct abuse and

neglect by parents, intimate partner violence among parents, and elder abuse or in-law conflict,

have been reported in recent studies to have positive relationships with victimization

experiences of children (Chan, Fong, Yan, Chow & Ip, 2011; Chan, 2017), while no research

has reported about the relationship between the cyberbullying and family poly-victimization

experiences. We hypothesized in this study that family poly-victimization is positively

associated with adolescent cyber-bullying. This present analysis is the first to contribute to this

area and aims to contribute to our understanding about the impact of co-occurrence of various

kinds of family violence on adolescents' cyberbullying victimization.

Methods

Study design and sampling

The study employed data from a large population study, which was conducted in China from 2009 to 2010. Using a two-staged stratified sampling method, a total of 150 schools were first randomly sampled from Hong Kong and five cities in mainland China, with a response rate of 76.7% at the school level. At the second stage, Chinese grades 9-12 students aged 15-17 years old were randomly selected from the 150 schools. A total of 18,341 agreed to participate, giving a response rate of 99.7% at the individual level. Participants were asked to complete a questionnaire which included items on their preceding year experiences on victimization in a private room at school under the instruction of trained interviewers. There were slightly more male participants (53.3%) than female (46.7%). The average age was 15.86 years old (SD = 0.97). More details of the study design and the demographic characteristics of the participants and their families are described elsewhere (Chan, Yan, Brownridge & Ip, 2013; Chan, 2014).

Measures

Demographic characteristics. A questionnaire was used to collect demographic and socioeconomic characteristics from the participants. It included items on age, gender, ethnicity, grade, parents' education levels, parents' marital status, parents' employment status, number of siblings, and family income.

Cyberbullying and traditional bullying. The peer and sibling module of the Chinese version of the 34-item Juvenile Victimization Questionnaire (JVQ) was employed to assess bullying victimization (Finkelhor *et al*., 2011). The six-item module demonstrated satisfactory internal consistency and reliability (Cronbach's α = .77). To provide a more comprehensive

assessment of bullying, we also employed the Relational Aggression Scale (RAS) to assess the bullying victimization of adolescents (Crick & Grotpeter, 1995). The five items of the RAS are: spreading rumors, keeping the victim from being in a group, telling friends to stop liking the victim, ignoring the victim, and threating the victim. The Chinese version of the RAS demonstrated satisfactory internal consistency and reliability (Cronbach's α = .83). Items above were rated on a 0/1 scale, where 1 represented having the experience and 0 represented not. The participants were asked if the non-physical behaviors happened in the family, at school, or on the Internet. Those responded at least one item as "Yes" and reported the experience happened on the Internet will be coded as "Internet Victimization", others will be coded as "Non-internet Victimization", which was used to differentiate cyberbullying from traditional bullying.

Experience of family violence. Participants' reports of intimate partner violence between parents (parental IPV) was assessed by items modified from the Abuse Assessment Screen (AAS) on fathers' or mothers' use of physical assault (e.g., pushing, twisting, slapping, beating, and kicking) or verbal aggression (e.g., insulting or swearing at, shouting or yelling, destroying something belonging to partner, threatening, and ignoring) against each other (four items) (Soeken, McFarlane, Parker & Lominack, 1998). In-law conflict was assessed by the occurrence of conflict between fathers or mothers and their parent-in-laws, including verbal conflict or use of force (two items). Participants' witnessing of elder abuse and neglect at home was assessed by five items, including physical violence, verbal aggression, lack of care, neglect, and abandonment. Participants were asked if they had been maltreated by their father or mother

(child maltreatment) by means of corporal punishment, physical violence, or verbal aggression (six items). Items above were rated on a 0/1 scale, where 1 represented having the experience and 0 represented not. A single item asked if participants had been left unattended at home by their parents (neglect). The reliability of the above scales was satisfactory, with Cronbach's alphas ranging from .60 to .85.

Posttraumatic stress disorder (PTSD). The 22-item self-report UCLA PTSD Index was used to assess adolescents' exposure to traumatic events (Pynoos, Rodriguez, Steinberg & Frederick, 1998). Items were rated on a yes/no scale and the Chinese PTSD index evidenced good reliability ($\alpha = .95$).

Depression. Depressive symptoms were assessed using the Chinese version of the Beck Depression Inventory II (Leung, 2001). It is consisted of 21 groups of statements rated on a four-point Likert-type scale, with a higher score indicating more severe depressive symptoms. Respondents were asked to choose one statement to report how they had felt in the past two weeks. This scale has demonstrated good internal consistency and reliability both in previous studies and in this study ($\alpha = .90$).

