Does the offline bully-victimization influence cyberbullying behavior among youths? Application of General Strain Theory

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ABSTRACT

The current study attempts to examine the relationship between traditional bully-victimization and cyberbullying behavior based on General Strain Theory perspectives. Offline bully-victimization can create negative emotional strains. This negative strain combined with the anonymity in cyberspace may lead youths to be engaged in cyberbullying behavior as the externalized response to the strain. Using longitudinal Korean National Youth Survey data, this study empirically tested the above theoretical explanation. First, this study found the declining trend of cyberbullying engagement among Korean youths. Secondly, consistent with GST, offline bully-victimization was significantly related to the cyberbullying engagement. Youths who were victims of traditional bullying showed a higher tendency of becoming cyberbullying assailers with externalizing their strain in cyberspace.

1. Introduction

The activities of youths in cyberspaces are growing rapidly via Internet services at home and through wireless mobile devices. In 2011, approximately 97.2% of households in South Korea had Internet access (OECD, 2012). Approximately 48% of Korean high-school students and 41% of Korean middle-school students reported that they had smartphones with Internet available anytime (Ministry of Gender Equality, 2012). This omnipresence of the Internet has improved our lives notably positively. We can use online maps, chat, play games, and access valuable information at anytime from anywhere. However, the Internet also exhibits negative aspects. Recently, attention has focused on Internet offenses such as cyberstalking, child pornography, and cyberbullying (Bhat, 2008; Seto, 2002). Cyberbullying in particular has become a serious social problem. A number of media outlets have reported the consequences cyberbullying victimization, including suicide. For example, a middle-school student in Dae-gu, South Korea committed suicide in 2012 after experiencing severe bullying victimization both offline and online (Choson, 2012). Police found evidence of a long history of cyberbullying in the victim’s smartphone. Despite the high level of concern related to the occurrence of cyberbullying, there is a clear paucity of research on the subject (Slonje, Smith, & Frisén, 2013). Previous research on cyberbullying has reported on its prevalence, its frequency within specific groups, its negative impacts, and the relationships between traditional bullying and cyberbullying (Smith, 2012; Tokunaga, 2010). A few studies have reported an overlap between traditional bullying and cyberbullying (Salmivalli & Pöyhönen, 2012). One study reported that those who were involved in traditional bullying also showed cyberbullying behavior (Raskauskas & Stoltz, 2007; Smith et al., 2008). Another study found that those who were victimized by traditional bullying showed a high tendency for cyberbullying victimization (Katz, Fetchenhauer, & Belschank, 2009). However, there is a clear lack of research regarding the relationship between traditional bullying victimization and cyberbullying behavior. Ybarra and Mitchell (2004) suggested that some cyberbullies may be victims of traditional bullying. However, no empirical evidence of this relationship has been presented until now (Smith et al., 2008; Vandebosch & Van Cleemput, 2008).

The current study attempts to examine the relationship between traditional bullying victimization and cyberbullying based on concepts borrowed from General Strain Theory. Offline bullying victimization can create negative emotional strain. This negative strain, in combination with the anonymity offered by cyberspace, may lead youths to become engaged in cyberbullying behavior as an externalized response to the strain. Using Korean National Youth Survey data, this study empirically tests the abovementioned hypothesis.

2. Review of literature

2.1. The definition and negative consequences of cyberbullying

Traditional bullying has been studied extensively in many different countries and different cultural settings, but there is no
unified definition for it (Olweus, 1994; Peterson & Ray, 2006). Nevertheless, traditional bullying is generally defined as intentional behavior to harm another repeatedly, creating a situation in which it is difficult for the victim to defend himself or herself (Olweus, 1999). Cyberbullying has been defined as “an aggressive act or behavior that is carried out using electronic means by a group or an individual repeatedly and over time against a victim who cannot easily defend him or herself” (Slonje et al., 2013, p. 26). Compared to the definition of offline bullying, the definition of cyberbullying has been the subject of debate with respect to the issues of (1) repetition and (2) power imbalance. In the case of cyberbullying, one act of cyberbullying may easily cause repeated victimization because other Internet users can spread the original posting to other websites or social networking services (SNS). Therefore, a single act of posting may be repeated several times by others (Slonje et al., 2013). Second, in the case of traditional bullying, a power imbalance is assumed to exist between bullies and bullying victims (Olweus, 1999). The bully in cyberspace does not have to be physically stronger than the victim. Cyberbullies can easily use pseudonyms. Therefore, a physically weak but technologically advanced person can be a cyberbully. Moreover, traditional bullying victims may become bully aggressors in cyberspace as a way of obtaining revenge or expressing strain.

The physical, psychological, and emotional strains experienced by a victim of cyberbullying represent the largest problem of cyberbullying (Bhat, 2008; Dempsey, Sulkowski, Nichols, & Storch, 2009; Sahin, Aydin, & Sari, 2012). With respect to cyberbullying and psychological distress, some studies have suggested that cyberbullying, similar to school bullying, can result in anxiety and emotional distress. There is also evidence that indicates that cyberbullying can result in more serious psychological harm, such as major depression, self-harm, and suicide (Erentaitė, Bergman, & Zukauskiene, 2012).