Health-related quality of life. The Chinese 12-item Short Form Health Survey (SF-12v2) was used to assess health-related quality of life. Item scores were summarized into two component 0/1 scores: physical component (PCS) and mental component (MCS) summary scores, with higher scores indicating better health-related quality of life. It demonstrated satisfactory reliability in a past study (Lam, Tse & Gandek, 2005) as well as in this study (α

= .75-.83).

Deliberate self-harm and suicide ideation. Adolescents' ideation of suicide and deliberate self-harm were assessed by asking whether they had ever thought about committing suicide or carrying out deliberate self-harm. Their responses were examined using a four-point Likert scale (1 = strongly agree to 4 = strongly disagree).

Statistical analysis

Data analysis was conducted in 2017. We summarized the demographic characteristics and the prevalence rates of family poly-victimization for comparison by using the Fisher exact test. The preceding year prevalence of internet victimization was computed using descriptive statistics. To estimate the associations between internet victimization and the witnessing of different types of family violence, other forms of child victimization, and demographic characteristics, we conducted a two-phase regression analysis with victimization as the dependent variable.

In Phase One, we performed separate multinomial logistic regressions with the adjustment of all demographic variables. In each separate analysis, one of the demographic variables was treated as the independent variable while others were controlled. In Phase Two, we examined the associations between victimization in cyberspace and other forms of family victimization using logistic regressions, with the adjustment for the demographic variables in Phase One. Children's witnessing of intimate physical partner violence between parents was excluded in the association analyses to avoid any overlap with items in the JVQ. $p < .05$ was

considered as statistically significant and SPSS version 23.0 was used to perform all the statistical analyses in the study.

Results

Prevalence of victimizations and comparison on demographic characteristics

Table 1 shows the comparison of the demographic characteristics and health correlates of the participants. Participants were divided into three groups according to their experience of preceding-year cyberbullying. The groups were "no victimization", "non-internet victimization (who reported victimization in other places than on the internet)", and "internet victimization". Girls were more likely to report no victimization and non-internet victimization, while boys were significantly more likely to experience internet victimization in the preceding year (70.3%) experiences ($p < .001$). Those who reported internet victimization showed highest rates to have PTSD, depression and self-harm systems compared to the other two groups (all $p < .005$). Gender differences were found in the distribution of the three victimization groups in this study. About 33.7% of the respondents reported peer victimization in the preceding year, and 3.9% had experienced peer victimization in cyberspace. More boys (5.2%) than girls (2.5%) reported internet victimization. Similar results were also found in non-internet victimization: Boys (30.6%) were more likely to report victimization than girls (28.8%) (all $p < .001$). Details of the prevalence of various kinds of family victimization have been reported in previous reports related to our study (Chan, 2014). In general, the lifetime prevalence of family violence witnessed by children ranged from 8.3% to 41.4%. Girls were more likely than boys to report

physical and psychological violence between parents and conflicts between parents and grandparents (all $p < .001$).

Association between Internet/Non-Internet Victimization and Health Correlates

As shown in Table 2, significant correlations were found between bully victimization and all health correlates, including PTSD, depression, physical and mental health, and suicide ideation (aOR = 0.95-1.54, $p < .05$). No significant difference was found between internet and non-internet victimizations in these health items. That is, the health impacts of internet victimization are as significant as those of non-internet victimization.

Association between Internet/non-Internet Victimization and Parent/Child Characteristics

Table 3 shows that parents' divorce, separation and widow (aOR = 1.27-1.68, $p < .05$), below-median family income (aOR = 1.11-1.35, $p < .05$), mother's low level of education (aOR = 1.37-2, $p < .05$), and father's unemployment (aOR = 1.43-2.13, $p < .01$) were significantly associated with children's involvement in bullying. The risk of boys becoming bullying victims appears to be much higher than that of girls (aOR = 1.15-2.73, $p < .001$) and having siblings also brings greater risk to the possibility of bullying (aOR = 1.28-1.36, $p < .05$). Overall, all of the above factors have higher odds ratios for internet victimization than non-internet ones, except for children who have siblings.

Association between Internet/non-Internet Victimization and Family Violence

As shown in Table 4, all types of family victimization (i.e., in-law conflict between parents and grandparents; physical and psychological parental IPV; child corporal, physical,

psychological maltreatment; and physical and verbal elder abuse and neglect) were associated with greater risk of bully victimization (aOR = 1.99-5.36, *p* < .001). Generally speaking, all aspects of family victimization, except child neglect, had higher risks for children as internet victims (aOR = 2.24-5.36, *p* < .001) than non-internet victims (aOR = 1.99-3.37, *p* < .001). Elder abuse is the greatest risk associated with children's cyber victimization (aOR = 3.35-5.36, *p* < .001).

Discussion

To our knowledge, our study is the first that estimated the co-occurrence of family poly-victimization and adolescents' victimization in cyberspace. Using a large representative sample, this study contributes to our understanding of the impact of bully victimization on adolescents' health.

Our findings suggest that boys were more likely than girls to be bullied in cyberspace. This is consistent with results in previous studies, that boys tend to retaliate against their bullies in the real world and also through cyberspace (Fanti, Demetriou & Hawa, 2012; Arslan, Savaser, Hallett & Balci, 2012; Wong, Chan & Cheng, 2014). Girls, reported as more likely to be perpetrators in indirect aggression in real world, were also found involved in cyberbullying, which some researchers consider as a kind of indirect violence (Ybarra & Mitchell, 2004; Fanti *et al*., 2012). Our findings provide diverging evidence from some past studies which reported no significant difference on gender issue in cyber-victimization (Jansen *et al*., 2012).

Disadvantages in regard to familial and parental characteristics were demonstrated to be associated with children's involvement in cyberbullying. Parents' divorce, separation and widow, below-median family income, mother's low education level, and father's unemployment were associated with greater risks of cyberbullying and other types of victimization. This is consistent with previous findings that low social economic status and low parental educational levels, which could be associated with fewer emotional and material resources, are associated with higher risks of children's involvement in bullying either as the perpetrator or the victim (Jansen *et al*., 2012; Silvestri, 2015). Better family support and parental protection often correlates with fewer incidences of bullying and victimization (Jansen *et al*., 2012). Siblings, on one hand, may distract supervision and weaken protection from parents (Chan, 2014), but they may also provide care for and support each other in cyberspace, thereby reducing the possibility of siblings' experience of Internet victimization. Older siblings may be more familiar with information in cyberspace and more willing to share their experiences than parents are (Jansen *et al*., 2012), and may thus be able to provide more protection for their siblings in cyberspace.

All types of family violence, including in-law conflict, intimate partner violence, child maltreatment, and elder abuse, were associated with children's victimization by bullies. Children who experienced family violence were found to have greater risk of being victims of cyberbullying than being victims of non-internet violence. These results supported our hypothesis that family poly-victimization is positively associated with adolescent

cyber-bullying experiences, and are consistent with previous findings that internet usage could be related to the involvement of cyberbullying (Sanzone-Goodrich, 2013). Our study is the first to reveal the relationship between elder abuse and adolescents' victimization in cyber space. Family dysfunction and impaired parental functioning, such as abuse on the elderly by parents within family, may be even more stand out as the ground for violence socialization of the children (Chan KL, 2017). Children of violent parents may easily accept being bullied by peers, as revealed in our present study, or learn bullying behaviors to inflict upon others because they have observed positive consequences of parents' use of violence and formed positive expectations on the result (Bandura, 1986). Limited social learning skills and coping strategies learnt from parents cause these children to experience a higher risk of problematic relationships.

The current findings show that exposure to conflicts among family members might be associated with children's health problems, including PTSD, depression, and physical and mental health, as well as deliberate self-harm. The longer the time spending on the Internet might be related to greater exposure on negative materials or information on suicide and self-harm, which might then be associated with higher levels of depression, suicidal ideation, and self-harm (Daine *et al*., 2013). The result shows no significant difference between Internet and non-Internet victimization in regard to the health items.

This study contributed to our understanding of cyberbullying among adolescents by taking the impact of various kinds of family victimization on bullying into consideration. Proactive screening assessments for family poly-victimization as well as cyberbullying should

be taken into consideration. Any form of victimization in a family environment adds to the possibility of children becoming involved in bullying, as perpetrators or as victims. Healthy familial functioning and relationships among family members are key to reducing delinquent activities, such as cyberbullying and other forms of victimization. Integrated violence prevention based on a family context is therefore highly recommended for schools and other service centers to support families as a whole in regard to preventing bullying victimization. Meta-analysis showed that school-based intervention programs with which the presence of parent and whole-school anti-bullying policy was one of the effective elements and could be applied to school programs in China (Farrington & Ttofi, 2009). Therefore, family members, stakeholders from schools and communities are recommended to work together to facilitate a bully-free environment.