The physical effects of cyberbullying are more tangible than other effects. For example, weight loss or gain, bruises or cuts, the use of substances, and in the worst cases, death may all be perceived (Hinduja & Patchin, 2010). Each of these effects can be caused by cyberbullying and the stress it creates in victims. Many different psychological effects may arise when enduring cyberbullying. Psychological disorders such as anxiety and depression may evolve. The loss of self-worth and self-esteem can arise and cause individuals to become reclusive and afraid of the world around them. Dempsey et al. (2009) surveyed 1684 American students and observed statistically significant results for social anxiety, but not depression, in relation to cyberbullying. Perren, Dooley, Shaw, and Cross (2010) found a significant correlation between cyberbullying and depression symptoms in a sample of 1694 students from Switzerland and Australia. The disparity between the results indicates differences between the samples, but the psychological issues that cyberbullying causes are real. The emotional disparities that victims of cyberbullying experience are vast; they may range from extreme sensitivity to aggression (Sahin et al., 2012) and even helplessness (Butler, Kift, & Campbell, 2009).

2.2. Comparison between cyberbullying and traditional bullying

Cyberbullying is distinct from traditional bullying in that electronic communication allows for perpetrators to remain anonymous and creates opportunities for messages to be posted to a larger audience (Robert, Ann, Lydia, & Shari, 2012). These factors allow for perpetrators to remain unaccountable for bullying actions unlike in traditional bullying incidents, thus opening the door for students who would usually be bullying victims offline to be bully aggressors in cyberspace.

Cyberbullying, compared to traditional bullying, demonstrates a lack of supervision by authority figures (Patchin & Hinduja, 2006). The lack of law enforcement agents in cyberspace and ambiguous legal issues (such as the jurisdiction or legal definition of cyberbullying) create a lack of supervision of cyberbullying. In addition, parents, teachers, and other adults cannot always supervise youths’ online activities because youths can access the Internet anytime and anywhere using smartphones.

In the case of traditional bullying, the majority of bullying occurs in or near school. Therefore, access to bully targets can be controlled by changing a school’s physical and social environments. Moreover, traditional bullying usually occurs during school hours. Once victims return home, the bullying temporarily ceases. Cyberbullying, in contrast, can occur at anytime and anywhere with the omnipresence of the Internet through smartphones (Patchin & Hinduja, 2006).

Traditional bullying and cyberbullying both involve an imbalance of power between one individual and another (Felix, Sharkey, Green, Furlong, & Tanigawa, 2011; Lee and Song, 2012). However, the source of power is different between the two different types of bullying. In the case of traditional bullying, an imbalance of power can arise in anything from size, age, and socioeconomic status to psychological development (Griezel, Finger, Bodkin-Andrews, Craven, & Yeung, 2012). Usually, the victims of traditional bullying are physically or psychologically weak persons. In the case of cyberbullying, an imbalance of power can be created by advanced technical skill in using information and communication technologies (ICTs) and anonymity. A greater knowledge of ICTs may contribute to the empowerment of an individual in cyberspace (Vandebosch & Van Cleemput, 2008), and anonymity empowers potential assaulters to engage in cyberbullying with a low possibility of detection.

Up to this point, we have examined the differences between traditional bullying and cyberbullying. However, there is an overlap between the two types of bullying. According to previous research, individuals who were victims of cyberbullying were targets of traditional bullying as well (Patchin & Hinduja, 2006; Tokunaga, 2010). Other studies reported that many students who were offline bully-assessors also committed cyberbullying (Raskauskas & Stoltz, 2007; Smith et al., 2008). Bullying and being bullied are interwoven between offline and online spaces. Slonje et al. (2013) reported that many students’ engagement in cyberbullying initially started from a face-to-face argument. Additionally, an argument in cyberspace sometimes led to offline bullying. Because the offline world and online world are connected to each other, the bullying incidents are closely related each other.

To date, studies on bullying have confirmed the overlap between bully incidents in both traditional and cyberspaces (Smith et al., 2008). However, little is known about the sequence of events that links traditional bullying victimization and cyberbullying (Ybarra & Mitchell, 2004). The current study attempts to examine whether offline bullying victimization experience leads to cyberbullying behavior based on GST.