Limitations of the current study should be considered. The data we used in this study was employed from part of that in our earlier project in 2010, while changes regarding the internet might occur with every passing day and the status of cyberbullying might be considerably different with time. This was the initial step to compare the above relationship and more updated information is therefore required to contribute to our understanding of this topic. The data we used in this study were from questions affiliated with a larger project focusing on child sexual abuse, so we employed a limited number of items on cyberbullying. Self-report measures have the inherent potential for unreliability especially when it comes to the sensitive topics, thus teacher, parents and peer reporting may be considered in future studies. Future

research should provide more items to specify more phenomena and to uncover the complete

situation, which may provide more detailed information on the relationship between traditional

bullying and cyberbullying.

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Table 1

Three Groups Comparison on Demographic Characteristics and Health Variables (N=18341)

	Prevalence (%)			
	No victimization	Non-internet victimization	Internet victimization	
Variable	(N=12177)	(N=5309)	(N=671)	*p-value*[a]
Parent Characteristics				
Marital status				
Divorced/separated/widowed	870(7.1)	462(8.7)	58(8.7)	.000
Married/cohabitating	11070(90.9)	4690(88.3)	588(87.6)	
Missing	237(2.0)	157(3.0)	25(3.7)	
Father's education level				.000
Secondary three or below	4686(38.5)	2561(48.2)	306(45.6)	
Secondary four to seven	3281(27.0)	1404(26.4)	193(28.8)	
Tertiary or above	2547(20.9)	784(14.8)	73(10.9)	
Missing	1663(13.6)	560(10.5)	99(14.7)	
Mother's education level				.000
Secondary three or below	5304(43.6)	2863(53.9)	357(53.2)	
Secondary four to seven	3064(25.1)	1269(23.9)	152(22.7)	
Tertiary or above	2175(17.9)	634(11.9)	68(10.1)	
Missing	1634(13.4)	543(10.2)	94(14.0)	
Father's unemployment	575(4.7)	442(8.3)	63(9.4)	.000
Mother's unemployment	660(5.4)	361(6.8)	54(8.1)	.001
Receiving social security	803(6.6)	467(8.8)	56(8.3)	.000
Family income				.000
Below median	7022(57.7)	3479(65.5)	464(69.2)	
Above median	4047(33.2)	1484(28.0)	169(25.2)	
Missing	1108(9.1)	346(6.5)	38(5.6)	

Child Characteristics

Gender				.000
Boy	6281(51.6)	2925(55.1)	472(70.3)	
Girl	5896(48.4)	2384(44.9)	199(29.7)	
Age (mean, SD)	15.892	15.806	15.812	.000
	(SD=0.97)	(SD=0.96)	(SD=0.95)	
Sibling				.000
Yes	6912(56.8)	3416(64.3)	425(63.3)	
No	5031(41.3)	1784(33.6)	233(34.7)	
Missing	234(1.9)	109(2.1)	13(1.7)	
Health Correlates				
PTSD (mean, SD)	17.60	24.74	25.57	.000
	(SD=16.06)	(SD=18.11)	(SD=20.50)	
Depression (Mean, SD)	10.36	15.54	18.16	.000
	(SD=9.61)	(SD=11.52)	(SD=13.99)	
Physical health by SF-12 (Mean, SD)	25.08	23.58	22.51	.000
	(SD=5.03)	(SD=4.80)	(SD=5.20)	
Mental health by SF-12 (Mean, SD)	12.11	11.67	11.48	.000
	(SD=2.90)	(SD=2.53)	(SD=2.91)	
Deliberate self-harm and suicide ideation (Mean, SD)	6.45	6.56	6.88	.000
	(SD=1.65)	(SD=1.71)	(SD=1.90)	

Note. [a] *P*-value by X^2 test or t-test.

Table 2

Independent Associations between Internet/Non-Internet Victimization and Health Correlates

Health Correlates	Adjusted OR (95% CI) [a]	
	Internet Victimization	Non-Internet Victimization
	(n = 14044, Nagelkerke R^2 = 12.9%, p [b] < 0.001)	
PTSD	1.23***	1.31***
	(1.091, 1.394)	(1.242, 1.388)
Depression	1.05***	1.01***
	(1.037, 1.059)	(1.01, 1.02)
Physical health by SF-12	0.95***	0.97***
	(0.937, 0.96)	(0.96, 0.97)
Mental health by SF-12	0.99*	0.99***
	(0.977, 1)	(0.983, 0.992)
Deliberate self-harm and suicide ideation	1.53***	1.54***
	(1.228, 1.914)	(1.402, 1.702)

Note. Abbreviation: CI, Confidence Interval; OR, Odds Ratio; PTSD, Posttraumatic Stress Disorder; SF-12, Short Form Health Survey.

Boldface indicates statistical significance *$p < .05$. ** $p < .01$. *** $p < .001$.