2.3. General Strain Theory and cyberbullying

GST proposes that strains cause delinquency (Agnew, 1992). Agnew (1992) listed three main sources of strain: (1) failure to achieve positively valued goals, (2) loss of positively valued stimuli (for example, parental loss), and (3) the presence of negative stimuli (for example, bullying victimization or emotional abuse). According to GST, individuals who suffer the three abovementioned types of strains experience negative emotions (such as anger or anxiety). The externalization of those strains can be expressed as delinquent or violent behavior (Agnew, 1992). GST argues that strain results from individuals’ feeling as if they are not treated as they would prefer to be treated or experience undesired outcomes. Examples of this treatment include “hostility from parents, exclusion from peers, negative school experiences, and
physical or criminal victimization” (Hay & Meldrum, 2010, p. 447).
Hay and Meldrum’s study examined 426 adolescents and found a significant correlation between being a victim of bullying and self-harm or suicidal ideation. The traditional bullying caused extreme negative emotion, which then turned into self-harm (Hay & Meldrum, 2010). As stated previously, bullying is a growing problem and has reached all-time high levels over the past decades. In 2012, 30% of students in the United States reported being a bully or participating in bullying activities and 35% of students reported being the victim of bullying. A previous study showed that 11% of those 35% reported bullying more than twice a month (Polanin, Espelage, & Pigott, 2012). Thus, bullying behaviors are a result of pressures created by negative social relationships or negative experiences. The results found for traditional bullying with respect to self-harm and suicidal ideation are also significant for cyberbullying (Hay & Meldrum, 2010; Hay, Meldrum, & Mann, 2010). Another study found that strain was a significant cause for bullying; in a cohort of 1442 adolescents, self-control was a large indicator of bullying (Moon, Hwang, & McCluskey, 2011). Based on GST, we can expect that traditional bullying victimization might create negative experiences and emotions among victims. In turn, those offline bullying victims may become bully assaulters in cyberspace as an externalization of strain. The anonymity offered by cyberspace might make this theoretical transition relatively easy. Based on GST, the current study examines the potential link between traditional bullying victimization and cyberbullying.

2.4. Current study

The purpose of the current study is to examine the relationship between traditional bullying victimization and cyberbullying. Our central hypothesis is that, consistent with GST, offline bullying victimization is significantly positively related to cyberbullying. Because one of the previous studies discussed in the literature review section acknowledged bullying victimization as a source of strain within the framework of GST, the externalization of that strain may be manifested in cyberspace more easily.

To examine the effect of traditional bullying victimization on cyberbullying, the current study controls for other types of strain factors such as study strain, financial strain, and parental strain in GST. In addition, other competing theoretical factors as well as socio-demographic variables are included in the statistical analysis for control. As theoretical control variables, delinquent peers and low self-control are included, considering previous research on juvenile delinquency. Previous studies have reported the influence of delinquent peers in committing violent or bullying behaviors in the offline setting (Espelage, Bosworth, & Simon, 2000; Moon et al., 2011; Pepler & Craig, 1995; Sutherland, 1947). By associating with delinquent friends, youths have opportunities to learn techniques for committing delinquent behaviors as well as motives and justification that are favorable toward delinquent behavior. Youths who have engaged in cyberbullying activities might learn those behaviors from their close friends. In examining 1113 Korean middle-/high-school students, Lee (2005) reported observing a significant influence of delinquent peers on committing cyberbullying.

Gottfredson and Hirschi (1990) argued that low self-control is the main cause of delinquent behaviors. According to the researchers, youths with low self-control might seek instant gratification, be insensitive to others, and possess limited cognitive skills. Many studies have confirmed the existence of a significant positive relationship between low self-control and delinquent behaviors (Baron, 2003; Hay, 2001; Olweus, 1994). Lee (2005) examined the influence of low self-control on cyber delinquent behavior. He found a significant relationship between low self-control and engagement in cyber delinquent behaviors.

This study also included age, gender, and monthly family income as control variables. Tokunaga (2010) suggested a curvilinear relationship between age and cyberbullying based on the fact that adolescence is a peak period for cyberbullying behavior. Moreover, numerous previous studies on juvenile delinquency have reported on the role of gender (Broidy & Agnew, 1997; Piquero & Sewell, 2004). In a study of cyber delinquency among Korean students, male youths were determined to be significantly more involved in cyber delinquent behavior than female youths (Lee, 2005). However, Tokunaga’s (2010) review on cyberbullying victimization research concluded that females are more victimized by cyberbullying than males. As the last socio-demographic variable, monthly family income is included in this study. Traditional bullying research has included family income as a control variable (Moon et al., 2011).

In summary, based on GST, the current study examines the effect of offline bullying victimization on cyberbullying offense while controlling for GST’s three other strains (study strain, financial strain, and parental strain), two other well-known theoretical variables (delinquent peer and low self-control), and socio-demographic variables.

3. Methods

3.1. Data

For this study, Korean Youth Panel Survey (KYP) data was obtained. Beginning in 2003, the National Youth Policy Institution of South Korea (NYPI) has collected a wide range of data regarding Korean juveniles’ school life, family life, and their behavior and perception on leisure, deviancy, and future plans. Specifically, the NYPI selected 3449 of national sample of 8th grade students in 2003. The trained interviewers contacted each student annually for six years and completed self-reported surveys for deviancy variables and combined it with the face-to-face interview for other variables. Also, parents of participated students were contacted by telephone and interviewed regarding family contexts (NYPI, 2009). Data collection of KYP was completed one year after the high school graduation in 2008 (wave 6). Since the current study focuses on the youth cyberbullying behavior, wave 6 was excluded. One of the difficulties regarding panel design study is the attrition of panels from the survey as the wave increases. Deleting of missing cases based on the listwise deletion would result in the loss of potentially meaningful information. Instead, the current study decided to delete cases with more than two missing responses on the variables. Therefore, for each variable, students responded to at least three waves in the data. In our final dataset, 3238 students are included in the analysis. Among them, 525 (16.2%) students had non-responses one or two times at the variables included in this study. In order to see whether there are some systematic relations between missing cases and non-missing cases, we analyzed the logistic regression making the missing case dummy variable as the dependent variable and all other variables as independent variables. Monthly income and study strain showed significance in the analysis. But all other variables including dependent variable were not significant. Since there was a systematic influence by missing responses on the monthly income and study strain, we decided to include a dummy variable for missing responses in the multivariate analysis. Also, using maximum likelihood estimation methods, estimation using incomplete data can result in fairly accurate analysis results utilizing both complete and incomplete data information together (Rabe-Hesketh & Skrondal, 2008).
3.2. Dependent variable

Cyberbullying is operationalized through the questions: ‘Have you ever intentionally circulated false information on internet bulletin boards and others during the last year?’ and ‘Have you ever cursed/insulted other people at chatting/bulletin boards during the last year?’ The response category for each question was ‘1 = yes’ or ‘0 = no’. Combining these two questions, we created cyberbullying. Cyberbullying was coded into a dichotomized variable with 1 for at least one cyberbullying experience and 0 for no experience. There was no missing case in wave 1. But, in the following waves, there were some missing cases. The percentage of missing cases ranged between 3.9% (wave 3) and 9.2% (wave 5).

3.3. Independent variable

3.3.1. Bully-victimization

Traditional bully-victimization is operationalized by two questions: ‘Have you ever been severely teased or bantered during the last year?’ and ‘Have you ever been collectively bullied during the last year?’ Each question has ‘1 = yes’ and ‘0 = no’ responses. By adding the scores of two items, bully-victimization was calculated. Therefore, bully-victimization ranged from 0 and 2. The key proposition of GST is that strains cause deviant behavior. Bully-victimization as a core independent variable can create strain among youths. Therefore, this variable becomes an important indicator of strain in the GST theory.

3.4. Control variables

3.4.1. Parental strain

GST proposes that strains create negative emotions which in turn lead to delinquent behavior (Agnew, 1992). Parental strain coming from the conflict between youths and parents can create negative emotional strain (Aseltine, Gore, & Gordon, 2000). KYPI used four items to measure parental strain. Parental strain was operationalized by summing four items: (1) I get stressed by parental concerns on my school grades, (2) I get stressed by disciplining of parents, and (3) I get stressed by excessive meddling of parents, and (4) I get stressed because it is boring assignments or examinations, (3) I get stressed by preparation for college or occupation, and (4) I get stressed because it is boring to study. The response category ranged from 1 (never) to 5 (almost always). Factor analysis demonstrated a single factor loading with eigenvalue greater than 1 in all five waves. The Cronbach’s alpha for the items ranged from .820 (wave 1) to .862 (wave 4) indicating high levels of reliability for this measure at each wave. In order to calculate the sum score of four items, missing cases were replaced with series mean.

3.4.2. Study strain

The study-related strain can also create negative emotional status especially among Korean youths (Moon et al., 2011). KYPI included four items to measure students’ strain coming from study. The study strain scale was created by summing four items: (1) I get stressed by poor school grades, (2) I get stressed by home assignments or examinations, (3) I get stressed by preparation for college or occupation, and (4) I get stressed because it is boring to study. The response category ranged from 1 (never) to 5 (almost always). Factor analysis showed a single factor loading with eigenvalue greater than 1 in all five waves. The Cronbach’s alpha for the items ranged from .774 (wave 1) to .846 (wave 4) indicating moderately high levels of reliability for this measure at each wave. In order to calculate the sum score of four items, missing cases were replaced with series mean.

3.4.3. Financial strain

The financial limitation can also create negative emotional status. For example, when youths cannot purchase clothes and gadgets, it causes stress among them. KYPS used three items to measure financial strain. The financial strain scale was operationalized by summing three items: (1) I get stressed by not being able to wear nice clothes, (2) I get stressed by lack of pocket money, and (3) I get stressed by not being able to get goods that I want. The response category ranged from 1 (never) to 5 (almost always). Factor analysis showed a single factor loading with eigenvalue greater than 1 in all five waves. The Cronbach’s alpha for the items ranged from .820 (wave 1) to .862 (wave 4) indicating high levels of reliability for this measure at each wave. In order to calculate the sum score of three items, missing cases were replaced with series mean.

3.4.4. Delinquent peer

The association with delinquent peers can lead to delinquent behavior (Sutherland, 1947; Warr, 2005). Research has consistently shown that youths who associated with delinquent peers are more likely to engage in delinquent behaviors (Elliott & Menard, 1996; Pepler & Craig, 1995). A delinquent peer was operationalized by summing the number of friends in three delinquencies: Among your close friends, how many did the following acts during the last year? (1) I frequently beat up people, (2) I frequently rob people, and (3) I frequently steal.