[a] 0 = no victimization, 1 = internet victimization, 2 = non-internet victimization.

[b] *P*-value by the likelihood ratio test.

Table 3

Independent Associations between Parent/Child Characteristics and Internet/non-Internet

Victimization

Variable	Adjusted OR (95% CI) [a]	
	Internet Victimization	Non-Internet Victimization
	(n = 11136, Nagelkerke R^2 = 5.5%, p [b] < 0.001)	
Phase One [c]		
Parent Characteristics		
Marital status		
Divorced/separated/widowed	1.68*	1.27*
	(1.086, 2.598)	(1.048, 1.551)
Married/cohabitating	1.00	1.00
Father's education level [d]		
Secondary three or below	1.37	1.23*
	(0.848, 2.219)	(1.032, 1.474)
Secondary four to seven	1.38	1.05
	(0.874, 2.188)	(0.887, 1.237)
Tertiary or above	1.00	1.00
Mother's education level [d]		
Secondary three or below	1.89*	1.37**
	(1.121, 3.198)	(1.13, 1.654)
Secondary four to seven	1.52	1.34**
	(0.919, 2.505)	(1.122, 1.594)
Tertiary or above	1.00	1.00
Father's unemployment	2.07***	1.43***

	(1.47, 2.908)	(1.205, 1.688)
Mother's unemployment		1.01
	0.88(0.583, 1.316)	(0.845, 1.205)
	1.13	1.2*
Receiving social security	(0.795, 1.601)	(1.034, 1.4)
Family income [e]		
Below median	1.35*	1.11*
	(1.067, 1.704)	(1.005, 1.218)
Above median	1.00	1.00
Child Characteristics		
Gender		
Boy	2.73***	1.23***
	(2.179, 3.411)	(1.129, 1.336)
Girl	1.00	1.00
Age (mean)	0.91	0.94**
	(0.82, 1.018)	(0.895, 0.979)
Sibling		
Yes	1.36*	1.41***
	(1.072, 1.725)	(1.276, 1.553)
No	1.00	1.00

Note. Abbreviation: CI, Confidence Interval; OR, Odds Ratio.

Boldface indicates statistical significance *p < .05. ** p < .01. *** p < .001.

[a] 0 = no victimization, 1 = internet victimization, 2 = non-internet victimization.

[b] *P*-value by the likelihood ratio test.

[c] Variables in Phase One were adjusted by other variables in the same phase and variables in Phase Two were adjusted by all variables in Phase One.

[d] Education: Secondary three or below = grade nine or below; secondary four to seven = grade ten to 12; tertiary or above = college/university or above.

[e] Income: Below median = HKD14,999/CNY3,999 or less. Above median = HKD15,000/CNY4,000 or above. (HKD1 = ~US$0.13; CNY1 = ~US$0.16

Table 4

Independent Associations between Internet/non-Internet Victimization and Family Violence

Variable	Adjusted OR (95% CI) [a]	
	Internet Victimization	Non-Internet Victimization
	(n = 11136, Nagelkerke R^2 = 5.5%, p [b] < 0.001)	
Phase Two [c]		
Family violence (lifetime)		
In-law conflict	2.79***	1.99***
	(2.19, 3.564)	(1.764, 2.235)
Parental IPV		
Physical	3.14***	2.19***
	(2.536, 3.88)	(1.992, 2.411)
Psychological	3.35***	2.3***
	(2.701, 4.163)	(2.105, 2.508)
Child maltreatment		
Corporal punishment	3.23***	2.42***
	(2.611, 3.998)	(2.22, 2.643)
Physical	3.54***	2.39***
	(2.862, 4.391)	(2.163, 2.644)
Psychological	3.02***	2.33***
	(2.453, 3.712)	(2.141, 2.541)
Neglect	2.24***	2.14***
	(1.777, 2.813)	(1.95, 2.342)
Elder abuse		
Physical	3.35***	2.31***
	(2.543, 4.411)	(2.001, 2.669)

Verbal	4.13***	2.37***
	(3.284, 5.183)	(2.109, 2.661)
Neglect	4.6***	2.88***
	(3.668, 5.762)	(2.574, 3.23)

Note. Abbreviation: CI, Confidence Interval; OR, Odds Ratio.

Boldface indicates statistical significance *p < .05. ** p < .01. *** p < .001.

[a] 0 = no victimization, 1 = internet victimization, 2 = non-internet victimization.

[b] *P*-value by the likelihood ratio test.

[c] Variables in Phase One were adjusted by other variables in the same phase and variables in Phase Two were adjusted by all variables in Phase One.