3.4.5. Low self-control

According to Gottfredson and Hirschi (1990), low self-control is the main source of delinquent behavior. KYPS used six items to measure the level of self-control among students. The self-control scale was operationalized by summing six items: (1) I jump into exciting things even if I have to take an examination tomorrow, (2) I abandon a task soon once it becomes hard and laborious to do, (3) I am apt to enjoy risky activities, (4) I enjoy teasing and harassing other people, (5) I lose my temper whenever I get angry, and (6) I don’t do my homework habitually. The response category ranged from 1 (very untrue) to 5 (very true). Factor analysis showed a single factor loading with eigenvalue greater than 1 in all five waves. The Cronbach’s alpha for the items ranged from .640 (wave 1) to .691 (wave 3) indicating moderate levels of reliability for this measure at each wave. In order to calculate the sum score of six items, missing cases were replaced with series mean. A high score represents low self-control abilities.

3.4.6. Gender

Previous research reported gender differences in delinquent behavior consistently. Gender was dichotomized as a dummy variable, coding males as 1 and females as 0. This variable does not vary among different waves. Therefore, there are no missing cases for this variable.

3.4.7. Monthly income

As a socio-economic variable, monthly household income was included in the analysis. Originally, students were asked to report their household’s monthly income for the year in ten-thousand Korean won. Therefore, one (1), which is equal to 10,000 won, in

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1 NYPI (2008) examined the previous literatures and implemented a series of consultations in order to develop KYPS measurement items. Since South Korea has its own cultural and societal environmental, KYPS developed several measurement scales which are appropriate to South Korean students in the KYPS and validated against South Korean students. Current study used original scale which developed by KYPS without excluding any items from the scale.

2 Since delinquent peer was measured by the sum of number of friends who committed three different delinquent behavior, this study did not implement a reliability test.
this variable represents about 10 US dollars based on an exchange rate of 1 dollar to 1000 won. Considering missing cases and non-significant variations among five waves, we decided to use average of income on the available cases as the monthly income for all five waves. Therefore, there are no missing cases for this variable.

3.5. Statistical analysis

To assess the influence of traditional bully-victimization and other independent variables on cyberbullying behavior, the random-intercept logistic regression model is an appropriate statistical analysis. Panel data contains repeated measurements against the same youths multiple times. Regular OLS regression analysis assumes that error terms across observations are uncorrelated with each other. This assumption can easily be violated in the case of panel data analysis like the current study (Singer & Willett, 2003). Due to the fact that the dependent variable is collapsed into a dichotomized variable, we apply the Beroulli analysis with the logit link-function in the modeling. Considering the dichotomized dependent variable with panel data structure, the current study utilized random-intercept logistic regression using STATA 11.0 (Rabe-Hesketh & Skrondal, 2008).

Random-intercept logistic regression model

$$ \logit\{Pr(y_{ij} = 1|x_i, \delta_j)\} = \beta_1 + \beta_2(Bully - victimization)_{ij} + \beta_3(Parental strain)_{ij} + \beta_4(Study strain)_{ij} + \beta_5(Financial strain)_{ij} + \beta_6(Delinquent peer)_{ij} + \beta_7(Low self - control)_{ij} + \beta_8(Gender)_{ij} + \beta_9(Monthly income)_{ij} + \beta_{10}(Wave)_{ij} + \beta_{11}(Missingdummy)_{ij} + \delta_j $$

where $y_{ij}$ is the binary dependent variable with 1 represents the presence of cyberbullying in the wave $j$ for the $i$th youth; the model included a youth-specific random intercept $\delta_j$ in the linear predictor. This is a kind of generalized linear mixed model with both fixed and random effect to $\delta_j$ and a random effect $\delta_j$. This model is assuming that, given $\pi_{ij}=Pr(y_{ij} | x_i, \delta_j)$, $y_{ij}$ are independently distributed as $y_{ij} | \pi_{ij} \sim binomial(1, \pi_{ij})$

The above model specification allows the relaxation of assumption for independence among responses for the same youths given the covariates (Rabe-Hesketh & Skrondal, 2008).

4. Findings

The descriptive statistics for the variables used in the analysis are presented in Table 1. In this study, approximately 50% of students were males. Mean monthly household income was 311.49 (3,114,900 won), or approximately 3110 US dollars per month. There was a great variation in monthly household income between wealthy (Maximum = 1625) and poor (Minimum = 25.2) students. These two variables were coded as a time-invariant variable. Therefore, wave 1 through wave 5 showed the same values for these two variables.

For each wave, the percentage of students who were engaged in cyberbullying was determined. In wave 1, 43% of respondents reported some type of involvement in cyberbullying in the 8th grade (2nd year in middle school in South Korea). As the wave number increased, the percentage of youths who were engaged in cyberbullying behavior decreased significantly. In wave 5, only 7% of the respondents reported engaging in cyberbullying behavior in the 12th grade (3rd year in high school in South Korea). The overall percentage of respondents who reported engaging in cyberbullying for the five waves was 19%. An examination of the sequence chart showing the percentage of students who were engaged in cyberbullying demonstrates a clear decreasing trend (see Fig. 1). Based on this linear decreasing trend, the wave number was selected as a control variable in statistical modeling. The wave variable can also be interpreted as an age variable.

The measurement of the prevalence of cyberbullying is quite dependent on the definition of cyberbullying and the measuring items that are used (Ribel, Jager, & Fischer, 2009). Therefore, comparisons of prevalence among different studies require that the manner in which variables are operationalized be considered. To date, few studies have reported on the prevalence of cyberbullying. Through a study including 1987 German pupils, Ribel et al. (2009) explored the prevalence of cyberbullying. Using a relatively narrow definition of cyberbullying, 3.9% of the sample reported to be engaged in cyberbullying behavior. Cyberbullying victimization studies have reported that approximately 20–40% of youths reported have been victimized by a cyberbully (Aricak et al., 2008; Dehue, Bollman, & Vollink, 2008; Hinduja & Patchin, 2008; Smith et al., 2008; Ybarra & Mitchell, 2008). An interesting finding is the decreasing trend of cyberbullying prevalence as youths become older. Because the current study administered a five-year annual survey to the same panel of students that were selected from national random samples, the representativeness of the findings are relatively good. This trend is similar to that observed for traditional offline bullying behavior (Solberg, Olweus, & Endresen, 2007).

Bullying victimization offline as a source of strain in GST showed a decreasing trend as well. In wave 1, the mean bullying victimization score was 0.14 (SD = 0.41). As the wave number increased, the frequency declined and showed a mean bullying victimization score of 0.02 (SD = 0.14) in wave 5. The overall mean bullying victimization score for the five waves was 0.06 (SD = 0.26). This finding for a Korean sample shows a trend similar to that reported in previous studies (Forero, McLellan, Rissel, & Bauman, 1999; O’Moore et al., 1997; Solberg et al., 2007). Bullying victimization has been reported to be more frequent in lower grades than in higher grades in other countries as well.

As the other sources of strain in GST, parental strain, study strain, and financial strain were included in the analysis. First, parental strain also showed a slightly decreasing trend among youths. In wave 1, the mean parental strain score was 11.30 (SD = 3.69). As the wave number increased, the mean parental strain score decreased, reaching 10.33 (SD = 3.25) in wave 5. The overall mean parental strain score for the five waves was 10.82 (SD = 3.39), slightly below the mid-point 12.

Study strain demonstrated a fluctuating trend. Unlike in most other countries, South Korea administers high-school entrance examinations. Moreover, there is a college entrance examination similar to the SAT or ACT in the US. As students approached each examination date, they showed relatively high levels of study strain. Wave 2 (3rd year in middle school) and wave 5 (3rd year in high school) may have shown lower levels of study strain because students had just completed their examinations. The highest mean study strain score was recorded in wave 4 with a score of 13.01 (SD = 3.43). The overall mean study strain score was 12.47 (SD = 3.42).

Financial strain measured whether youths were becoming stress because of a lack of pocket money to buy clothes and goods. Financial strain did not show any linear trend over the study period. The highest mean score was reported in wave 2 (Mean = 8.01, SD = 2.87). The overall mean was 7.82 with a standard deviation of 2.85.

Differential association theory explains delinquent behavior in association with delinquent peers. The number of delinquent peers who were involved in three different types of delinquencies was measured. In wave 1, the mean number of delinquent peers was...
0.9 (SD = 3.52). Showing a decreasing trend with an increase in wave number, the mean number of delinquent peers was 0.26 (SD = 1.76) in wave 5. The overall mean number of delinquent peers was 0.57 (SD = 3.05).

In the case of low self-control, wave 2 showed the highest score of low self-control (Mean = 16.22, SD = 3.99). Without showing any increasing or decreasing trend, the overall mean score of low self-control was 16.00 (SD = 3.91).

Table 2 reports the results of random-intercept logistic regression analysis. Model 1 analyzed the base model using socio-demographic variables and a missing-value dummy variable. The missing-value dummy variable controls for the potential influence of missing cases. The random-intercept logistic regression model contains an additional panel-level variance component, labeled lnσ²u (Stata, 2005). The standard deviation of the variance (σ_u) is also reported. Rho represents the proportion of the total variance contributed by the panel-level variance component (Stata, 2005). If rho is zero (0), there is no need to perform random-intercept logistic regression with the additional panel estimator. Instead, pooled regression analysis can be performed. The likelihood-ratio chi-square (X²) test determines whether rho is zero. Model 1 showed significant test results (X² = 736.42, p < 0.001), rejecting the null hypothesis that rho is zero. Therefore, random-intercept logistic regression is a better choice than pooled regression.

Among the three socio-demographic variables considered in this study, wave (age) and gender were significant. As the wave number (age) increased, a respondent’s odds of being a cyberbully decreased significantly (Coeff. = −0.815, p < 0.001) by 55.8% (0.442/1.00). This finding clearly showed a decreasing linear trend again in the multivariate analysis. Tokunaga (2010) reported a curvilinear relationship between cyberbullying victimization and age that reached its peak in the 7th and 8th grades and continued to decrease among older adolescents. However, involvement in cyberbullying was determined to continue through adulthood (Tokunaga, 2010). The current study examined youths beginning from their 8th grade until the 12th grade. Therefore, the current findings match those reported in previous studies.

Gender (being male) significantly (Coeff. = 0.524, p < 0.001) increased the odds of being a cyberbully by 68.9% (1.689 − 1.00) × 100. Numerous previous studies on juvenile delinquency have reported gender differences (Broidy & Agnew, 1997; Piquero & Sealock, 2004). Male youths are significantly more involved in traditional offline bullying behavior among Korean students (Moon et al., 2011). In the case of cyberbullying offenses, even though there are still inconsistencies among the results...
Table 2
Random- Intercept Logistic Regression Model on Cyberbullying.

<table>
<thead>
<tr>
<th>Fixed effect</th>
<th>Model 1 (base model)</th>
<th>Model 2 (full model)</th>
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<tr>
<td></td>
<td>Coeff. SE</td>
<td>Odds-ratio Z</td>
</tr>
<tr>
<td>Wave (age)</td>
<td>-0.815 0.022</td>
<td>0.442 36.69</td>
</tr>
<tr>
<td>Gender</td>
<td>0.524 0.073</td>
<td>1.689 7.19</td>
</tr>
<tr>
<td>Monthly income</td>
<td>0.000 0.000</td>
<td>1.000 -1.50</td>
</tr>
<tr>
<td>Bully-victimization</td>
<td>0.750 0.090</td>
<td>2.117 8.33</td>
</tr>
<tr>
<td>Parental strain</td>
<td>0.020 0.010</td>
<td>1.021 2.02</td>
</tr>
<tr>
<td>Study strain</td>
<td>0.024 0.010</td>
<td>1.024 2.43</td>
</tr>
<tr>
<td>Financial strain</td>
<td>0.072 0.011</td>
<td>1.075 6.41</td>
</tr>
<tr>
<td>Low self-control</td>
<td>0.082 0.008</td>
<td>1.085 10.35</td>
</tr>
<tr>
<td>Delinquent peer</td>
<td>0.039 0.008</td>
<td>1.040 4.81</td>
</tr>
<tr>
<td>Missing-dummy</td>
<td>-0.069 0.103</td>
<td>0.934 -0.67</td>
</tr>
<tr>
<td>Constant</td>
<td>0.053 0.105</td>
<td>0.50</td>
</tr>
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</table>

Random effects

<table>
<thead>
<tr>
<th></th>
<th>Coeff. SE</th>
<th>Odds-ratio X²</th>
<th>Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln sigma_u</td>
<td>1.421 0.049</td>
<td>0.913 0.091</td>
<td>-571.05***</td>
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<tr>
<td>rho</td>
<td>0.380 0.016</td>
<td>0.913 0.091</td>
<td>-571.05***</td>
</tr>
<tr>
<td>Likelihood-ratio X²</td>
<td>736.42**</td>
<td>571.05***</td>
<td></td>
</tr>
</tbody>
</table>

* p < 0.01.
* * p < 0.05.
* * * p < 0.001.

reported by different studies, Smith (2012) and other review papers have indicated that females are more involved in cyberbullying than males (Tokunaga, 2010). In the current study, which used a national sample of Korean youths, males clearly showed higher tendencies of being involved in cyberbullying. Monthly income was not significant in explaining cyberbullying behavior.

In addition to the socio-demographic variables, Model 2, as a full model, included GST variables, low self-control, and association with delinquent peers. The likelihood-ratio chi-square (X²) test examined whether rho was zero for Model 2. Model 2 showed significant test results (X² = 571.05, p < 0.001) rejecting the null hypothesis that rho is zero. Therefore, random-intercept logistic regression is a better choice than pooled regression.

Wave (age) and gender were still significant in the full model as well. As a main source of strain, traditional bullying victimization was significant in explaining cyberbullying behavior. As bullying victimization increases by one unit, the odds of being engaged in cyberbullying (coeff. = 0.750, p < 0.001) increases by 111.7% ([2.117 – 1] × 100). Controlling for other independent variables and control variables, bullying victimization was the strongest factor explaining involvement in cyberbullying behavior. Previous studies have reported an overlap between traditional bullying and cyberbullying (Salmivalli & Pöyhönen, 2012; Smith et al., 2008). Nevertheless, most studies found that youths who were engaged in traditional bullying also showed a tendency to engage in cyberbullying. The current study found that traditional bullying victimization was also significantly related to cyberbullying behavior. Ybarra and Mitchell (2004) suggested a potential link between traditional bullying victimization and cyberbullying, but to date, little is known in this regard. The current study provides empirical evidence supporting this link. Traditional bullying victims who are unable to retaliate physically may do so by electronic means as a form of recompense (Slonje et al., 2013). Other strain factors such as parental strain (Coeff. = 0.020, p < 0.05), study strain (Coeff. = 0.024, p < 0.05), and financial strain (Coeff. = 0.072, p < 0.001) significantly increased the odds of being engaged in cyberbullying. However, the magnitude of these variables in explaining cyberbullying was much lower than that of the variables in explaining bullying victimization. Overall, the current study empirically demonstrated that strain factors in GST well explained youths’ cyberbullying behavior. The current study contributes to the current literature on cyberbullying first by demonstrating the empirical link between traditional bullying victimization and cyberbullying offense and second by providing a theoretical explanation for cyberbullying using GST.

As control variables, low self-control and differential association factor (delinquent peers) were included in the model. Low self-control was significantly positively related to cyberbullying (coeff. = 0.082, p < 0.001). As the low self-control score increases by one unit, the odds of being a cyberbully increases by 8.5% ([1.085 – 1] × 100). According to Gottfredson and Hirschi (1990), low self-control is the main source of problematic behavior among juveniles. A large body of research has confirmed the existence of a significant positive relationship between low self-control and deviant behaviors (Baron, 2003; Hay, 2001; Pratt & Cullen, 2000). The current study expands the applicability of low self-control in explaining cyberbullying.

Being associated with delinquent peers also demonstrated a significantly positive relationship with cyberbullying (coeff. = 0.039, p < 0.001). As the number of delinquent peers increases by one, the odds of being a cyberbully increases by 4% ([1.040 – 1] × 100). According to differential association theory, delinquent behaviors are learned, similar to other law-abiding behaviors (Sutherland, 1947). Association with delinquent peers might create favorable attitudes toward delinquent behaviors. Many studies have empirically demonstrated the positive relationship between association with delinquent peers and delinquency (Elliott & Menard, 1996; Warr, 2005). Moon et al. (2011) proved that a positive relationship exists between association with delinquent peers and traditional bullying behavior in the Korean context. Other studies have also reported significant relationships between the two (Pepler & Craig, 1995). The current study empirically demonstrated the positive relationship between association with delinquent peers and cyberbullying.

5. Discussion and conclusions

Previous research has indicated that bullying is an international issue that places great psychological and physical strain on victims. However, there has been limited research on the examination of traditional bullying and cyberbullying using criminological theory. The current study examines the relationship between traditional offline bullying victimization and cyberbullying among South
Korean youths using GST as the theoretical framework. The current study used a five-year annual survey of the same panel of students that were selected from national random samples. Therefore, we were able to examine the trend of cyberbullying. Cyberbullying of Korean youths showed a decreasing trend similar to that of traditional offline bullying behavior (Solberg et al., 2007). Few studies have reported the prevalence of cyberbullying involvement. One study examined German youths’ cyberbullying behavior. Ribel et al. (2009) reported that 3.9% of their sample was engaged in cyberbullying behavior. Overall, the current study showed that 19% of students were engaged in cyberbullying behavior at least one time in the past 5 years. This result indicates that Korean youths are engaged in cyberbullying more frequently than German pupils. This finding may have resulted from a different student culture, web accessibility, and other contextual factors. Moreover, the difference in the operationalization of variables may have played a role in this respect. Tokunaga (2010) reported a curvilinear decreasing trend for cyberbullying victimization. In addition, involvement in cyberbullying was determined to continue through adulthood (Tokunaga, 2010). Because students were assessed only up to the 12th grade, the present study could not examine whether cyberbullying behavior continued into adulthood. However, wave 5 showed that 7% of high-school seniors were engaged in cyberbullying behavior, therefore demonstrating the possibility that cyberbullying may continue after high school. One contribution of the current study is the examination of the trend of cyberbullying engagement using a longitudinal panel study design. This study found an almost linearly decreasing trend of cyberbullying among Korean youths. This aging-out phenomenon is similar to that observed for traditional bullying.

Previous research on cyberbullying has suffered from the lack of a theoretical explanation regarding the cause of cyberbullying (Tokunaga, 2010). Ybarra and Mitchell (2004) suggested a potential link between traditional bullying victimization and cyberbullying. To date, little is known in this regard. The current study provided empirical support for this link by applying GST theory. Consistent with GST, offline bullying victimization is significantly related to cyberbullying engagement. Youths who were victims of traditional bullying showed a higher tendency of becoming cyberbullying aggressors by externalizing their strain in cyberspace. The current study contributes to the literature on cyberbullying by first demonstrating the empirical link between traditional bullying victimization and cyberbullying offense and second by providing a theoretical explanation for cyberbullying using GST. Other strain factors such as parental strain, study strain, and financial strain significantly increased the odds of being engaged in cyberbullying; however, the magnitude of these variables in explaining cyberbullying was much lower than that of the variables in explaining bullying victimization.

In addition, the current study included low self-control and association with delinquent peers as control variables. These variables were significantly positively related to cyberbullying engagement. Therefore, the theoretical explanation for cyberbullying can be extended to other criminological theories. Future study is required to shed light on other theoretical explanations regarding cyberbullying.

Overall, the current study empirically demonstrated that strain factors in GST explained youths’ cyberbullying behavior well. Future research should explore gender differences in cyberbullying because the current study found that gender is significantly related to cyberbullying in two models. Given the severity and context of bullying behaviors, it is necessary to develop strategies to manage bullying. Families, schools, and communities must be aware that cyberbullying and traditional bullying are harmful. Giving students, teachers, and parents more information and increasing awareness in general can assist in the deterrence of both traditional bullying and cyberbullying. Such actions may help bul- lies to understand the error of their ways and the considerable impact that their actions may have in addition to giving victims a voice and offering them a way to stand up for themselves and not be fearful of the consequences of seeking help.

References


